POLITICAL AND ECONOMIC INTERACTIONS BETWEEN SPANIARDS AND INDIANS: ARCHEOLOGICAL AND ETHNOHISTORICAL PERSPECTIVES OF THE MISSION SYSTEM IN FLORIDA

BY

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There has been no published archeological research which has investigated both Spanish and Indian sectors of mission villages in Florida. It has either been impossible to distinguish these areas or the reports of such possible investigations have been very preliminary. This study was designed specifically to examine acculturation processes and Spanish-Indian interaction during the mission period in northern Florida (ca. 1606-1704). Concepts from economic anthropology and organizational theory were employed in examining ethnohistoric data in order to formulate a model of political and economic change in Timucuan society. Hypotheses relevant to archeological investigation were generated on the basis of this model.

Prior to Spanish arrival, the Timucuan politico-economic system appears to have been based largely on balanced, reciprocal transactions and share-out and mobilization forms of redistribution. Early Spanish-Indian interactions seem to have conformed to this system but, as time

progressed, interactions became increasingly unbalanced. Owing to dramatic demographic disruptions and the decreasing ability of Spaniards to meet native economic and behavioral expectations, the mission system declined rapidly. Ultimate collapse of the Florida mission system was probably due more to internal factors than to external ones.

Archeological research at Baptizing Spring, a Utina mission site in Suwannee County, Florida, was carried out to investigate hypotheses relating to Spanish endorsement and perpetuation of native politico-economic roles. This site may have been the early 17th century mission of San Augustín de Urica (ca. 1610-1656?).

Patterns of Spanish and aboriginal artifact distribution between two aboriginal and two Spanish structures suggest that Indians obtained primarily ornamental items from Spaniards. European-origin and aboriginal prestige goods, hypothetically identified in the model and through previous research, were found to cluster in one of the Indian dwelling areas. This suggests that native prestige goods maintained their symbolic significance and that European goods of similar types provided Spanish reinforcement of aboriginal roles and status. In addition, it was found that Indians had access to introduced domesticates but that these may have been restricted to high-status individuals. Artifact assemblages differed significantly between Indian-Indian and Indian-Spanish structural areas suggesting that Spaniards had restricted access to certain food resources, non-local, and locally manufactured goods. Data also suggest that demographic upheaval and population shifts may be represented in the archeological record.

The Baptizing Spring site was compared to other excavated mission period sites in Florida. On the basis of these comparative data, it appears that this mission site did not enjoy the relatively greater wealth of larger, more important missions in Apalache and coastal Northeast Florida. Necessary information is not available from these other mission period sites to substantiate or reject the hypothesis that introduced technological items were dispersed among Indians rather than restricted to Spanish or Spanish-supervised usage at haciendas, ranches, and missions. Such items were not found among artifacts at Baptizing Spring where basically traditional technological, subsistence, and social patterns appear to have been retained. The only evidence of the presence of European weapons -- firearms -- was recovered from the postulated high-status Indian dwelling.

CHAPTER ONE
INTRODUCTION

Research concerned with Spanish-Indian interaction in Florida has suffered from a lack of clearly stated theoretical basis. The study of acculturation is usually mentioned as a working objective but by itself acculturation is little more than a general term which describes a particular kind of culture change. It is the processes, the means by which change is initiated and reactions to these means, that dictate the direction of culture change. There is little doubt that a concerted program of directed change brought native Floridians into the Spanish colonial system. The degree to which Indians were acculturated, however, has been argued and the actual kinds of interactions which took place have not been examined in detail.

A Spanish mission site was discovered in Suwannee County, Florida, in 1976 following clearing and bedding activities for pine planting by Owens-Illinois, Inc.. Considerable exposure of the site left it open to local collectors,who are extremely active in this area,and to erosion. Hasty excavation of the two presumed Spanish building areas was performed by Dr. Jerald T. Milanich of the Florida State Museum. In the ensuing two year period, fairly limited documentary research was undertaken with the intent of continuing excavation at the site. In 1977, a survey of the surrounding area (Loucks 1978a) revealed six sites within 500 m of the mission. These sites were partially surface collected using various sampling techniques as it was hoped that they could be temporally and functionally linked with the mission site.

Dr. Charles H. Fairbanks of the Department of Anthropology, University of Florida, applied for and received a grant from the National Endowment for the Humanities. Further excavation in the aboriginal sector of the mission village was planned in order to examine the lifeways at a Spanish-Utina mission and the material correlates of acculturation. The aims in the proposal were to construct a general picture of the shared influences on material culture of both Spaniards and Indians and to examine the processes by which acculturation was accomplished. Excavations in both Spanish and Indian living areas had never been carried out at a single mission site in Florida, therefore no statements could be made concerning the functioning of a mission as a whole unit.

This dissertation focuses on the Baptizing Spring site (8 Su 65) as the testing ground for certain hypotheses concerning interactions between Spaniards and Indians. The theoretical orientation derives largely from anthropological economics and its related fields of interaction, social exchange, and organizational theory.

Acculturation

Conceptually, acculturation entails both processes and results of contact between cultures. In practice, it is difficult to study because to do so requires an holistic approach. This is especially true when formulating models to implement directed culture change.

Acculturation studies have been associated primarily with British and American functionalism (Plog 1977:26). American interest was sparked by the growing conviction that diffusion did not fully explain sociocultural change. In England, the problem was enhanced through an awareness of forced cultural changes in colonization efforts. In 1936 the American Anthropological Association held formal discussions regarding the subject's suitability for anthropological investigation. Agreement on central issues was necessitated by involvement of anthropologists in American Indian administrative problems. Later, World War II provided impetus to acculturation awareness as forced culture contacts occurred and post-war issues of decolonization had to be faced (Bee 1974:94, 95).

In view of the contemporary concern with applied anthropology at most research institutions, it is difficult to realize that it was necessary to formally recognize contact culture change as an appropriate topic for anthropological attention. Acculturation studies have figured in sociocultural research for at least forty years; in anthropology these studies have been primarily ethnohistorical and ethnological in nature. Such works include Bohannan and Plog's (1967) Beyond the Frontier, Everett Rogers' (1969) Modernization Among Peasants, and the well-known volumes by Linton (1940), Foster (1960), and Spicer (1961) which spurred and provided concepts for acculturation study.

Many studies have concentrated on the pressing problems brought about by economic development: Nash's Machine Age Maya (1958) and Salisbury's (1962) study of technological change in New Guinea are two such examples. Impacts of political and economic change and the introduction of new technologies, health care and education programs, changed food crops and material goods have all been studied either before or after the fact. Directed change, both at home and abroad, is a major governmental preoccupation.

R.L. Bee (1974:98-106) has summarized four distinct facets of acculturation studies: cultural systems, contact situation, conjunctive relations, and acculturation processes. Each culture system participating in contact situations exists as a separate, independent entity prior to contact. Within these systems, certain properties act to maintain independence. Physical or "subtle" boundary-maintaining mechanisms exist, internal structure is flexible within a culturally prescribed range, and self-correcting mechanisms affect the ways in which forces of conflict are balanced by forces of cohesion.

The contact situation, as defined by Bee (1974:102), involves ecological and demographic parameters which influence the outcome of acculturation. Technological capabilities and environmental limitations of the recipient group are major features that determine which technologies and goods will be accepted. If new techniques and practices are not adopted, the explanation may be that the cost of doing so is too great, rather than that the recipient's behavior is too conservative (Schneider 1974:192). Demographic variables concern the number of people or groups involved in the interaction, their ages, and their sex. In some contact situations, interaction is limited to males in a certain age group (e.g. fur traders). In other situations, primary interactions may be between males of the superordinate group and females of the subordinate group. Such was the case in St. Augustine where Spanish men, largely soldiers, married Indian women (Deagan 1974).

Bee's "conjunctive relations" (1974:102-103) are composed of two aspects: (1) structural limitations and (2) "filtering" of information. The former refers to the limitations placed on interactions by the context of the interaction, be it religious, economic, militaristic, or a combination of these. Viewing contact in this manner enables the definition of paired relationships such as "buyer-seller" and "missionary-convert." The recognition of these paired relationships facilitates the study of acculturation using a transactional orientation which can simplify model formation.

The second aspect is similar to features in Foster's description of conquest culture situations. Only a small part of the totality of traits and complexes that comprise the donor (superordinate) culture are introduced. These are further diminished in the geographical region of the recipient (subordinate) culture (Foster 1960:227). Priests, for instance, participated in a limited part of Spanish culture. Regular order priests acted within monastic spheres entirely different from the public sphere of the secular priests. Each group had their different tasks and roles defined by the Church. In Florida, as in other parts of New Spain, military and secular officials added a further dimension of Spanish culture which was restricted to males of differing ethnic and economic backgrounds. The recipient culture also may present only a partial rendering of the total system. Certain activities may be hidden from outsiders or only superficially represented.

The final facet of acculturation studies involves the processes themselves, several of which have been subsumed under the general categories of diffusion, evaluation, and integration (Bee 1974:104). Different responses of populations to contact situations are seen in terms of a typology of processes or outcomes: cultural creativity, cultural disintegration, reactive adaptation, progressive adjustment (fusion and assimilation), and stabalized pluralism (Plog 1977:29). Spanish colonization was a directed contact encounter: "societies [were] interlocked in such a way that participants in one culture [were] subject not only to sanctions in their own system but also to those operative in the other system" (Spicer 1961:520). Directed contact is characterized by effective control of some type and degree by members of one society over members of the other with certain behavioral changes sought by the superordinate group. Changes which occur, however, are determined by both cultural systems (Spicer 1961:520).

Archeological Acculturation Studies

Plog (1974:8) has argued that the area in which archeologists are best able to employ their talents is the study of change. Basically, four paradigms have dominated this field: evolutionism, cultural ecology, behavioralism, and acculturation (Plog 1977:25). In prehistoric archeology, culture contact studies have been approached through the effects of trade and conquest/population movements. It has been difficult, however, to distinguish changes brought about by different kinds of contact. A particularly appropriate example concerns the appearance of complicated stamped ceramics that reflect Georgia design motifs and styles in northern Florida during the late prehistoric/protohistoric period. It is not known whether the appearance of these ceramics is related to diffusion of techniques, trade, or actual population mixing (Milanich 1978:75).

The study of acculturation processes can be carried out at sites of known contact situations but such studies have been relatively few. Considering the rich colonial history of the United States, this gap in archeological research is somewhat surprising. One can guess, however, that there is some feeling that contact sites are less exotic than prehistoric sites and more bothersome than strictly colonial European or American sites. Particularly because archeologists attempt to understand cultural process from the examination of material objects, the European-Indian sites would seem to provide excellent opportunities for the study of culture change. These sites hold the physical results of two or more very different cultures coming in contact and coexisting for a usually discoverable period of time. The introduction of goods can be related to their function and the contact situation (e.g. French fur traders who had sporadic contact with Indians and were not interested in precipitating specific social changes versus Spanish missionaries who had very definite plans for changing Indian life). Thus, hypotheses concerning their impact and the cultural processes which accompanied introduction and acceptance can be made. Supplied with a substantial historical and anthropological background, these hypotheses can be formulated prior to field research and tested.

Perhaps contact sites have received less attention than fully prehistoric sites because historic archeology is of relatively recent interest. Many historical archeologists have yet to agree on, or realize, what it is that they should or could be doing (Moran 1979). There is also a theoretical dichotomy between those who think historic archeology should be historical versus those who feel it should be anthropological. A recent symposium on acculturation studies held at the 1979 Society for Historical Archaeology Conference revealed that, with few exceptions, these archeologists are still describing material culture, reading documents and probate inventories, and making little or no attempt to view their findings in anthropological terms or to offer processual interpretations. Exceptions included Keeler's (1979) attempt to apply systems theory to changes among the Chinook Indians (although he wasn't exactly sure how to go about it nor what to do with his data), Baker's (1979) study of Colono-Indian pottery and Catawba culture change, and Brown's (1979) study of French and Indian interaction in the Lower Mississippi valley. One of the few historical archeological works which has proposed and tested hypotheses of acculturation processes is that by Deagan (1974) wherein she examined the role of Indian women, married to Spaniards, as the primary agents and affectors of both Indian and Spanish material culture change.

Specific Goals and Assumptions of this Study

It is invalid to assume that two transacting groups reach an agreement on the basis of identical understandings, values, and expectations (Salisbury 1976:42): ". . . common membership in a single moral community can be seen as providing the sanctions that prevent the terms [of a transaction or interaction] from becoming too disadvantageous for the less powerful" (Salisbury 1976:44). The major assumption of this study is that two groups with different cultural and value systems have differing expectations of interaction behavior. In situations marked by disparity of power and cultural complexity, the donor group changes its behavior in some degree but the major changes occur in the recipient group's behavior (Foster 1960:7). If, however, cultural complexity and power are not greatly disparate one might expect less behavioral change and greater conflict as both groups act to maintain their own systems. Conflict will arise when either side refuses to yield over a situation where values and behavioral expectations clash. Some changes will be superficial if practices and beliefs of both groups are similar. A relevant example is the substitution of Catholic saints and religious figures for aboriginal ones in Mesoamerica. On the surface, Catholicism replaced native religion yet Amerindian statuary, beliefs, and behavior remained, for the most part, unchanged. If negative reinforcement is a factor, the behavior in question may simply "go underground" and appear to have been removed as in the case of kiva ceremonialism among the Rio Grande Pueblo (Dozier 1961:95). The working hypothesis of this study is that Spanish and Indian behavior and expectations of behavior on the part of each group did not change and that this lack of change created conflict and contributed strongly to the internal collapse of the mission system in Florida.

It was earlier stated that the study of acculturation requires an holistic approach. Archeological and historical information, however, present only a fragmentary picture of past cultures and it is usually impossible to perceive every aspect of a cultural system. Since economics ties together political, religious, economic, and social organization, an anthropological economic approach was adopted. Another factor which dictated this approach is the obvious truism that artifacts and their distribution are the physical results of economic activity: production, transaction, distribution, and consumption. Viewing contact situations in terms of paired relationships (see above) also involves economic theory which deals specifically with interpersonal and intergroup relationships.

The following chapter develops the theoretical basis -- derived from economic anthropology and organization theory -- for the hypotheses. Chapter Three presents ethnohistoric data on the Timucua during the early contact period and throughout the mission period. Economic and political conditions in Spain are briefly discussed and models of pre-contact Timucuan economic systems and mission period interactions are proposed.

Changes, or lack thereof, in interactional behavior and expectations throughout the Franciscan residency at the Florida mission (1573-1704) are discussed. Finally, hypotheses formulated from the documentary evidence and theoretical data are presented at the end of this chapter.

Chapter Four reviews mission period archeology in Florida and offers a discussion of inferences and conclusions reached by previous investigators. Information known about the Utina Indians is presented and the Baptizing Spring site is very tentatively identified as a documented mission of the first half of the 17th century. In addition, an overview of the 1977 survey near Baptizing Spring and excavation data from the 1976 and 1978 field seasons are discussed.

Chapters Five and Six detail structural and artifactual data (excluding material from surface collection at Baptizing Spring) from the mission site and survey sites. The mission data are described in Chapter Five and interpreted in light of the hypotheses in Chapter Six. Also in this latter chapter, the survey sites and other mission period sites are compared to Baptizing Spring. Chapter Seven presents a brief summary of the goals, hypotheses, and tested outcomes of the research project. A description of Spanish-Indian interaction as perceived archeologically at mission sites, especially at Baptizing Spring, is presented.

The ethnohistorical analysis presented in Chapter Three is an integral part of this thesis since it established the research framework employed in the study. Only selected aspects, however, are testable in an archeological situation. Through documentary analysis it was found that (1) economic and political controls were major cohesive factors of the Florida mission system, and (2) the mission system in Florida collapsed largely because of internal dissension brought about by the failure of Spanish agents to meet Indian expectations of "proper" behavior and their economic demands, not because of external forces in the form of Yamassee and Carolinian raiders. The archeological thrust of this research, also based on documentary evidence, was that Indians and Spaniards attempted to maintain traditional political subsystems by differentiating access rights to European goods.

CHAPTER TWO
CONCEPTS OF ECONOMIC ANTHROPOLOGY AND POLITICAL ORGANIZATION

> A material transaction is usually a momentary episode in a continuous social relation. The relation exerts governance: the flow of goods is constrained by, is part of, a status etiquette (Sahlins 1965:139).

The above statement embraces the essence of economic anthropology: the study of exchange embedded in the study of social relationships between groups or individuals. Herein lies the primary difference between economists and anthropologists. The former deal largely with material goods and services -- measurable entities -- while recognizing the importance of unmeasurable social "preferences." The latter emphasize the intangible social aspects of exchange. As stated by Firth (1970:4), the material dimension of an economy is a basic feature but the significance of an economy lies in the transactions of which it is composed and in the type of relationships which these transactions create, express, sustain, and modify. Although many economists working in anthropology downplay "social invisibles" (Pryor 1977:95) such as love, prestige, and status, many anthropologists working in economics agree that these intangibles are just as important as quantifiable commodities.

A recent development along these lines is the appearance of what has been dubbed "transactional" or "social exchange" theory. Social exchange theorists include human animate values along with inanimate and animate non-human objects in their analyses (Schneider 1974:20).

Social exchange describes a transaction of material or social value in return for obligations expressive of subordination (subservience, deference, clientship, or respect) or alliance manifested by expressions of respect and friendliness if the social exchanges off-set each other (Schneider 1974:148). The outcome, then, is determined by the value of the material or social element exchanged.

Some of the distance between economists and anthropologists can be lessened if the distinction between material and social is replaced by the more general idea of "property" where property is defined as rights in things rather than things themselves. If this is done, economics would be definable as the study of allocation of property (Schneider 1974:148, 152). Economics, however, is more than allocation. It also entails management, production, distribution, and consumption of resources. Social resources, in terms of access to goods and services (Wilmsen 1972:2) as well as relationships, are just as critical as natural resources.

Modes of Exchange

Since Sahlins (1972) defined and popularized the three states of reciprocal interaction, the terms and their descriptive foundations have been argued and reworded ad nauseum. It is probably true that no major theoretical strides have resulted and that reciprocity is basically conceived of in the same light as previously. True to his economic background, Pryor defines reciprocity as exchange in which the forces of supply and demand are masked (as opposed to market exchange where these forces are overt). He precludes possible balancing with "social invisibles" and limits reciprocal interactions to situations including counterflows of goods and services of more or less equal value (Pryor

1974:186). Sahlins invited argument primarily by describing a "negative" reciprocal transaction since in doing so he contradicted the very meaning of reciprocity: flow and counterflow. His selection of the term negative, however, pertained to the social context and function of a particular type of transaction, "the attempt to get something for nothing with impunity" (Sahlins 1972:195). Examples of such behavior include theft, gambling, stealing, and bargaining. Schneider (1974:154) attempted to describe negative reciprocity in more lucid terms as exchanges which lack governing norms. Even this is incorrect, however, as there are socially prescribed situations in which negative reciprocity is acceptable or unacceptable. In this study the concept of negative reciprocity will be preserved intact, recognizing the terminological ambiguity but accepting it as a concept with which most anthropologists, even opponents, are familiar.

Generalized reciprocity is subject to norms which dictate sharing of wealth and resources without resort to rational calculation of value or gain (Schneider 1974:154). The unmodified form would describe "free gift giving" and other variants include generosity, hospitality, and helpfulness, in which there is neither immediate nor future expectation of return (Sahlins 1972:193). Return to the giver, however, consists of the social theorists' manifestations of subservience, indebtedness, or alliance.

The "true" mode of reciprocity, balanced transactions, is simply exchange with its implied characteristic of counterflow of goods and services from one party to another (Pryor 1977:27). Balancing connotes exchange of equally valued elements but it must be remembered that "balance" depends on the range of socially accepted exchange ratios.

Cultural norms serve to ensure peaceful and honorable behavior in transactions (Schneider 1974:154). Balanced reciprocity is also subject to value and time limits which may terminate further interaction possibilities (simultaneous exchange of the same type of goods) or may guarantee future exchange -- time-lapse between counterflows of unequally valued goods (Sahlins 1972:194-195). Some economic anthropologists feel it is preferable to view "balanced reciprocity" as successive transactions (Salisbury 1976:48).

Exchange Spheres

Exchange or transactional spheres are composed of differing material items and/or services and may be further distinguished by differing modes of exchange. Each sphere is distinct from each other sphere by virtue of the goods or services it encompasses and the exchange modes operative within it. Cultural classification of material items into subsistence and prestige categories usually indicates the presence of at least two different spheres (Bohannan and Dalton 1965:5-6). Prestige sphere is a phrase covering a multitude of individual and group transactions, ceremonies, and goods which are "honorific" because they symbolize position, status, rank, reputation, and power (Dalton 1971a:14). Items in a prestige sphere are segregated from transactions concerning ordinary goods such as those within a subsistence sphere (e.g. foodstuffs) except in emergencies such as famine when valuables may be sold to outsiders (Dalton 1971a:15). In the latter case, prestige goods may become "devalued" as other necessary goods suffer crucial scarcity.

The significant characteristic of exchange spheres is that, under usual circumstances, only goods within the same sphere are exchanged. It seems to be universal that various spheres are hierarchically ranked on the basis of moral evaluation. Institutionalized situations exist in which spheres are "over-ridden, situations in which items are 'converted' from one sphere to another." Conversions are regarded as morally good or bad, converting "up" or "down," rather than as skillful or unskillful (Bohannan and Dalton 1965:8).

Economics, Prestige, and Power

Probably the most important "social invisible," and the one which Pryor believes he has shown to have inadequate causative power in determining economic activity, is prestige. The position of individuals in power is established, continued, and constantly reinforced by prestige that derives from elaborate display and consumption of economically valuable goods (Herskovits 1965:462). This belief embodies the economic act of conspicuous consumption yet Herskovits emphasizes intrinsic value rather than social value, and the two are not always synonomous. Dalton (1971a:14) maintains that prestige goods are "intensely social because they rearrange [emphasis mine] one's position in society, one's rights and obligations." This is tantamount to saying that it is goods which decide status and role rather than one's access to prestige goods which validates rank and prestige (Schneider 1974:147). Recognizing patterns indicative of differential access to and distribution of goods is a common goal of archeologists studying ranked societies. Although inheritance patterns may accord individuals rights to certain goods, it is these rights which validate position and the goods themselves function as symbols of these rights of access. The right of acquisition determines the nature of the result, not the acquisition or ownership *per se*.

Two types of politico-economic interactions need to be discussed but it is first necessary to distinguish between power and authority. Power entails the ability to forcefully control or influence a second party and this power resides in control of valued items (Emerson in Hall 1972:205). Power relations arise out of both positively and negatively balanced exchanges and also out of unbalanced transactions and open conflict (Whyte 1971:172). Authority, on the other hand, lacks force: directives or orders are followed because of the belief that they ought to be followed (Hall 1972:207). Authority, then, is positively reinforced by society while power is negatively reinforced by the governing group or individual. Prestige goods validating power and authority may be different: goods exacted through tribute payments on fear of punishment for failure to render symbolize power whereas other prestige goods accorded on the basis of respect, rank, or inheritance rights reinforce authority.

The effective establishment of authority obviates a need for overt sanction in daily activities since authority is sustained by creating social obligations. If a superior commands voluntary obedience from subordinates he need not induce them to obey by promising rewards or threatening punishment. "Use of sanctions undermines authority" (Blau 1971:160,161). Authority involves the exercise of social control which rests on willing compliance of subordinates with certain directives of superiors (Blau 1971:158). The linkage between authoritarian control and economic activities is succinctly provided by Mary Douglas' concept of licensing in which authority serves to protect vulnerable areas of an economy. Political-economic "license," although often tacit (i.e. unsanctioned), creates monopoly advantages for those who receive the benefits of it, both superiors and subordinates (Douglas 1970:131). In her words, "both parties become bound in a patron-client relation sustained by the strong interests of each in the continuance of the system."

Economic Archeology

Previous archeological and prehistoric economic studies have dealt primarily with ecological and geographical models of interaction. The European "school," in general, includes (1) the development of agriculture, (2) settlement pattern and land use at different periods, (3) seasonality, and (4) trade and its motivation among current themes in archeology (Sieveking 1977:xv). Social exchange models used are those derived from geographical theory: central place, locational, and network analyses (Sieveking 1977:xxi). Higgs' edited volume Paleoeconomy (1975) equates economy with resource exploitation and, although topics include ethology and human exploitation behavior, the articles concentrate on environmental description and exploitation, site catchment, subsistence, settlement patterning, and territorial and ethological analysis of animal resources.

North American and Mesoamerican interests in prehistoric economics also have concentrated on trade networks and resource utilization. The sophistication of analytical techniques such as neutron activation and petrographic analysis have enabled delineation of interregional trade networks but the inability or unwillingness to hypothesize and test behavioral elements of exchange from presence and distribution of artifacts has resulted in the exclusion of a basic feature of any economic system. Granted, it is often difficult if not impossible to extract human behavior from material remains, but this is the proposed goal of numerous archeologists. It is no longer valid to offer excuses on the basis of lack of models when such studies as Salisbury's (1962) on technological change in New Guinea, Barth's (1970) "Economic Spheres in Darfur," Bohannan's work on the Tiv (1955), and Dalton's numerous studies of market systems, to mention a very few, provide several case studies of economic processes and concepts illustrated by changes and patterns in material culture. This is particularly true when ethnohistoric data are available on which to build hypotheses concerning economic systems.

It is pointless to list and discuss the numerous archeological endeavors in describing and modelling economic interactions. A brief glance through American Antiquity, archeological textbooks, and other sources reveals that much of the work done has been concerned with trade. Perhaps the advocation of regional studies and the increasing number of surveys have been influencing factors. Rarely, however, is one able to find articles which deal with actual social and behavioral attributes of economic interaction. Exceptions include a considerable amount of work done on the significance of the distribution of prestige goods. Peebles (1974) was able to define several status groups on the basis of differential distribution of elite goods associated with burials and on the basis of burial placement in ceremonial center mounds, smaller mounds in villages, and beneath house floors. Settlement patterns and features have also been used to define periods of conquest and expansion and to infer levels of economic development (Sears 1968:147). In the southeastern United States, William Sears used attributes of artifacts, particularly ceramics, to propose presence of craft specialization which reflected wealth and organization within societies (Sears 1961:22) and status hierarchies reflected in "sacred and secular" dichotomization (Sears 1973). Recently, Kohler (1978) used changing patterns of trade/ elite and utilitarian ceramic distribution to delineate different status-associated living areas within a Weeden Island period ceremonial center village. In historical archeology, Otto (1975) measured ceramic type and vessel form diversity, as well as differences in house plan and diet, to show correlations between status and access to goods.

Social and economic implications of differential interaction are not usually studied; rather, they are taken as given. A study by DeGarmo (1977:157), however, concentrated on discovering social groupings as defined by archeological measures of variability in behavior. He used distribution of certain artifacts to delineate production and distribution groups within a single settlement and to identify three interpretive "possibilities" relative to manufacture and consumption of goods. Even going this far, the behavioral correlates and social significance were not discussed.

In Chapter Three it will be seen how ethnohistoric data can be used to place past cultural economic systems into anthropological perspective and how models of economic behavior and culture change can be constructed. The nature of the sites under study and the existence of historical records facilitates the kind of analysis advocated above and it is recognized that this approach is not always possible. Given more interest in social exchange theory by historical archeologists, it may someday be possible to apply formulated models to prehistoric sites.

CHAPTER THREE
PROTOHISTORIC TIMUCUAN AND SPANISH MISSION PERIOD ECONOMICS

Many subgroups composed the larger Timucua group. The Saturiwa and Agua Dulce were included among the Eastern Timucua and the Yustega, Utina, Potano, and Ocale comprised the Western Timucua. Primary differences between the various tribes appear to have derived from environmental situation. Eastern Timucua occupied lower, marshier, and geologically younger (less fertile) soils than did their inland counterparts. The coastal saltmarsh (especially along the northeastern Florida coast) and estuarine habitats, however, were fertile beyond any natural soil configuration in Florida. Western Timucua inhabited more fertile soil districts in the Central Highland region, a strip which corresponds roughly with the 100 foot contour (Figure 1).

North Florida aboriginal political organization was a chiefdom (as defined by Service 1975:80) characterized by hereditary inequality, primogeniture, permanent leadership, and hierarchical authority. Chiefdoms have been identified as redistributive societies (Service 1962:144). A patron-client relationship is well-established between superordinates and subordinates and the former concentrate power independent of that allocated by the general populace (Adams 1975:228). The concept of redistribution can be described in terms of centric, or focused, transfers (unbalanced) characterized by the high degree to which they radiate to or from a single individual or single community-wide institution. This community-wide focal point is the distinguishing feature of centric

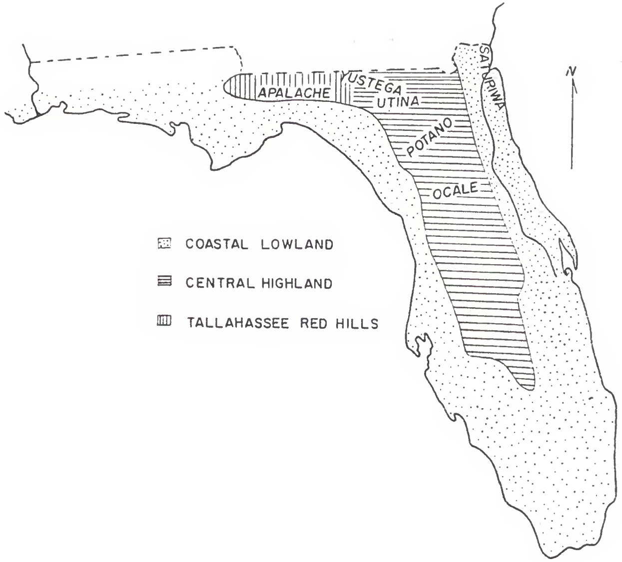


Figure 1. General Geomorphological Areas of Florida and Location of Certain Eastern and Western Timucuan Tribes and the Apalache.

transfers which can be one-way or two-way. Centric transfers are usually regressive in that goods and services flow from the poorer to the richer (Pryor 1977:34, 250, 280, 286). Recently, the concept of redistribution has been separated into four organizational forms collectively viewed in the past as "redistribution." Briefly, these are:

1. levelling mechanisms - institutionalized behavior that counteracts the concentration of wealth by individuals or groups (e.g. ceremonial obligations, potlaching); these mechanisms have no single formal structure but are distributive in their effects

2. householding - pooling and general consumption of goods produced under division of labor characteristic of a domestic unit

3. share-out - allocation of goods produced by cooperative labor to participants and owners of the factors of production

4. mobilization - recruitment of goods and services for the benefit of a group not coterminus with the contributing members (Earle 1977:215)

To "share-out" can be added the allocation of goods to an "insurer," one who insures, at least in the minds of the people, present and future yields on production. Redistribution in the form of mobilization is basic to ranked and stratified societies and should be interpreted as an essential mechanism used to finance the political and private activities of the elite population (Earle 1977:216, 227). As will be shown, Timucuan society manifested both share-out and mobilization redistribution wherein goods, services, and information were the "goods" redistributed.

Timucuan social attributes included clan distinction, linked clans, and warrior/non-warrior distinction (Garcilaso de la Vega 1962:15; Swanton 1922:369). There were a limited number of primary chiefs whose influence was regional and a greater number of secondary, village chiefs. Both were generally referred to as "caciques" although tribal affiliation was often designated through use of the most powerful cacique's name. "Nobles" were set apart from "commoners" by dress, behavior, and location of dwellings within a village. Copper ornaments, featherheaddresses, and tatooing were common symbols of high status. Feather headdresses also distinguished warriors from non-wariors during times of war (Garcilaso de la Vega 1962:15; Le Moyne in Bennett 1968:24). High-ranking individuals were carried on litters during state affairs and special benches or shelters were prepared for them when they alighted (Le Moyne in Bennett 1968:93). According to Garcilaso de la Vega (1962: 170-171), a cacique's residence was larger than others and placed on a natural or artifical mound. Nearest to him, sometimes her, and around a central plaza lived other high-status persons. Lower status families lived further away from the central area. Unfortunately, Garcilaso de la Vega should be invoked with caution since his information was not first hand. Among the Eastern Timucua, however, Le Moyne (in Bennett 1968:62) described a similar village patterning although the cacique's dwelling was centrally located within the village; higher status individuals did live nearest him.

Public meetings which were presided over by the cacique, shamans, and elders, have been described in detail elsewhere (see Swanton 1922: 359; Le Moyne in Bennett 1968:60). Prescribed seating arrangements and formalized order of presentation and ritual drinking of cassina (Ilex vomitoria) were characteristic of these meetings. A cacique enjoyed considerable power and authority; few early accounts failed to note his "nobility," eloquence, and pride. Le Moyne, Laudonnière, and later, Father Pareja (Milanich and Sturtevant 1972), bore witness to his ability to command tribute and obedience through fear of punishment.

The Timucua were semi-sedentary, central-based horticulturalists and hunters and gatherers. Two crops of maize, the primary vegetable staple, were planted each year during the late spring and summer. Other produce included beans, gourds and other squashes. Maize was grown in communally farmed fields under direction of the cacique or his representative. Other crops were grown in gardens adjacent to individual dwellings (Ribault 1964:73). All, or most, villagers worked to clear, sow, and harvest the "cacique's field." Swidden techniques of clearing were employed and fields were used for consecutive plantings until fertility declined below productive levels (Covington and Falcones 1963: 148; Laudonnière in Sauer 1971:205). Late fall and winter months were spent in the forests, hunting and foraging (Le Moyne in Bennett 1968:44). Wild foods such as nuts, persimmons, wild plums, berries, and others probably added considerably to both winter and spring-summer diets. Foods were dried and/or smoked to be saved for winter rationing.

Early explorers, biased by the need to understand political underpinnings, generally concentrated on interactions between different status groups, principally on the level of elite versus subordinate. When no rank was differentiated and the Indians were treated as an ethnic entity, Father Escobedo (writing ca. 1589-1600) noted that within a village, Indians treated each other with generosity (Covington and Falcones 1963: 143, 148, 151). This reflects an ideal (Eastern) Timucuan conceptualization of behavior since stealing was common although supposed to go undetected (Le Challeux in Lorant 1946:94, 96). To refuse a request was dishonorable; food was freely distributed among the "poor"; a cacique must never act "greedy" (Covington and Falcones 1963:143). Nothing is known about kinship ties and the obligations entailed. Generosity may have pertained to all goods but, acknowledging the restricted possession of prestige items, it is probable that generosity operated only in terms of food, and, possibly, basic utilitarian goods. Food is the one material good most usually linked with generalized reciprocity and hospitality (Sahlins 1972:216).

Food was given freely to outsiders, Europeans, or was traded (Le Moyne in Lorant 1946:36; Ribault 1964:77, 81). Exchange of food for non-food items may have been restricted to interactions between outsiders and villagers as it is often considered improper to make such exchanges with one's kin. Items given freely between kin do not carry the same significance as items given outside the kin realm. Food distribution is particularly sensitive to injunctions for or against its sharing and trading (Sahlins 1972:216). Reciprocity, especially in its generalized form, reflects the imbeddedness of particular transactions in long-term relationships (Salisbury 1976:44) and blood ties may be stronger than simply long-term relational ties. It is noteworthy that foods prepared for winter provisioning were not available to the French at any rate of exchange (Le Moyne in Swanton 1922:359). Food exchange with outsiders may have been restricted to occasions when villagers lacked calculable reason to conserve or when a show of hospitality was politically expedient. There is little doubt, however, that Indians sought to gain from provisioning the French. Le Moyne (in Bennett 1968: 98) reported that they stopped bringing in provisions as soon as they realized that the French had no more goods to exchange.

Father Pareja's 1613 Confessionario (Milanich and Sturtevant 1972), although written after the French had come and gone from Florida and the Spaniards had been established for roughly 50 years, has been used as a valued source of ethnographic information regarding aboriginal practices and behavior. Since the main purpose of Pareja's book was to provide questions which would reveal the continuation of non-Christian, Indian practices, the author considers it as a pertinent source to be used in this section. It is interesting that after more than half a century of contact with Europeans, the Eastern Timucua still retained many of their beliefs and continued in many of their obviously incompatible roles (e.g. sorcerers, shamans).

A second "native" trait was gambling/stealing (Milanich and Sturtevant 1972:33; Le Challeux in Lorant 1946:94, 96), both of which fall under Sahlins' definition of negative reciprocity. Gambling, however, is a neutral transfer and does not systematically affect the distribution of goods in society toward or away from greater equality (Pryor 1977: 255). The major cost of these transactions was prestige loss on one side and prestige gain on the other (Covington and Falcones 1963:148-149). Neither stealing nor gambling was considered immoral by the Timucua. Either activity may be seen as a means of earning prestige, particularly during peace times when excellence in battle was not an open means of attaining it. The actual winnings or material gains were symbolic of the acheived prestige. Ownership of certain items may have been shared by kinsmen with bundles of rights attached. One does not know which goods were stolen consistently and which were not, nor what social ties linked culprit to supposed victim. The question of stealing may be one of European ethnocentricity rather than negative reciprocity.

Elite versus non-elite interactions include those transactions between patient/client and curer/sorcerer and commoner and elite. The former are included under the assumption that sorcerers definitely, and curers and herbalists possibly, participated in a higher ranking than the average villager. Remittance for curing and spell-casting, although insured and inflated through threat of witchcraft, may be viewed as one flow in a balanced reciprocity (see Milanich and Sturtevant 1972:30, 31). The initial flow issued from the curer or sorcerer in the form of the service or "good" purchased -- health, a marriage ceremony, or a spell. The test of balanced reciprocity is intolerance to one-way flow (Sahlins 1972:195). Intolerance is obvious on the part of the sorcerer or curer but must be hypothesized for the client. Presumably a client or his relatives could avenge a job poorly done: a spell or cure that failed or exacerbated the situation. A sorcerer could suffer prestige and clientele loss or be threatened by a competitor. It is difficult to believe that negative reinforcement was one-way.

A cacique, with the inherited authority to receive tribute and obedience, and power to obtain it if challenged, reciprocated through the management of production and share-out redistribution. Supernatural confirmation of allocative rights supported through his shaman and social acceptance by his people allowed the cacique control over public granaries (Milanich and Sturtevant 1972:23-26, 31, 34). The authority structure, composed of chief and shaman, not only organized and directed labor in horticultural production but also ensured fertility in return for obedience and part of the yield. Control over maize fields and public storehouses would have reinforced chiefly position.

The presence of public fields and granaries fostered village solidarity and subsidized labor, war efforts, feasting, provisioning of the "poor," and entertaining guests. Shamans who "tasted" the first corn and prayed over the lakes, arrows, forests, and fields (Milanich and Sturtevant 1972:23-26) further reinforced the dependence of low-status individuals on the elite. Furthermore, since a shaman or chief alone could open the granary, dependence was doubly insured. This mutually agreed upon interdependence constitutes licensing, as defined in Chapter Two (Douglas 1970).

Additional services performed by the cacique included alliance formation, arbitration of disputes, revenging war deaths, arranging marriages, and organizing war efforts. For these corporate utilities and because of his importance as a leader, provider, and distributor, the cacique could expect respect, obedience, and yearly tribute payments of "pearls and other moneys made of shell and chamois [dressed hides]" (Canzo 1600). Escobedo stated that a cacique was supposed to be generous but, as Sahlins (1972:210) notes, in chiefly redistribution the flow between chief and people is fragmented into independent, small transactions. A cacique may accumulate many goods but is required to give out more or less. Accounts of aboriginal distribution do not indicate lower limits being exceeded to the point that a cacique lost his authority. The situation at the end of the mission period, however, suggests that such limits were recognized by Indians and that failure to distribute quantities of goods within prescribed limits could result in loss of position and concomitant authority. The loss of ability to enforce, however, had no little effect on loss of authority.

Interregional interactions are poorly known. Garcilaso de la Vega (1962:253-254) gave the impression that there was a special group of long-distance traders dealing in common and/or elite goods. Ribault (1964:74-75) mentions getting gold and silver in trade with Indians south of the mouth of the St. Johns River but these metals could have been scavenged from shipwrecks. Le Moyne (in Bennett 1968:104-105) knew that the Caloosa near Tampa Bay were getting precious metals from wrecked treasure fleet vessels but contended on the basis of what he was told by the Saturiwa and Utina, that the Eastern Florida tribes received gold and silver from Indians in the Appalachian Mountains (Le Moyne in Bennett 1968:95, 99). He does not, however, mention long-distance traders among the Indians. It has usually been recognized that much, if not all, of the gold and silver obtained by Indians came from salvaging wrecks (Bushnell 1978:45). Since copper was a prehistoric trade item, however, there exists the possibility that some of the precious metals traded to Europeans did come from distant places. Whether or not there was an organized group of specialized traders can not be determined.

In order for such a group of traders to have existed, there would have had to have been pan-Southeastern sanction of their activities so that safe passage through hostile territories would be insured. The prehistoric and early historic Southeastern Indians were well-known for their propensity for belligerent behavior. There are several possible explanations: (1) these "merchants" were actually links in a system of trade partnerships; (2) as outsiders, not belonging to a particular tribe, they existed outside the realm of inter-tribal hostility; (3) their activities provided scarce and valued items; and (4) traders might have acted as spies. None of these need be mutually exclusive and quite possibly there were several reasons why traders were allowed to travel through many different regions; however the third reason is probably the most important. Mobilian, a trade jargon or kind of lingua franca, was reportedly spoken by all the tribes east of the Mississippi. The Apalache were the only Florida tribe listed among those using the language (Haas 1975:257-258). The presence of a trade language would certainly suggest that trade interactions occurred over the Gulf States, at least, and there is no reason to think that such activities would be absent. It is interesting that the Apalache were the only group mentioned as speaking the language. Could this be an oversight, or lack of information, or could the Apalache have excercised some control over trade goods coming into Florida proper? It certainly suggests that when the Indians told Le Moyne the gold and silver came from "Apalatcy" (Le Moyne in Bennett 1968:84) they could very well have meant that it came from Apalache not the Appalachian Mountains as Bennett (1968) interpreted. The problem does remain, however, that there are no mountains in Apalache (western Florida).

One final level of interaction that can be examined is loosely termed transactions between human and supernatural, the propitiation of natural elements which provided sustenance being the primary example. One of the most, if not the most, important shamanistic functions was the insurance of successful yields from lakes, fields, forests, etc. For their services, shamans received half the catch of fish, the first deer killed, the first corn, and so forth (Milanich and Sturtevant 1972: 23-26). These transactions represent a cyclical flow wherein shamans acted as intermediary agents between humans and supernatural forces.

Supplication of the latter was returned as yield in resources to the people who returned part to the shaman in recognition of his role, thus regenerating and maintaining the cycle.

Modelling Timucuan Economics

On the whole, aboriginal modes of exchange related to political and maintenance organization appear to have been characterized by balanced reciprocity. Generalized reciprocity was typical within kin/ village contexts and seems to have been a feature of initiatory interactions between Indians and Europeans as well. The question arises as to whether or not "free" exchange was precipitated by mutual good wishes or if Indians were merely attempting to supplicate recognized superior power. In the latter case, then, the "gift" would have been balanced by intangible elements such as peace and freedom from retribution. Trade with the French, at least, seems to have held no awe for the Eastern Timucua who had no qualms about refusing to trade. From documentary sources, the only goods which were consistently described as gifts given by Indians were foodstuffs and possibly other items used in every-day household activities.

Negative reciprocity was reflected in activities such as gambling, possibly stealing, and most assuredly warfare. The ultimate motivation was the garnering of material items symbolizing prestige. War booty would not only add to a man's wealth but would also have added to his status. In all other activities exchange was more or less balanced, characterized by two-way flow of material and/or non-material elements.

Determination of exchange spheres can only be hypothetical although it is highly probable that such spheres existed (cf. Bohannan and Dalton 1965:6). The obvious division is between subsistence and prestige/

luxury goods. The former would include all foodstuffs as well as food procurement and processing items such as hoes, digging sticks, bows and arrows, fishing paraphernalia, axes, knives, grinding stones, pottery vessels for cooking and storage. Weapons, which have dual functions in warfare and food procurement, might entail special injunctions concerning dispensation. Even when given in balanced transactions only goods within this sphere would be exchanged under normal circumstances. In emergency situations (e.g. bad harvest, crop destruction during warfare), non-food items may be exchanged to obtain food or, if food is plentiful it might be traded with outsiders to acquire desirable articles which may indicate prestige ("conversion up"). The last case might cause the outsider to "lose face" while augmenting prestige for the Indian.

Goods in the hypothetical prestige sphere would have included fishbone counters (only on the East Coast?) and "green and red stones" (greenstone and hematite?) -- gambling winnings (Le Challeux in Lorant 1946:94) -- pearls, chamois, shell, cassina, feathers, metal ornaments, and litters. Although they were not exchanged, litters are included because they were important symbols of high status. Tobacco, which was smoked in curing ceremonies (Le Moyne in Bennett 1968:42) and on other ritual occasions, may also be included as a prestige item although restriction of its usage is not certain. The same may be said for cassina; it was a ritual substance used in political meetings, ceremonies, and as harvest payments. Both maize and cassina could be classified as ritual items, the latter because it represented the cacique's authority, village solidarity, and supernatural favor.

Prestige items were of at least three kinds: some goods reflected authority position in that they were restricted to high-status individuals who had rights of access by virtue of their ascribed status. In so far as cassina and tobacco were ritual substances, they may have been associated with high-status usage more so than with usage by commoners and, therefore, might be included under "authority" prestige goods. Other prestige items, principally those received by the cacique as tribute, reflected power. Lastly, acquisition of certain goods such as gambling winnings and war booty, including slaves and scalps, symbolized achieved status. Distribution of achieved status goods might not exhibit unequal distribution among the populace since, theoretically, anyone could gamble or kill. Presumably, however, goods acquired as war booty would be restricted to males, possibly within a certain age group.

Copper ornaments were available only through trade networks and were restricted to high-status individuals ("authority-prestige goods"). Pearls, shell dippers, and dressed hides must have been physically available to anyone but were eventually accumulated by the cacique via tribute payments -- "power-prestige goods" associated with mobilization redistribution. Feathers were also avaliable, in the physical sense, to anyone but usage was restricted to elite persons and warriors, representing both ascribed and achieved rank. Feather headdresses were worn by warriors only (?) during wartime; at other times they would have been used by high-status groups. Perhaps during war the latter displayed additional symbols of status associated with their inherited positions. Certainly, behavior would have set elites apart from common warriors. The only good which definitely would have been limited due to non-local availability was raw or ornamental copper and possibly gold and silver. Except on the east coast of Florida, pearls would also have been non-local in origin.

Figure 2 illustrates a simplistic view of material flows. In this diagram, traders are included parenthetically to indicate that their status as a group is uncertain. It is obvious that some prestige items and tribute goods had to be acquired by all individuals, or only those adults (males?) in a position to get them, but that these were monopolized by the cacique thus preventing competitive accumulation. These goods would be assigned prestige value only after acquisition by the cacique. Prior to that event they did not allocate prestige to the tributary. Additionally, these tribute goods plus other high-status items such as ceremonial whelk dippers, cassina, and gold and silver could be traded within or between regions allowing the cacique and other elites direct control of trade in luxury items.

Wealth inheritance would have given nephews (and sons) of the elite a congenital advantage. Primogeniture would preclude dispersal of accumulated wealth, concentrating material wealth and prestige within a relatively small group. "Young nobles" may also have had special opportunities to build their positions as it was fairly common for heirs of caciques to act as special messengers and to acquire prestige through special "noble deeds" (se Garcilaso de la Vega 1962:125-126, 145, 154-155).

Peninsular Economic and Demographic Conditions (1482-1700)

Between the years 1482 and 1700 Spain suffered serious population decline and major demographic changes. During the reign of Ferdinand and Isabella, all areas experienced considerable losses through emigration with the exception of Castile where population increased (Vicens Vives 1969:291). Nationwide population drop over the 200 year period has been estimated at 30% to 40% -- from nine or ten million to six

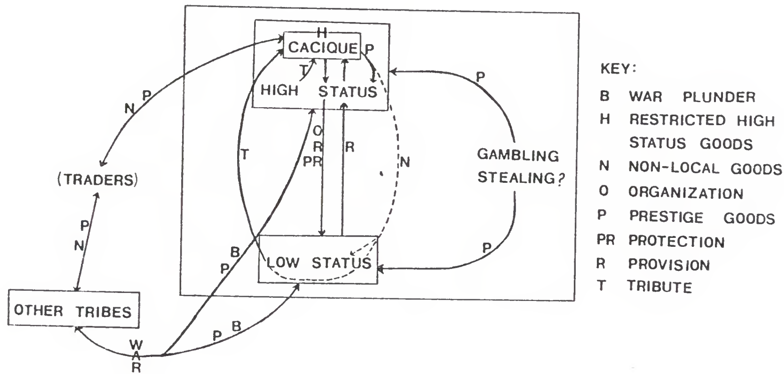


Figure 2. Hypothetical Flow Chart of Prehistoric/Protohistoric Timucuan Economic System.

million (Moses 1894:125) -- or a loss of three million between the end of the 16th century and 1723 (Davies 1961:158). Excepting Andalucia, all major Castilian cities experienced serious population reduction from 1594 to 1646. By the latter date, almost all these cities had lost at least half of their population, many as much as 75%, most of whom moved to inland cities particularly in northern Spain. By 1680, Seville had undergone serious demographic and economic retrogression (Davies 1961:157).

There were several reasons for this drastic population reduction, emigration being the major cause usually cited. Not only were some of the "best elements" being drawn off to Spanish armies and conquest (Davies 1964:23), but forced emigration of Moors and Jews, who were the primary agricultural workers and craftsmen and financiers, had additional impact on demographic and economic conditions. There are no reliable estimates of the number of conversos who left Spain in the aftermath of the Inquisition. Suggested figures put the total for the whole country at 500,000: 150,000 Jews and 300,000 Moriscos after the revolt of 1502 (Vicens Vives 1969:291).

More than 80% of the Spanish population were peasants; urban workers constituted 10-12%, urban middle class merchants, citizens, and ecclesiastics 3-5%, and less than 2% nobility. Peasants, unable to make a living from the soil, moved to urban centers to become beggars and vagrants (Davies 1964:273; Vicens Vives 1969:293). Movement to cities and emigration of Moors precipitated a shortage of agricultural workers. Spaniards, who despised agricultural work as a job previously performed by the Moors, refused to take up the task (Davies 1964:273).

The ranks of public officials and ecclesiastics swelled and in the mid-1600s the government declared it would no longer support the increasing numbers of priests and monks (Davies 1961:102). Circa 1500, 1.5% of the population (the nobility) owned 97% of the Peninsula and during the 16th century the religious class, about 2% of the national population, monopolized almost half of the national income (Vicens Vives 1969:293, 340).

Until roughly 1540, sheep raising for wool and the textile industry dominated economic perogatives (Davies 1964:23; Vicens Vives 1969: 302). They became so important that a special management board was established and agricultural production was severely hampered by national interests, loss of land to pasture, and more enticing incentives to concentrate on sheep raising. Textile manufacture flourished in the beginning of the 16th century but around 1540 began to decline. Importation of gold and silver from America had caused significant price increases (400% during the 16th century) creating the desire to buy in foreign markets and a concomitant decline in the quality of Spanish-produced goods (Davies 1964:266; Moses 1894:129). Added to this, the flow of bullion from the New World also began to drop off during the first quarter of the 1500s (Davies 1964:263). By the middle of the century, Spain no longer exported textiles but actually needed to import them to meet her own demands (Moses 1894:129). Perhaps related to this, the importation of hides from Buenos Aires, Cuba, and other parts of New Spain, became important (Davies 1961:150; Moses 1965:267; Vicens Vives 1969:357, 403). Spain then exported these hides or leather to other countries (Vicens Vives 1969:357, 358-359).

Philip III began debasing coinage, which had already been debased to copper, in 1600. He further reduced the weight of coins in 1602 and required that all payments be made with copper. By 1605 very little silver was to be found anywhere in Spain and the premium on it rose so high that continental trade was stifled (Davies 1964:266-267). During the reign of Charles II (1665-1700), Spain was sunk in deep economic depression. Very little was sent to America during the last decade of the 17th century except wine (which could not legally be made in the New World). Many goods were exported to the colonies from foreign countries under pretext of coming from Spain. These goods primarily included wax, spices, paper, cloth, and mercury. American exports to Spain consisted of hides, "chinaware" (Aztecan and Chinese), grain, tobacco, tropical drugs, copper, and mostly gold and silver (Barozzi e Berchet in Davies 1961:149-150).

Spanish-Indian Interaction (1564-1650)

The topic of Spanish and Indian interactions is the hardest to arrange since insights to economic and social transactions are scattered over numerous sources, both primary and secondary. It appears, however, that three general periods can be defined on the basis of topics covered by those sources which were reviewed. Letters and cedulas included in the Ethnohistory Index (P.K. Yonge Library of Florida History) that contain information on Indians concentrate on gifts made to Indians prior to about 1650. After that date, very little mention of "gifts" is made at all. During the last two periods used here, 1650-1675 and 1675-1704, priests, visitadores, and government officials spent more paper describing actual situations and conflicts between Indians and Spaniards.

Data are presented topically and chronologically in an attempt to show continuation of or changes in policy and attitudes. It was impossible to confine discussion to the Timucua, especially after the mid-1600s, since references to this group are relatively few. Latter 17th century accounts are basically concerned with the Apalache in western Florida (for reasons that will be discussed later). Until the early 1600s, contact with Western Timucua was sporadic; missions had not been established, therefore description of early interactions must be garnered from sources describing the Guale and Eastern Timucua. Although the Indian groups differed to some extent, it does not seem likely that Spanish policy would have been enacted differentially.

The beginning date of the construction of Fort Caroline by the French (1564) near the mouth of the St. Johns River is given as the starting date for this evaluation since the French settlement spurred Spain to the first successful attempt at colonization. Most data, however, will extend from 1573 onward, after the Franciscans took over the mission field from the Jesuits.

Pope Alexander VI issued a papal bull in 1501 giving the Crown a grant of ecclesiastical tithes in all newly found regions under the condition that sovereigns made themselves responsible for the introduction of Catholicism and maintenance of the Church and for the instruction and conversion of Native Americans. In 1508, Pope Julius II issued another bull conferring full patronage on Ferdinand and his successors (Haring 1963:167).

It is popularly well-known that Juan Ponce de León landed in Florida and officially proclaimed it as property of the Spanish Crown in 1513. Two of the most famous _entradas_, that of Pánfilo Narváez (1528) and that of Hernando de Soto (1539), brought Spaniards in contact with interior tribes. The results were disastrous, especially those which arose out of de Soto's policy of brutalizing the natives and destroying their villages and fields.

Pedro Menéndez de Avilés, who expulsed the French (1565) and became the first long-term governor of Florida (1565-1574), undertook the colonization of Florida for several reasons, the most important of which were the promise of economic gain and increased social position. Revenue to the Crown and the priveleged adelantado, good defensive location against enemies, and guaranteed profit from trade and agriculture were among the primary reasons for establishing the colony (Lyon 1976:45). The adelantado's agreement with the Crown included his responsibility to bring natives to the Christian faith and loyal obedience of the king. The 1563 ordinances indicated that an adelantado was allowed to create two-generation repartimientos of Indians in each established village. They also provided that three-generation encomiendas could be granted to other settlers in areas aside from ports or main towns (Lyon 1976:50).

Since the French had conceived good relationships with the Indians of the northeastern Florida coast, tensions were high between Indians and Spaniards. When the latter took control of Florida in the mid-1650s, relations were primarily based on trade. Menéndez was, however, to receive tribute from caciques in the name of the king. Serious evangelization was to wait for a more propitious time (Lyon 1976:118-119).

Missions were to serve dual purposes along the Florida frontier: they were to be agricultural and religious schools (Haring 1963:183) as well as nodes in a defensive network which, it was thought, would serve as a buffer against French and British encroachment from the north. Indians were to supply the labor force necessary to construct physical defenses (such as the fort in St. Augustine), roads, and bridges. They would also provide the bulk of the subsistence support. Promotion of self-sufficiency supported by native cultivation was among the primary objectives (Rogel in Gannon 1967:33).

There is no doubt that Spaniards regarded their duties to Church and God with utmost respect. Population decline in Spain (and the threat of Protestantism) made the duty of conversion more pressing in order to maintain the Catholic religion as an important source of power and enlightenment. The fact remains that Church and State were closely aligned and shared access to a great deal of potential wealth. Mission Indians provided bodies and souls which could encourage the realization of that wealth.

Gifts and Trade

Since the earliest peaceful attempts of the Spanish to win over the Florida natives, gifts had been offered as tokens of their friendship. Father Luis Cáncer de Barbastro offered gifts which, although of little value to Europeans, "were highly prized by them [Indians] and much appreciated" (in Gannon 1967:11). Spaniards gave gifts not only to open relationships but also to placate (Geiger 1936:3). Brother-in-law and chronicler of Menéndez, Solís de Merás (1923:184) reported that Guale Indians who arrived in St. Augustine in 1566 to receive gifts and food went away declaring war if they did not receive them. Expenses for gifts to both Christian and "heathen" Indians were authorized by cedulas in 1593 and 1615 (Father Moreno 1654). Table 1 summarizes gifts and trade goods given and received by Indians.

Table 1. Gifts and Trade Goods Exchanged between Indians and Europeans.

Gifts	Sources
clothes, flour, tools	Governo Canzo, 1597
blankets, knives, fish hooks, scissors, hatchets, glass beads, sickles	Covington and Falcones, 1963 (Father Escobedo, original ca. 1589-1600)
mirrors, knives, scissors, bells, and "things highly prized"	Solís de Merás, 1923 (original ca. 1566)
garments, beads, hatchets, machetes, (given to "principal Indians")	Solís de Merás, 1923
corn, hoes, (given to Indians south of St. Augustine "to increase their estimation of us")	Governor Ibarra, 1605
European Trade Goods	
jewelry, knives, scissors, axes	Covington and Falcones, 1963
Indian Gifts*	
deer hides (painted and unpainted), meal, little cakes, roots (sassafrass?), gold, silver, copper, pearls, beans, fish, shellfish, meat	Captain Ribault, 1964 (original, 1562)
maize (flour, roasted, ears), smoked meat, wild roots (medicinal and other), metals	Le Moyne in Bennett, 1968 (chronicler for Laudonnière, original, 1591)
Indian Trade Goods	
ambergris, maize, smoked meat, fish	Covington and Falcones, 1963

* Many of these gifts were also traded items.

It appears that gifts were sometimes, if not always, given to caciques (Canzo 1597, 1599; Cedulario, San Lorenzo 1593). Whether or not the cacique distributed these goods among his village is not known. Presumably, some of the goods were at least distributed to other elite individuals. Caciques, as leaders of the villages, received special Spanish attention. The goods given to "principal Indians" listed by Solís de Merás (1923:148, 127) differ from those he indicated as general gifts. There is only one specific reference among the numerous sources reviewed which indicated that caciques, those who were obedient and good converts, received special compensation. In this case, Governor Canzo (1600) awarded 150 ducats to Doña María, cacica of Nombre de Dios just north of St. Augustine, and 200 ducats to Don Juan, cacique of San Pedro on Cumberland Island, Georgia.

It is impossible to ascertain how important cash actually was to Indians. Father Escobedo, stationed at Nombre de Dios from 1589 until about 1600, wrote that food was scarce and "unfaithful" Indians took advantage of festival days to hunt and then sell ducks (1 real), turkeys (15.5 gold reales), and rabbits (2 reales) to those who had stayed indoors. Leather "moccasins" made to order out of deerskin sold for three ounces of Mexican silver (Covington and Falcones 1963:143, 144). Escobedo also ranked Eastern Timucuan preferences for trade goods: fish hooks, axes or hatchets, knives, scissors (in descending order). Glass beads apparently "delighted" all Indians (Covington and Falcones 1963: 145, 146).

Labor and Taxes

Writing for Governor Salinas, Ramirez (1622) noted that it was customary for Indians to come to St. Augustine from Guale to cultivate the "savannas." Caciques were required to send up to 50 Indians from each village, dependent on its size. Soldiers were sent to issue orders for labor and were supposed to provide necessary provisions and passage money for the journey. Upon arrival in St. Augustine, Indians were to receive gifts and to be paid (probably in goods) for their work. If caciques did not send Indians, Salinas warned, they were to be severely punished. Thus, the colonial system of repartimiento also found a place in Florida. In 1637, Governor Horryutiner reported that Indians were required to carry provisions for the priests from St. Augustine to Apalache (Matter 1972:253). The use of Indian labor continued through the mission period even though the Crown constantly ordered against it.

Native Floridians retained the practice of paying tribute to caciques in traditional goods and, in addition, they were required to pay tribute (or tithes) in corn to the government (Bushnell 1978:38; Royal Officials 1605). The corn, and probably other foodstuffs, was used to provision soldiers stationed at St. Augustine (Governor Marqués, 1579, in Conner 1930:229). Prior to 1600, each "friendly" Indian and cacique was taxed one arroba (roughly 25 pounds) of maize per year. In 1600, this tax was reduced to six ears of corn because of the hardship caused by the earlier tax and the poverty of the Indians (Canzo 1600).

Mission Politics and Economics

Each mission priest lived at a more or less centrally located, primary village (doctrina) and administered to nearby sub-stations (visitas). The priest either visited these outlying villages to teach doctrine and perform baptisms (Geiger 1937:69), or Indians came into the doctrina on Saturday evenings, or evenings before holy days, and stayed overnight to hear mass the next day (Geiger 1936:14). Villages that lacked a resident priest supposedly competed with each other to build the best church and residence for a future priest in the event that they should ever be allotted one (Oré 1936:104, 107).

Franciscans, as mendicants, were dependent on alms begged from the community for their support (Oré 1936:79). Due to the general poverty of Florida, especially in its early settlement period, priests were supported by the Crown along with the soldiers and secular officials. The situado, royal subsidy, was shipped from Spain, Cuba or the Mexican Peninsula. Perishables were generally of poor quality and spoiled; all subsidy goods were extremely expensive. The reality of Florida poverty has been questioned by many and it is generally felt that reports issuing from priests, treasurers, and governors to the Crown were exaggerated in attempts to obtain more goods. Bushnell (1978) has studied the St. Augustinian and general north Floridian economic conditions in detail and the kinds of goods she cites, particularly those enjoyed by the hidalgos, do not hint at an overwhelming poverty. Recent zooarcheological research carried out on St. Augustinian material also suggest that poverty might have been exaggerated (Reitz 1979). If the data from St. Augustine have been intentionally biased, it is also possible that information regarding poverty at the missions might also have been overstated. Certainly, the level at which the Spaniards were used to living was drastically different in Florida and the fact that they probably went without things to which they were accostumed may have prompted many feelings of poverty. As long as there were Indians to hunt and farm, food should not have been very scarce.

Since Spaniards were, in general, uninspired over agricultural duties, the mobilization of Indian labor to provide for garrison, town-dwelling, and mission personnel was extremely important. Although livestock management was more in line with the Peninsular activities they were accustomed to, farming does not appear to have been a particular skill enjoyed by Spaniards. Neither, it seems, were they satisfied with the nature of Native Floridian farming techniques. Governor Salinas (1620) asked the king for permission to import 20-30 Indians from Honduras or New Spain who would teach the Indians how to farm. Four Franciscans also asked for about 30 people to settle and farm near the priests (Pesquera et al. 1621). Periodically, from 1620 through the 1670s, governors made requests to the Crown to furnish them with Indians from Campeche or Honduras who would either teach the natives to grow indigo and cochineal, cash crops, or grow them themselves (Consejo de Indias 1623; Cedulario, Madrid 1623; Francisco de la Guerra y de la Vega 1673; Cedulario, Madrid 1673). According to Bushnell (1978), these were merely proposals and the enterprise was never funded or carried out. Whatever the truth of the matter may be, most accounts impress the reader with an overall subsistence sufficiency. In later periods, there was enough maize, beef, and hides to allow exportation to Havana and illicit trade.

Cedularios of 1641 and 1663 awarded regular clergy annual subsidies of flour, wine, oil, vinegar, salt, blankets, robes, dishes, candles, paper, and other items (Tepaske 1964:179). Father Pareja's (in Oré 1936:105, 107) famous and astringent letters, however, attest to extreme poverty at the missions. Furnishings for the church were obtained despite poverty because Indians brought deerskins to buy wax (candles) and to pay for burial of their dead. At some missions, he reported, pigs and arrobas of maize were used to purchase small bells.

Hides brought to the priests were probably sold or traded (by the priest) to obtain requisite fixtures. Judging from the list of Spanish imports from America and exports to other countries, hides and leather goods were probably a good medium of exchange, especially if cash was not on hand or simply not allowed to be used by Indians. On the east coast of Florida, south of St. Augustine, ambergris was collected by Indians and/or representatives of the governor. This substance turned a very high profit in Spain and also for the Indians who traded it. In St. Augustine, at least, ambergris was definitely used instead of cash money (Bushnell 1978:43).

Priests supplemented royal subsidies with alms of maize, beans, or toasted flour received from Indians (Oré 1936:105). In many cases, everything priests obtained from their charges was justified as alms since Franciscans were subject to vows of poverty.

Soon after the Spaniards began intensive missionizing activities, native populations were "reduced" into centralized villages, either missions or visitas. Centralization of Indian populations was a major objective from the outset (Geiger 1936:16) and was necessary not only to provide control over the Indians but also to provide a conveniently available repartimiento labor pool.

By 1597 Guale mission Indians were peaceful in the aftermath of death and destruction of villages and fields precipitated by the revolt of mission Indians along the Georgia Coast. Governor Marqués informed the Audencia de Santo Domingo that he hoped Indians would become good Christians but that adults, who had their own religion and did not want to convert, were preventing their children from being taught (Connor 1930:224-229). Within 20 years this situation had altered drastically and at San Juan del Puerto at the mouth of the St. Johns River, Father Pareja (1602), reported that natives assisted at high mass and vespers.

All was not well between priests and their converts, however, nor between caciques and their villagers. Pareja (1602), who served in the Florida mission field for almost 40 years, asked the Crown to order governors to threaten to punish Indians so that natives would do as their caciques told them. Once caciques became Christians, their subordinates no longer obeyed them. The general consensus on the friars' part was that it was the duty of the governor to punish Indians. Father López (1605) stated that the priests should be seen as "loving fathers," not the governors. The continuous rivalry between secular and religious personnel and the inability to divide jurisdiction (a fault built into the Spanish system) was to plague Florida throughout the mission period.

The one major change in political organization was the breakdown of tribal level organization characterized previously by intervillage alliances (Milanich 1978:67). After 1633, Milanich states, there were no references to major regional chiefs, only to caciques of individual villages. At the Timucuan missions visited by Rebolledo in 1657, however, it appeared that visita or village caciques were subordinate to caciques of primary regional villages where missions were located (Pearson 1968:97). The position of the cacique was maintained and priests attempted to enhance this role since the chief could be an important avenue through which to work conversion (Pearson 1968:67).

Settlement and Demographic Changes

Aside from the temporary shift of work details to St. Augustine and reduction, both important factors, there is little mention in the documents of this period which concern demographic change. Pareja (in Geiger 1937:145) wrote that some Potano had left their own villages to settle in Christian communities and it is possible that centralization was forced or made highly desirable by promises of economic, and religious, benefits.

The role of disease and epidemics has not been widely reported but this may be a bias resulting from selection of sources. Between 1614 and 1617 epidemics brought about many deaths and completely depopulated some villages (Geiger 1937:251). According to friars' estimates, which may be exaggerated, half the Indian population in Florida was killed (Bushnell 1978:19).

Priests, Soldiers, Civilians, and Indians: 1650-1675

This is a rather arbitrarily assigned period but it begins at about the same time as major political and economic problems in Spain were occurring and it ends roughly at the time when Spanish Florida had to turn its attention to British and Indian ally encroachments. A further dimension was added to frontier Florida economy around 1655 when civilian or military cattle ranching had begun to be important. The cattle industry reportedly did not become extensive until around 1700 (Arnade 1965:6) but earlier accounts of cattle ranches, and the problems they were creating, do exist.

Gifts and Trade

The Royal Treasurer José de Prado (Moreno 1654) advocated that gifts to Indians be eliminated because they constituted a heavy drain on St. Augustine funds. He suggested, instead, that Indians should be fed when in St. Augustine or when sick but that gifts only be given when a new governor was installed. There is a notable lack of accounts of gift-giving which may be a reflection of decreased amounts of gifts to give or simply documentary sample bias. More interesting, in any event, are the other exchanges Indians participated in. Indians had many items to offer which Spaniards wanted: sassafrass (which brought a good price in Spain), ambergris, deer and buffalo (?) skins, nut oil, bear grease, tobacco, canoes, storage containers, and, most of all, food. Indians wanted whatever the Spaniards had: weapons, construction and cultivating tools, nails, cloth, blankets, bells, beads, church ornaments, and rum (Bushnell 1978:13). The problem was to supply enough of what the Indians wanted. Governor Rebolledo had 60,000 pounds of pig iron beaten into tools to barter for ambergris with the coastal Indians south of St. Augustine. When the Indians offered him more of this precious substance, he melted cannons and arquebuses. For 600 ounces of ambergris (worth 15,000 pesos), Rebolledo gave Indians 500 pesos worth of iron in the form of hoes, an anchor, mortars, cannons, muskets and arquebuses which the governor claimed were worthless (Bushnell 1978:13, 43). Soldiers also traded muskets to the Indians (Bushnell 1978:13).

Just after the Timucuan revolt, Rebolledo made a visitiation of Timucua and Apalache (in 1657) in order to report on present conditions and to determine the cause of the revolt. In Apalache, priests had required Indians to go to Apalachicola and "Chactos" territories, both hostile to Apalache, to trade for skins and other "esteemed items." Indians complained that no payment for this service was made except to the cacique (Pearson 1968:71, 84). What exactly the priests did with these goods was not explained but Indians were suspicious and claimed that friars prevented them from selling their goods to ships' crews to earn money. Priests then bought Indian goods (probably foodstuffs and skins) at low prices and turned a good profit by selling them to soldiers (Pearson 1968:73). Similar complaints were made at San Martín de Tomoli and San Joseph de Ocuya in Apalache. Father Juan de Paredes (San Martín) took excess yields from a plot cultivated for him to provide for laborers on the church and other Indians and shipped most of the food out of the province. Of course, Spaniards expected that the missions would provide for the ranches and military but Indians resented not only losing their produce but also having to transport it without being paid. Father Sanchez (San Joseph) simply took part of the harvest ostensibly to buy ornaments and other things for the church, none of which were ever seen (Pearson 1968:96, 98).

Soldiers and Indians appeared to enjoy good relations, much to the chagrin of the missionaries. Indians felt obliged to offer food and shelter to soldiers (or Indians) passing through their villages and all claimed they did this voluntarily, an act for which they were punished and humiliated by friars (Pearson 1968:72, 80, 92). It must be remembered that these complaints leveled at missionaries and the praise for the military were presented to the governor. One might suspect bias, protective on the part of the Indians, or sheer embellishment by Rebolledo himself for benefit of his position and laying the blame for the revolt on a group other than the military.

Labor and Taxes

Manuel, the cacique of the Yustega village of Asile in 1651, expressed unhappiness with the Spaniards in general: military officials tried to take their land and they were forced to work on plantations and cattle ranches without compensation (Milanich 1978:65). This grievance occurred over and over: either forced by the clergy to carry trading goods or private property (Pearson 1968, above; Moreno 1654), ordered to fix roads and build bridges (Pearson 1968:11), forced by soldiers to carry goods to St. Augustine (Pearson 1968:157), or forced to work on the castillo in St. Augustine. In 1651, Governor Benito Ruiz stated that Indians in Apalache were fleeing into the woods because they were being required to carry goods and to labor for the haciendas. A few years later, Governor Diego de Rebolledo wrote that he considered the use of Indian labor to be a practical necessity even though the Crown forbade the use of Indian bearers (Matter 1972:256, 258). The use of Indian labor to work fields in St. Augustine was also continued. Repartimiento Indians cleared land and planted the communal and private maize fields with digging sticks and hoes. In St. Augustine, everyone who was important had their "service Indians" (Bushnell 1978:184). In addition to working gardens and plots, Indians were used to "fill gaps" in the infantry. Governor Francisco de la Guerra y de la Vega (1673) wrote that 200 Indians from Apalache were brought to the capitol; 50-55 from Timucua stayed until the end of October and 45-50 from Guale were also conscripted. Caciques, although they organized the work crews, were exempted from all such services (Bushnell 1978:49).

Indians at San Luis de Xinaica claimed that priests sometimes came to the village and requisitioned Indians without permission. This caused hardship since it took away people essential to the economic livelihood of the village. The cacique requested that Franciscans use Indian labor only with permission from and under supervision of the village cacique for fear that failure to do so would undermine the cacique's authority (Pearson 1968:87).

Other stories of misfortune reached Rebolledo throughout Apalache.

An Indian from San Juan de Aspalaga, who had been too ill to carry a vessel to the Timucuan village of Arápaja, had sent someone else and was whipped by the priest who had asked him to go (Pearson 1968:94). It was this kind of behavior, Rebolledo asserted, that had precipitated the uprising in Timucua (Pearson 1968:116-124, 141, 152). During the 1656 rebellion, however, Timucuans had killed both priests and soldiers and had burnt churches (Pearson 1968:143). Other sources lay the blame on Spanish rancheros whose cattle were destroying fields and who forced Indians to work on their properties (Arnade 1965:6).

This author failed to come across any specific references to tax payments but it is possible that some of the "loads" carried to St. Augustine represented a tithe or tax of some kind. Bushnell (1978) does, however, discuss taxation and tithing in great detail and it is evident that taxes of various kinds were required from everyone.

Mission Politics and Economics

It has been impossible to discuss the other two sections without reference to political and economic conditions at the missions. Many of the problems arose in Apalache, rather than Timucua, since there were very few Indians left in that latter province. Epidemics between 1649 and 1659, years of famine, and the rebellion had left the Timucua scattered. In 1672 there were so few Indians in central Florida that Spaniards gave land away in Timucua to anyone who would open a cattle ranch (Bushnell 1978:20).

The Apalache did not receive permanent missions until 1633, 27 years later than Timucua. In the late 1600s, it is apparent that many traditional practices and beliefs were still intact. Several caciques beseeched the governor and priests to permit them to continue playing their ballgame and performing their ceremonies. The degree to which certain traditional activities was allowed or punished appears to have been subject to the personal whim of the soldiers and/or priests involved (Father Paiva 1676).

Tepaske (1964:194) claimed that most Franciscans overcame traditional native behavior patterns by providing exemplary models of Christianity and personal conduct. In fact, it seems that many of the friars assigned to Apalache were particularly prone to the administration of physical abuse. Whippings and beatings meted out to elite and commoner alike humiliated the former and caused them to lose the respect of their subjects (Pearson 1968:83, 93). So much was this a problem, and so important was it to maintain the cacique's status, that Rebolledo ordered that caciques and other elites who broke civil or religious regulations could be punished only by the governor (Pearson 1968:77). One can imagine how the religious felt concerning this usurpation of their jurisdiction.

Indians attempted to trade with soldiers and ships' crews putting into port (in Apalache). Their right to do so was unquestioned by the governor although priests forbade the practice and tried to maintain the sale of goods and trade as their own perogative. Some Apalache were trading illicitly, however, with foreign ships after the soldiers were removed from that province in 1648 (Pearson 1968:130). Caciques and friars in both Apalache and Timucua shipped wheat, rye, and barley to Havana to make a profit on it rather than have it confiscated by the governor for use in St. Augustine (Bushnell 1978:40). At the end of this period, Indian trade with the English, who offered rum and firearms in return for allegiance against the Spaniards, was not uncommon (Tepaske

1964:193). During the late 17th-early 18th century, Spaniards were also involved in illicit trade and the Suwannee River became an important artery for shipping goods out of Florida (Boniface 1968:207).

Priests apparently attempted to facilitate conversion and/or strengthen their own positions by appointing "ensigns" of their own choosing to act in native festivals. Constitution XIV of the 1684 diocesan synod (Statutes Relating to Florida n.d.:13) reiterated injunctions against Franciscan appointments issued in 1672 and 1678 cedulas. The statute also stated that priests were to disinvolve themselves with Indian confraternities and not bother them about debts during their festivals. Villages had town governments in which the caciques were alcaldes mayores, leaders of the community and festivities (Bushnell 1978:156).

Demographic Changes

As mentioned above, a series of epidemics (typhus or yellow fever, small pox, and measles) between 1649-1659 had caused significant reduction of population in Timucua (Bushnell 1978:20). The Timucua rebellion had also resulted in death and scattering of populations. In 1675 an estimated 81% of the 10,766 Indians under Spanish rule in Florida were in Apalache (Bushnell 1978:20). Early in this period, the Council of the Indies in Madrid (1654) also noted a decrease in the number of priests in Florida. St. Augustine had experienced an influx of Indians brought to the capitol to work on the castillo and orders were sent out to supply more priests for that city in order to serve the Indians (Cedulario 1673). Governor Pablo de Hita Salazar (1674) reported that Indians brought to the capitol to work on the fort were dying or were needed in their own villages, therefore, he asked the queen, could they import slaves from Cuba to augment and stabalize the work force?

Only one piece of evidence regarding village relocation was noted by the author although, presumably, other instances occurred. Rebolledo granted permission for the Timucuan village of Santa María to relocate half a league away from their current site because the village was an old one, fields had lost their fertility, harvests were poor, and the forests had been cleared so thoroughly that it was difficult to get firewood (Pearson 1968:80).

1675-1704

This final period actually represents a continuation of the preceding one: there was increasing strife, dissension, and dissatisfaction; more Indians were leaving missions, and secular and religious hands were tightly about each other's political throats. The peaceful scenario depicted by Bishop Calderón in 1676 contrasts sharply with most other views and the conviction grows that either certain people chose to closely edit final reports to the Crown and various councils or that Indians (and priests) could be extremely shrewd actors. Part of Calderón's report notes the following: in January Indians burn the undergrowth from their fields in preparation for planting. Wheat is planted in October and harvested in June. In April they begin to sow corn. All work in common to plant the "lands of cacique and of charity" (i.e. alms plots for the priest and "needy widows"). Everything, plant and animal, is given to the cacique to be divided; he keeps the hides and gives the best part of the hunt to the priest "to whom the Indians are greatly subjugated." Indians do not covet riches nor gold or silver and do not use these for money. Rather, they barter. The most wanted and used articles are knives, scissors, axes, spades, small hatchets, large bronze bells, blankets, trinkets, and all woven cloth. Before entering the church, each Indian gives the priest a bundle of firewood or a log (Calderón 1676; also in Wenhold 1936:13).

Calderón perceived that all worked in common for the good of the village but mostly for the good of the priest who had his gardens planted, received the best meats, and had his firewood delivered. Failure to covet riches is probably a reflection of their scarcity in Florida at this time and of the fact that, as good Christians, they were not supposed to covet wealth, however wealth was expressed. Bushnell (1978:15) reported that soldiers seldom even saw money and that Indians never used it. This may have been true during the later mission period but during the early part goods had been sold for cash money and cash rewards had been offered. It is extremely unlikely that Indians did not desire wealth although their manner of reckoning it probably differed from the Bishop's.

Gifts and Trade

Rarely were gifts given except to non-Christian neighboring Indians in attempts to form alliances (Quiroga y Losada 1688). Indians had enough problems trying to retain their property and goods and with the shortage of food and necessities which were not supplied by Floridians (Tepaske 1964:195). These conditions prompted the following orders from Governor Zúñiga regarding Indian activities in Apalache: (1) Indians had the right to raise swine and fowl, which were not to be taken from them, and to attend the market in St. Augustine to sell bacon, lard, swine, hides, and skins which they raised or acquired; (2) trade with the Apalachicola (Creek) would be allowed only for "customary goods," not British ones (Boyd 1951:31, 34). As in Spain, trade with other countries was theoretically suppressed but carried out none the less. Apalachicola could provide British goods whereas Spaniards could not even supply necessities. Zúñiga, however, had his own rules concerning trade with the Apalachicola. Horses could be given in exchange only for guns which the English provided. The English, on the other hand, wanted pack horses from the Apalachicola in exchange for the guns. Since one group had to first have what the other group could provide in order to begin the exchange, a stalemate arose creating a great deal of hostility on the part of the Apalachicola. They formed a peace treaty with the Apalache and invited four Indians to their village to cement relations. Three of those four were murdered and then the mission of Santa Fe in Timucua was raided and burned (Zúñiga, 1702, in Boyd 1951:36-37).

Labor

No specific mention of taxes is made in the documents reviewed but the pattern of forced, uncompensated labor continued (Council of the Indies 1676; Boyd 1951:25, 27, 28, 29; Cabrera 1686; Pearson 1968:194) and more often resulted in Indians leaving the missions to join British allies or to go elsewhere. In 1676, Father Alonso del Moral (1676) asked the king to aid Indians forced to work on the castillo in St. Augustine. He reported that 300 natives from Apalache, Timucua, and Guale were yearly brought to the capitol to work for the Spaniards. The diocesan synod drafted the following statutes regarding Indian labor in 1684:

> Many Spaniards, negroes, and mulattoes residing in St. Augustine and other missions detain married Indian men in their houses, who have their wives in other places or who have gone to St. Augustine to work or dig but are detained later to serve them . . . this should not be done because married persons should cohabit.

> The wretched Indians, for being so, are none the less Christians [and as such must be allowed to hear mass and not work on days of obligation.] [This was addressed to] persons having Indians on their estates, even as hired laborers (Statutes Relating to Florida n.d.: 5, 6-8).

The major concerns of the synod were aptly expressed: married people should live together and Christians must attend mass and observe regulations. The tone is somewhat less than sympathetic.

<u>Mission Politics and Economics</u>

In 1682, Bishop Juan de Palacios of Cuba asked the Crown to place the missions in the hands of Jesuits or Dominicans because the Franciscans "must be begged to fill parish and castillo [positions] in St. Augustine. Also they always want some benefits as well" (Juan de Palacios 1682). Governor Quiroga y Losada (1690) described some benefits enjoyed by mission friars: "priests lack for nothing . . . because Indians sow their cornfields, wheatlands, tobacco tracts . . . they raise their chickens and fatten their swine. [Indians] don't pay <u>ovenciones</u> [tithes?] in money, but make up for this in deer, bear, <u>cinola</u>, otter and other types of hides." Quiroga y Losada concurred with Calderón that missionaries did seem to reap the greater part of material benefits and then continued to make demands. Father Martorell in Apalache required his villages to plant one-half or a whole arroba yield (of maize?) for each mission priest. Later he insisted on four, six, or eight arrobas and the Indians under his jurisdiction fled the village. In response, Governor Cabrera (1687) ordered that Indians could give whatever they wanted to the priest but they should not see this as an obligation.

Secular and religious authorities continued to clash over disputed jurisdiction. Priests were subject "under pain of being chastized" to outlaw ballgames (Statutes Relating to Florida n.d.:4) and keep strict control over native festivities (Calderón 1676). Problems arose because a lieutenant told Indians at San Joesph de Ocuya they could dance all night as was their custom. The friar stated that Indians knew that by giving soldiers tacalos de caecina (cassina?), janepas, chickens, and watermelons, as they did with said lieutenant, they could "be let to live" (Cabrera 1682).

In an attempt to pave over fractional disputes, Governor Zúñiga insisted Indians owed allegiance and obligations to the Franciscans.

> All converted Indians must have crucifixes and images of saints on the walls of their huts.
>
> Indians must obey the commands of friars and attend to their needs.
>
> No Indian could marry unless first pledged to support his perspective bride.
>
> Indians could plant only those lands designated by the friars (Zúñiga, 1702, in Tepaske 1964:194).

In return, Zúñiga promised to provide for widows and orphans, to pay all labor done by Indians in St. Augustine, and to give all Indians full hearing before punishing them for their crimes (Tepaske 1964:194). As might be expected, the setting down of rules did little to affect actual changes.

The first good evidence of political organizational upheaval occurs in documents of the 1670s. In Guale, Apalache, and Timucua individuals were claiming rights to chieftainships which were disputed by other villagers (see Pearson 1968:206-216, 219, 220, 240) and military visitations were made to the three provinces to make sure that Indians were agreed on their caciques' right to lead, to reinstate those with legitimate claims, and to see that Indians obeyed their caciques. In Timucua, the *visitador* Sergeant Major Domingo de Leturiondo created the office of cacique for a man who would take his own and other families to a place a good distance away in order to settle a town (Pearson 1968:273, 274).

An additional burden and responsibility was added to mission settlements after 1675 when Yuchi slavers launched raids into Apalache and northern Timucua and Indians were given arquebuses and ammunition to go in pursuit (Pearson 1968:189). Slave raids on villages continued and were taken up by Yamassees, British allies, in the 1680s through the final annhialation of the missions in 1704. In 1686 soldiers, officers and officials, and even caciques were issued weapons as private property (Bushnell 1978:186). Zúñiga ordered that Indians should be provided with all the supplies necessary for war operations (Boyd 1951: 32) but these seem to have been lacking in quantity since Spaniards had to trade with their enemies to obtain firearms.

Demography

Population movements and depopulation became major problems during the last quarter of the 17th century. Several events which caused the Indians to "flee into the woods" or join British forces have already been mentioned. Other groups were moving into mission districts known or unknown to the Spaniards. One settlement of 248 Tocobaga was discovered living on the Basis River in Apalache during the 1677 visitation of Domingo de Leturiondo. It was decided that they could remain (Pearson 1968:256-258).

All Florida provinces suffered manpower shortages and Spaniards passed strict laws against caciques allowing single or married men to "wander around creating problems" by imposing a fine of 12 doeskins or the equivalent (Pearson 1968:246). At San Juan de Guacara (1677-78) on the Suwannee River, Indians asked for a canoe to use as a ferry since they were supposed to operate one (Boniface 1968:177-178) and depended on it for their livelihood. All able-bodied men had left because the work was too hard and there was never enough food. Only 20 men remained in the entire village (Pearson 1968:276-277) and they had not had a resident priest for a long time. Caciques were enjoined not to allow these wanderers to settle in their villages although this rule was lifted for San Antonio de Bacuqua in Apalache which was in sore need of extra men (Pearson 1968:259).

Economic Interactions During the Mission Period

In Chapter One it was stated that introduced cultural elements are reinterpreted within the conceptual and value systems of the recipient culture and that two parties do not approach transactions with the same understandings and expectations. It was proposed that if two cultures did not differ greatly in their cultural complexity and power that it would be difficult for the conquering party to evoke behavioral changes and both cultures would tend to maintain their respective conceptual systems. Structurally, Spanish and Timucuan political and religious systems were similar: both observed mutual reinforcing of political and religious institutions (in fact, political and religious roles were inseparable); political organization was hierarchical; wealth and status were determined through descent; both leaders invoked power and authority to control their subordinates; elite goods were accessible to a few; and tributes, tithes, and/or taxes were exacted by politico-religious institutions.

The primary difference, aside from scale, was politico-economic. Florida chiefdoms were redistributive in two senses: the elite mobilized goods and services for the benefit of the elite but basic goods, especially food, were "shared out." The Spanish monarchy, on the other hand, consumed massive amounts of elite goods but did not itself participate in insuring subsistence support for the populace. Spain had a national market economy primarily directed towards protecting and sustaining the textile industry. Agricultural production for sustenance was not one of its concerns. Traditional Catholic peasants paid tithes, alms, and fines to the Church in produce, cash, or labor in return for church services, sacrements at birth, death and marriage, and emergency subsistence support and refuge in times of famine and war (Dalton 1971a: 21). It was, therefore, the Church's duty to provide services similar to those provided by a cacique and his officials.

The major difference between peasant and tribal village economics in the ordinary production of subsistence goods is in the form of land tenure. Non-market land usage is acquired through social relations not through purchase or rental. Socio-political superiors (e.g. caciques) are "stewards of land allocation" who require return payments of material goods, labor, services, and clientage (Dalton 1971b:222-224). Spanish attempts to take or buy land were unsuccessful because, as the cacique of Asile explained in 1651, caciques could not give or sell land since it was owned jointly by sons, nephews, other lesser chiefs, and principal men of the tribe. They could, however, <u>lend</u> it; that is, allocate rights of usage (Milanich 1978:66). Spaniards tried to alter this situation by breaking up intervillage alliances, placing pro-Spanish individuals in positions of influence (Deagan 1974:12), giving control of land allocation to priests, and assigning "hunting preserves" to each village (Pearson 1968:253).

For the most part, Spaniards endeavored to maintain the native, structural status quo although failure to grasp social embeddedness of certain practices made this difficult. Prestige acquisition, and therefore the ability to reinforce status, was a major loss suffered by Indians, particularly the elite. The Guale Revolt (1597) was precipitated when priests imposed monogamy on young caciques without understanding that having more than one wife was an indication of wealth and status. Prohibition of gambling, ballgames, and intertribal warfare removed (when they were successful attempts) important avenues to acheiving prestige. The fact that Indians bribed soldiers to allow them to have their dances and perform their ceremonies suggests that native Floridians did not, as a whole, become absolute converts. Some priests permitted dances but only under strict supervision and not for all night periods "as was their [Indian] custom." Other efforts employed to maintain political and economic position of the caciques included channelling labor conscription through the chief and holding him responsible for the behavior of his subordinates. Spaniards also allowed the cacique to receive tribute payments (in hides which were economically important to the Spaniards as exports). Caciques were favored with gifts and probably received goods which other Indians did not (e.g. firearms). Spaniards upheld the political position of the cacique by making him head of village, native political affairs and by seeing that caciques were obeyed. That maintenance of the caciques' position was important to caciques as well as to Spaniards is evident from the documents.

The most obvious change in Indian economics was their participation in a market/international system and cash economy. Exactly how widespread Indian use of cash became is uncertain. It is probable that very few Indians ever had cash and its presence may have been restricted to the earlier period. Money, however, need not be of coin or paper. Any regularly employed medium of exchange is equivalent with what one today thinks of as "money." Common mediums of exchange in Florida appear to have been hides, ambergris (on the east coast), and corn. Ambergris was not important prehistorically and the desire to acquire this substance was strictly owing to European demands. Likewise, corn was important prehistorically as a ritual and symbolic good but it was not used, for instance, in paying tributes as it was later used for paying tithes and taxes to the Spaniards. Requiring payments in corn was a means of insuring that the garrison in St. Augustine was fed and it would have created a strong motivation to increase yields (by planting larger fields) _if_ punishment was meted out to those who could not pay their taxes. So far, documentary evidence to this effect has not been discovered unless one considers the account of Father Martoréll in Apalache. The Indians, however, simply fled from the mission in that case.

In Apalache, Eastern Timucua, and probably in Western Timucua, Indians changed from inner-directed production for the village to outer-directed production for the market and garrison. In many cases this production was forced upon them but in some instances it appears to have been by choice since Zúñiga encouraged Indians to bring their produce to the market in St. Augustine. Often these goods were confiscated by priests or soldiers, however, so it is not clear what return Indians saw on market goods. Indians, however, were still required to produce for the village and the priest.

Cash, markets, kings, cities, and universal religion can destroy reciprocity as delineated by Sahlins (Dalton 1971b:237) but the ideals of reciprocal behavior may remain. In some respects one might consider that Spain worked against its own ends by implementing the policy of indirect rule, allowing caciques to "rule communities as in former times" (Geiger 1937:10). Most certainly, the religious and military factions worked against any common goal of the Spanish colonial empire. Major impacts on Indian life were created and augmented by the coexistence of market and superficially redistributive economies coupled with traditional expectations of reciprocal behavior.

In the beginning, transactions were more or less generalized but as the practice of "gift giving" declined and increased demands for goods and services without compensation were made on Indians, interactions became increasingly unbalanced. Spaniards not only failed to sustain their alliances but also came to rely more heavily on force as a means of imposing their will without offering any returns to Indians. This paper argues against the proposition that religious salvation was enough; to paraphrase, it is also necessary to keep body and soul together.

Spanish-introduced food items included wheat, figs, oranges and other citrus, peaches, chickens, pigs, cattle, and (at San Juan del Puerto, at least) sheep. Cattle raising appears to have been largely restricted to ranches whereas pigs and chickens were raised for the priest and, apparently, owned by some Indians at missions. In order to care for livestock and meet new demands put upon them by Spaniards, Indians were required to become sedentary and, probably, spend more time on production than they had prehistorically. Sedentism posed a real threat to continued settlement in any particular area. Except in Apalache, soil fertility is naturally poor in most regions of Florida. Continued usage of old fields depleted fertility at an unknown rate. Relocation of missions and villages, however, did become necessary.

The degree to which domesticates figured in Indian diets is unknown. Likewise, it is unknown what access Indians had to European agricultural tools and if new techniques were universally employed. Documentary evidence suggests that large numbers of hoes were distributed to Indians but relative to the number of Indians receiving them, the quantity may not have been substantial. In any event, European hoes were not greatly different from native ones. The basic movements and usage would have been similar. Oxen were present in some areas, particularly Apalache (Daniels 1975), but they may have been restricted to Spanish-owned and operated ranches and haciendas. Documentary evidence also contradicts itself. As late as 1675 Governor de Hita Salazar was still writing about developing agriculture in Apalache and noting that Indians were plowing by hand because oxen and plows had not been introduced there (Pearson 1968:186). The fact that Spaniards periodically wanted to import slaves and Mesoamericans to farm and teach Florida Indians how to farm implies that native Floridians never reached the level of agricultural development that Spaniards sought.

Calderón's description of agricultural activities in 1676 indicates that actual techniques had changed very little. Communal fields were still worked for the priest and for production of surplus to provide for those in need. Goods preferred as trade items by both Spaniards and Indians were primarily subsistence-related. Judging from retention of slash-and-burn horticulture and the complaints of poor harvests and famine, it is doubtful that food production increased relative to the augmented number of non-productive consumers. Indians were required to plant and hunt not only for themselves but also for priests, soldiers, Indian laborers working on construction projects, and for trade outside Florida. Depopulation resulting from epidemics, rebellion, and population drains during sowing and harvesting periods precluded the ability of Indians to meet demands. In St. Augustine as well as in the missions and villages, people complained of insufficient food. Spaniards were in a better position than Indians since they taxed, tithed, and confiscated food from Indians, failing to return any (or returning only little) of the yield or profit. If public granaries still existed, under control of priests and/or caciques, they would have been severely pressured.

Indians continued to hunt for food and also to obtain hides and skins which were exported items and tribute payment goods and gifts to other Indian tribes. Prehistorically, or at the time of European contact, deer skins were collected once a year by caciques. The increased demand for skins and hides on a continuous basis during the historic period may have exerted pressure on deer populations. Additionally, if Indians were indeed restricted in their activities to village hunting preserves, the source of deer, not to mention other animals, would have been rapidly depleted. The fact that priests required Indians to obtain hides from the Apalachicola may be a reflection of decreased animal (or human hunter) populations within village or tribal hunting areas. The introduction of cattle would have provided food resources for soldiers and St. Augustinians, and possibly mission populations, in addition to another source of hides. Cattle probably roamed free range since it is doubtful fences would have been erected over the countryside and Indians had complained of cattle damaging their crops. Cattle population density is unknown but it is conceivable that intermixing with deer populations could have affected not only their food resources but also might have increased the incidence of deer mortality due to increased prevalence of parasitism. Modern researchers have found that deer populations which share range with cattle can be severely affected by parasite population increase, particularly the Lone Star Tick. Infestation affects primarily the young and fawn mortality increases significantly when the two species share the same territory (Hair 1968; Bolte et al 1970). Unfortunately, the historical incidence of tick infestations in Florida have not been examined by the author.

According to Calderon, the village cacique received all of the food which he then redistributed to the villagers, giving the best parts to the priest. During the early period of mission activities, gifts which included flour came to the cacique and priest; these may have been apportioned to villagers. Spaniards saw it as their duty to provide for sick Indians, laborers, "orphans and widows" but were unable to do so because of the shortage of locally produced foods and the failure of the royal subsidies. Illicit trade and smuggling out of Florida only served to aggravate the situation. Numerous complaints from Indians concerning nonrestitution of debts or lack of reimbursement for goods and services indicate that they expected to be compensated. Traditional Indian and Spanish practices provided support of the community in crisis situations via the religious figurehead. Since public stores, if such existed, were used to purchase furnishings for churches, were shipped to St. Augustine or Havana, or were used for other purposes, there was no adequate surplus available to Indians. Of course, this situation may have arisen prehistorically but it is likely that Indians would have been just as dissatisfied with their leaders at that time as they were during the historic period.

Priests usurped many of the responsibilities formerly apertaining to caciques and native priests: land allotment, control of surplus food, overseeing communal labor, provisioning of non-producers, and endorsing marriages. Bonds between the community and the priest were enforced with injunctions against "wandering," settling in villages other than one's own, keeping married persons together, and legalizing marriages performed _only_ by one's assigned village priest. The most important role of the cacique became that of middle-man between Indians of his village and the Spaniards. He or she represented Indian complaints to _visitadores_ and "wrote" letters (probably composed or written by priests and signed by Indian caciques), channelled through the priests, to the governor or king. The cacique's position was both politically and economically necessary to the community and the Spaniards but was not necessarily one which was inherited. Status became based on Spanish support and force, not authority. The attempts of Spaniards to see that villagers were agreed upon the right of their cacique to rule, however, may indicate that his position was one which was validated by inherited right. Status and authority, however, were probably still upheld by acquisition of prestige goods _but_ the nature of these goods had shifted to those which symbolized Spanish backing.

Priestly authority rested only on divine right; they did not belong to the same moral community (see Chapter Two) and, therefore, depended on physical force and military support to maintain their positions.

When the latter was not forthcoming, which it rarely was unless wide-scale revolts threatened the system as a whole, they essentially had no authority. Indians simply left the missions.

Lack of military support constantly plagued mission friars in the fulfillment of their religious and civil obligations but serious repercussions went unfelt until the economic basis of their power began to flounder. Increasing imbalance of consumption and reciprocity, not to mention outright seizure of Indian property, were important factors in the collapse of the mission system. Caciques would have had an important stake in upholding the mission system because they were politically and economically tied into the Spanish organization. Chiefs, as well as priests, complained over the decreasing supplies of goods and necessities issuing from St. Augustine and, ultimately, the royal subsidy. Over time, with loss of wealth and political power, ritual status and authority gradually diminished (see Nash 1966:94). The political and economic "license" simply expired; there was no longer a strong interest in <u>both</u> parties to continue the system, nor were they able to do so.

Hypotheses

Of necessity, hypotheses and their implications which are testable at archeological sites must be concerned with physical remains. Material goods, however, are an integral part of any culture; their manufacture and distribution reflect not only social behavior but technology, resource usage, and environmental limitations as well. These variables work together to influence material assemblages associated with cultural systems. Archeological contexts are the result of further processes which have been described in detail by Schiffer (1972). The roles which certain goods played in Spanish-Indian interaction have been presented in the preceding sections of this chapter as they are indicated in the historical documents. There are numerous aspects of the evaluation of acculturation which cannot be archeologically investigated. Even if certain patterns of artifact distribution are encountered, one cannot be said to have proved anything (without repetitive testing at other sites), only that hypotheses have not been disproved. By examining the material assemblage at Spanish mission sites, particularly at Baptizing Spring where spatial aspects can be differentiated and compared between Spanish and Indian living areas, it will be possible to see what goods were introduced and how they were distributed. Importantly, questions concerning what goods Indians actually used and had access to can be examined. Analysis of the artifacts themselves may provide insights into changed manufacturing techniques and resource utilization. The primary hypotheses to be tested, however, dealt with distribution of particular and grouped artifacts on the basis of the fact that distribution and consumption, as primary economic activities, might be most indicative of social interaction as interpreted from historical documents.

A minimum of two exchange spheres was proposed for prehistoric Timucuan economy: a subsistence sphere and a prestige/tribute sphere. The subsistence sphere would include such things as food and food processing, procurement, and storage artifacts. The prestige sphere, characterized by restricted flow to certain individuals, consisted of authoritarian items (headdresses, garments, litters, high-status housing, non-local metals and/or ornaments) and "power" items - hides, pearls. Unfortunately, many of these goods will not be preserved in archeological sites.

Many of the introduced European goods listed in the documents were subsistence-oriented: domestic animals and plants, axes, hoes, knives, fish hooks, sickles, etc. As mentioned earlier, goods which served as weapons may also be associated with prestige. Additionally, scarce items may serve to indicate prestige and/or favoritism in dispensation. Non-subsistence items consisted of clothing, blankets, beads, scissors, bronze bells, and religious paraphernalia. Not specifically mentioned in historic accounts but recovered from archeological sites are olive jar and majolica ceramics, glassware, clay pipes, hardware, thimbles, copper, silver, and gold beads and pendants, brass finger rings, lead beads and musketballs, glass buttons, mirrors, crosses and crucifixes (Smith and Gottlob 1978:13-15).

The first readily identifiable indicator of status differentiation may be that of dwelling/building location within the village. If Garcilaso de la Vega was correct in describing location of elite dwellings and important buildings around a central plaza and on a slight rise (a pattern which has been identified in the prehistoric, stratified societies of the Southeast) and this pattern was maintained during the mission period as one similar to Spanish town arrangements, then the following hypotheses could be put forth.

1. Spanish buildings, as identified through architectural features, would have been located in central areas, possibly on a rise, bordering on a plaza.

2. High-status Indians would have been living nearest the Spanish area.

3. Decreasing status would be positively correlated with increasing distance from the Spanish buildings and the plaza.

4. Status may be positively correlated with dwelling size and elaborateness; ornamentation of walls and use of European hardware.

Artifacts' significance as prestige indicators may be shown through correlation with aboriginal prestige goods _if_ former high-status individuals maintained their rank and it was inherited by their descendants. Such associations may not be found, however, given the fact that many prehistoric prestige goods will not be preserved. Restricted distribution and differential access to goods will be assumed to correlate with prestige and control. Scarce items, or those which were traded in or directed toward priestly consumption, would be considered prestige goods within the Indian sphere although not necessarily within the Spaniard's prestige sphere.

5. The following trade goods, being similar in form and function to native items, would be classed within the Indian prestige sphere: clothing (especially that with elaborate designs, buttons, etc.), beads, bells, and jewelry.

6. The following goods, although technically subsistence sphere goods, would also be included within the native prestige sphere because of their coloring, quality, and novelty: storage jars, majolica, and glassware.

   a. Prestige items had restricted distribution and/or were limited in quantity.

Test 1. Distribution of prestige trade goods within archeological contexts will be non-random, concentrated in high-status areas.

Test 2. Prestige goods will be fewer in number than subsistence goods and native-manufactured goods in the Indian living areas.

7. European trade goods associated with prestige will have supplanted aboriginal prestige items.

7_{o}. If Indian patterns of reckoning prestige and its accouterments were retained, then native prestige goods or European equivalents will be found in high-status living areas within the Indian sector of the village.

8. Indian goods retained within the prestige sphere will be those which were also valued by Europeans such as hides, precious or semi-precious metals, pearls, and high-status housing.

Test 1. Aboriginal and historic prestige items will be found within the same household units.

Test 2. European prestige items may be more numerous than prehistoric ones.

In order to have maintained or obtained rank within the new Catholic-based hierarchy, Indians would have to have been good Christian converts. If, as is common, religious medals and other symbolic paraphernalia were awarded for learning and observing catechism:

9. Religious items may be found more often in conjunction with non-sacred prestige items within high-status dwellings.

   a. These items, if limited in quantity, will tend to be concentrated in high-status areas within the Indian village.

With regard to directional flow of non-food goods from Indians to priests and Spanish government to priests:

10. If more Indian goods were given to priests than European goods were to Indians, the ratio of European to Indian goods would be higher for Spaniards than for Indians, and

11. Cumulative total of goods per person would be greater for priests, declining with decreasing status.

    a. European goods distributed among Indians may have increased significance as prestige items.

Otto (1975:161, 219), working with material from a Georgia Sea Island plantation, proposed that artifact diversity would be correlated with different status groups such as slaves, overseers, and planters. In particular, he examined the variety of ceramic types and forms and faunal assemblages in three midden areas of these different groups. Kohler (1978:27-29) re-examined Otto's data and calculated an index of diversity for each of the plantation middens. He then hypothesized and tested the idea that in prehistoric sites ceramic type diversity would be greater in high-status middens than in lower status middens. The opposite was found to be true at the plantation site. The reason for different diversity measures of artifact assemblages was defined as differential access to goods. On the basis of these data and the assumption of differential access to goods, one might expect the diversity of ceramic types to be higher in the Spanish living area than in Indian living areas. Priests, with greater access to Spanish ceramics, might acquire "sets" whereas Indians would have to either obtain cast-offs from priests -- representing smaller proportions of a greater number of sets -- or buy their own ceramics during periodic trips to the market in St. Augustine. Another possibility which yields the same results is that Indians only obtained sherds, rather than whole vessels, and that these were used as ornaments (Seaberg 1955:147), gaming discs, or were simply collected for their color and novelty. Actual numbers of sherds of a single type would be greater in the Spanish area if ceramics owned by priests were broken there. In either case, one might make the following hypotheses:

12. Indians, with an eye for variety in their collection of ceramics and/or sherds, will have higher diversity of majolica types than will priests who would have owned whole vessels

(yielding more sherds of a single type) and/
or preferred matching pieces over a variety
of types.

13. If Indians were receiving majolica sherds there will be a low frequency of sherds representing any single vessel and sherds from a single vessel may be scattered over a wide area.

    a. If majolica was a high-status indicator among the Indian population, there will be a greater number of these sherds in high-status Indian areas.

Kohler (1978:31-32, 198-199) predicted and found positive correlation between higher ceramic diversity and elite status areas at a Weeden Island ceremonial site (McKeithen site) in Columbia County, Florida. His hypothesis was based on the assumption that elite individuals had greater access to trade and high-status goods within a chiefdom. During the mission period it might also be expected that high-status Indians would have greater diversity of native-manufactured goods within the Indian living area. In addition, if priests preferred certain designs or forms of native-manufactured ceramics or if certain individuals were producing vessels for their consumption, one might predict that aboriginal ceramics in the mission buildings would exhibit lower diversity than in the rest of the village.

14. Aboriginal ceramic type diversity will be greater in the Indian sector than in the Spanish sector.

Each of the hypotheses related to production and distribution of subsistence goods has its null counterpart which will not be included in the text but will be implied.

15. Spanish subsistence sphere goods were accessible to all Indians regardless of status.

16. Introduced European food items such as cows, pigs, chickens, peaches, oranges, etc., would have been restricted among Indians.

    a. The above goods might have been available only to priests who had greater access to them through shipments from St. Augustine or by demanding them as tithes/alms.

    b. Cattle may not have been used as food resources if they were not raised at missions or if their consumption was primarily intended for soldiers and St. Augustine where the market and slaughter house were.

17. Priests and high-status Indians would have received the best part (meatiest, most tender) of hunted game plus proportionately more of the domesticates than would lower status individuals.

18. With their monopoly over production and alms payments, priests' diets would have included more European foods, been less diverse, and of better nutritional value than diets of Indians.

19. If livestock raised by Indians went primarily to priests and/or soldiers, chickens, pigs, and cattle remains will be poorly represented in or absent from Indian dwelling areas.

The next chapter will present a review of previous archeological research carried out at Florida mission period sites, most of which concerns missions in northwest Florida (Apalache). It will also include research carried out in Suwannee County which is pertinent to this study and descriptive data regarding methodology and the history of excavations at the Baptizing Spring site.

CHAPTER FOUR

ARCHEOLOGICAL CONTEXTS OF SPANISH-INDIAN LIFE AT FLORIDA MISSIONS

Archeological data from other mission sites in Florida will be examined in depth relative to findings at the Baptizing Spring site in Chapter Six. This chapter presents a brief review of published works relevant to mission archeology, summaries of previous hypotheses and conclusions based on those data. The 1977 survey and excavation data from Baptizing Spring are also presented.

Mission Archeology (1948-1977)

The earliest archeologically constructive interest in Florida missions was exhibited by Hale G. Smith. He defined and gave material substance to two historical archeological periods then called St. Augustine (1565-1750) and Leon-Jefferson (1650-1725) (Smith 1948:313-319). These periods had artifactual, temporal, and geographical parameters: the St. Augustine period included the founding of that city and the ensuing years until the extirpation of most Indians residing near the capitol. This period applied only to the eastern portion of north Florida from the St. Johns River eastward to the Atlantic coast. Ceramic types, on which most period definitions are initially based, included the St. Johns chalky wares and San Marcos ceramics plus Spanish ceramics.

The Leon-Jefferson period covered the time of mission activity in the Apalache province (actually beginning ca. 1633) and, in fact, derived its definition from excavation of the Scott Miller site near Tallahassee in Jefferson County. Again, the period was defined on the basis of material culture: Spanish ceramics and trade goods and the aboriginal ceramic types Mission Red Filmed, Miller Plain, Aucilla Incised, Lamar-like Bold Incised, Leon Check Stamped, Jefferson Ware Plain and Complicated Stamped types, gritty plain, and Alachua Cob Marked.

The geographical parameters of these two periods left a great void between the Aucilla and St. Johns Rivers. Between 1955 and 1976, this void has begun to be filled but even considering that fourteen mission sites have been excavated in northern Florida, there remains a considerable lack of information. A general problem has been incomplete investigation within mission villages (concentration on Spanish living areas and cemeteries) or a common inability to ascertain exactly what part of a village, of unknown size, was being excavated.

Apalache

Scott Miller, the first excavated mission site in Florida, is located approximately 37.0 km southeast of Tallahassee (Figure 3). It is situated in an area marked with numerous limestone sinks, roughly 14.5 km west of the Aucilla River and 4.8 km north of the Wacissa River. The site iteslf is at a high elevation (for Florida), 76 to 91 m above mean sea level (AMSL), on a plateau in the Tallahassee Red Hills physiographic region. About 3 km south of the site, the land drops off sharply into the low, swampy, sandy Gulf Coastal Plain (Smith 1951:109-110). The presence of burnt red clay wall and floor rubble in a freshly plowed field made distinction of the two mission building remains unmistakable. It was, therefore, these two areas and an intervening borrow pit that received the brunt of the investigation.

On the basis of location with respect to natural features and other known mission sites, Scott Miller was tentatively identified as San

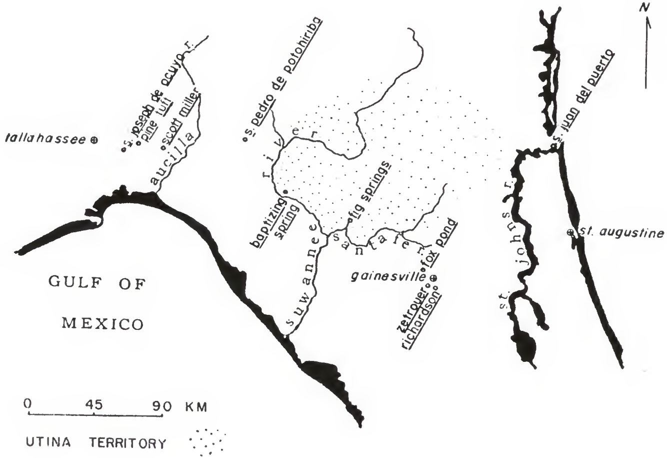


Figure 3. Location of Selected Excavated Mission Period Sites and Approximate Location of Utina Tribe.

Francisco de Oconee (Smith 1951:112). Smith noted that the entire 20 acre (8.1 hectare) field showed surface evidence of occupation but trenching failed to disclose other building remains or evidence of a palisade. The remainder of Smith's report concentrates on architectural features of the two Spanish buildings, artifact assemblages from the three major excavation blocks, and a description of the Leon-Jefferson period in terms of material culture.

The fort and mission of San Luis, 3.2 km west of Tallahassee, were tested to locate remains of the fort (Griffin 1951:139, 143). The material assemblage was similar to that at Scott Miller although proportions of ceramic types differed (Griffin 1951:155). As at Scott Miller, the primary goals were to label the site with a Spanish name so that distances to other sites could be plotted and to describe the material complex. Interpretation of acculturation situation was cursory although both Smith and Griffin viewed this as of primary importance.

In 1966 the Florida Division of Archives, History, and Records Management (FDAHRM) received approval to establish a mission study program. Field research began in 1968 and continued for about four years. During that period, five missions were discovered in the Apalache area (San Lorenzo de Ivitachuco, San Joseph de Ocuya, San Pedro de Patali, San Antonio de Bacuqua?, and San Damian de Escambi) and two in the Western Timucuan area (San Miguél de Asile and San Pedro y San Pablo de Potohiriba)(Jones 1970a:1,3). San Damian (ca. 1633-1704) was partially excavated in 1969. Portions of a burned, wooden building and a cemetery containing approximately 143 burials were located (Jones 1970a:3; 1970b: 1). Within the building area, a large variety of brass and iron tools and a broken bell were recovered (Jones 1970a:3).

Forty-two of the 143 burials at San Damian were excavated. The cemetery was located about 30.5 m south of the structural remains (church). Individual graves were situated in tight rows and groups of burials were enclosed in square - 2.4 m on a side - grid patterns of postholes (Jones 1970b:1). Most of the skeletons were supine, in separate graves, with their skulls toward the southeast. Hands had been placed either crossed or clasped over the chest. Three graves, two adult and one child, were double burials. One child was in a semi-flexed position. Two adults and a child, possibly Spanish, had been buried in coffins. Grave goods consisted of items of personal adornment: glass beads, rolled sheet brass beads, and shell pendants (Jones 1970b:2).

Excavations at the site of San Lorenzo de Ivitachuco revealed the remains of a burned convent which measured 4.3 m by 6.2 m (Jones 1972: 2). Although Jones describes a mission site designated San Pedro y San Pablo de Patali (Jones 1971:2), the location of this mission (110 miles or 177 km east of Tallahassee) and following artifact descriptions indicates that article actually refers to the Yustega mission and village San Pedro y San Pablo de Potohiriba. Since this is a Western Timucuan mission site, it will be discussed in the next section.

Surface reconnaissance at the San Joseph de Ocuya site (Figure 3) indicated that the site covered about 10 acres (roughly 4 hectares) and exhibited at least three areas where Spanish artifacts were concentrated (Jones 1973:6). The convent measured 9.4 m by 10.4 m and had been made of wood plastered over with red clay. Within this structure, a brass candelabra was recovered. The cemetery was located southeast of the convent and contained about 300 graves, 15 of which were excavated (seven adult and eight child). The child graves were located nearest the convent. Individual burials were extended and had been placed close together in narrow pits. No burial accouterments were found (Jones 1972: 2).

At San Joseph, Jones located what appeared to be a semi-subterranean (winter?) structure which was 6.4 m by 5.9 m in size. He also uncovered a trash pit and part of a palisade trench (Jones 1973:6). Remains indicated wattle and daub type wall construction and a compact, red clay floor. Jones (1973:46) suggested that the structure was of Spanish innovation and utilization on the basis of such features as wattle and daub construction, large rectangular (i.e. hewn) posts, and possible association of a Spanish ceramic sherd and Miller Plain copy vessel.

Jones went into considerable detail describing recovered Spanish and aboriginal artifacts. Floral and faunal material were so fragmentary that little could be said about them (Jones 1973:5). The main purpose of the account was to describe. Cultural "speculations" and interpretations were concerned primarily with continuity/discontinuity of aboriginal ceramic types and cross-dating sites.

The last mission site to be discussed for the Apalache area is San Juan de Aspalaga, or the Pine Tuft site (Figure 3). The report by Morrell and Jones (1970) was written to provide a preliminary architectural description of the Spanish buildings. Hale Smith conducted the first excavations at this site in the early 1950s but the only published report is the one referred to here. Two wattle and daub structural units (church and convent) and the remains of a compound wall were discovered (Morrell and Jones 1970:28-41). The report describes architectural features. Data on aboriginal and European materials, it is stated, will be presented at a later date in conjunction with multiple Spanish mission research information (Morrell and Jones 1970:25). Architectural data from Pine Tuft will be compared to data from Baptizing Spring in the next chapter.

Western Timucua

Two Yustega mission sites, San Miguél de Asile and San Pedro de Potohiriba (plus the associated village of San Pablo), were excavated as part of the FDAHRM mission study program. The only readily available information regarding San Miguél concerns the cemetery. It was located 15.2 m north of the church and 10 burials were partially excavated. The individuals were all primary and extended. A multiple grave containing five individuals was excavated (Jones 1972:2).

As mentioned above, the designation of San Pedro y San Pablo de Potohiriba as San Pedro y San Pablo de Patali created some confusion for this author. It is hoped that the data presented below are accurate. This site, San Pedro y San Pablo de Potohiriba (Figure 3), entailed two churches (an earlier and a later structure), a convent, a cooking building, and a cemetery (Jones 1971:2). A report in a special edition of the Madison County Carrier (Greene ed., 1972) indicates that a plaza was also delineated and that the site covered almost three acres (1.2 hectares). This site area figure probably refers only to the Spanish sector. The convent was 11.6 m on a side and had been burned, as evidenced by the scorched mud floor (Jones 1972:2; 1971:2). The cemetery was located 61 m northeast of the convent and was roughly 18.3 m by 24.4 m, containing 200 burials. Sixty-four burials were excavated and 13 of these had associated grave goods. As at San Damian, it appeared that the cemetery had been fenced but no individually fenced plots were discovered (Jones 1971:2; 1972:2; Greene ed., 1972).

Burials were extended, supine, and primary and had been placed in very close rows. Overlapping of burial pits and multiple graves were more common here than at other mission sites (Jones 1972:2). In the central burial area, individual burials overlapped two or three deep (Greene ed., 1972). Adolescent burials were located in the western portion of the cemetery (Jones 1972:2; Greene ed., 1972). Commonly, hands were placed over the chest and all except two burials were oriented with their heads toward the southeast; one adolescent and one adult were oriented with their heads toward the northwest (Jones 1972:2; Greene ed., 1972). The cemetery had been located on top of an earlier church structural area and the burials intruded through that floor. Grave accouterments included glass beads, rolled brass beads, brass finger rings, dumbell-shaped shell pendants, shell beads, and a shell gorget (Jones 1971: 2). A small brass crucifix was found associated with a child burial and a broken, brass hawk bell was found with an adult (Jones 1972:2; Greene ed., 1972).

Of the four remaining historic Western Timucuan sites previously excavated, three were Potano (centered around Alachua County) and one was Utina. The latter, Fig Springs, was a dump site in a spring off the Ichtucknee River in Columbia County. The Zetrouer site, excavated by John M. Goggin and University of Florida Field Schools over a four year period, was written as Seaberg's master's thesis in 1955. This site may have been the Spanish cattle ranch at Alachua (Seaberg 1955:160). It is located 16 km southeast of Gainesville and about 1.6 km east of Paynes Prairie, situated on a "high hill" about 109 m AMSL. Small, swampy areas and higher hammock land occur in adjacent areas while the site itself is in fairly typical southern hardwood forest. On the summit, soils are sandy and well-drained but most of the site was underlain by clayey sand and "rock" (limestone?) at 15-30 cm below the surface (Seaberg 1955:5-6).

No structural evidence was uncovered but features included a fire pit, two concentrations of charcoal and corncobs, and a refuse pit (Seaberg 1955:13-16). The larger part of Seaberg's thesis is descriptive in terms of artifacts and historical-archeological synthesis. This latter attempt, however, was the first of its kind. She never really put the two disciplines together although Seaberg does provide a fairly good outline of selected historical documents and archeological data up to that date.

Exploratory testing and surface collection by Goggin and Mr. Gerald Evans were carried out at the Fox Pond site (Figure 3) in 1956. These were followed much later by more excavation in 1964 under direction of Charles H. Fairbanks and William H. Sears. This site, possibly the 17th century mission of San Francisco de Potano, is located 12.9 km northwest of Gainesville near two sink holes, Turkey Creek, and Blue Creek (Symes and Stephens 1965:65). Excavations revealed no building remains and it has been suggested that the area investigated did not include the earliest village associated with the mission since ceramic seriation suggested an occupation date of 1630-1669 (Milanich 1978:79). According to Milanich (personal communication, 1979), the main village was located to the southwest, west of Fox Pond proper. The site was single component and shallow, only about 30 cm in depth to sterile soil (Grawford 1964:2). This appears characteristic of Potano sites (Milanich 1978:81).

The third Potano site, possibly the visita of Apalo, is the Richardson site, located on high ground bordering Orange Lake just north of Evinston (Figure 3) (Milanich 1972:36). Investigation, in the form of surface collection, was first carried out during the 1940s and continued into the 1950s under direction of Dr. John M. Goggin. A total of 5,159 sherds were recovered. About 2% of these ceramics were Spanish and 20 majolica sherds were seriated to produce an early occupation date of 1615 (Goggin 1968:73). Goggin used this site as a "type site" for the early Potano period (Goggin 1953). Later excavations were carried out in 1970 under the direction of Charles H. Fairbanks with a University of Florida archeological field school (Milanich 1972:36).

Three unit clusters were excavated during this later investigation and posthole patterns indicative of circular structures were discovered. Additional features included charcoal-filled "smudge pits" (burnt posts?) and fire and refuse pits. Concentration of Spanish material occurred in the southern part of the village. Milanich's report (1972:58) includes a brief interpretive section on archeological and historical data couched in acculturative terms but remarks derived from historical data are treated as conclusions rather than hypotheses. Again, after description of artifacts, there is very little consideration of archeological data relevant to Spanish-Indian interaction.

Prior to 1976, the only Utina site investigated was Fig Springs, located in Columbia County on the Ichtucknee River (Figure 3). Testing failed to locate a land site but thousands of artifacts were removed from the spring which probably had been used as a trash dump during the 17th century. Material remains placed this site within the Leon-Jefferson framework proposed by Smith although aboriginal ceramics consisted of Potano, St. Johns, and Leon-Jefferson types (Deagan 1972:23). Of necessity and because no Utina site had ever been excavated, Deagan's report was descriptive. She did compare types and proportions of artifacts represented (primarily ceramics) with other missions sites. Implications of "Leon-Jefferson influence" and some possible origins of Leon-Jefferson were examined (Deagan 1972:41-42) and will be discussed in a following section. Assumptions about the data were made, however, which had little basis on past knowledge of Utina material culture. Deagan (1972:43) designated two main archeological problems and gave certain explicitly inferential answers to them.

Eastern Timucua

The major mission excavation east of the St. Johns River was at San Juan del Puerto, located on Ft. George Island in the mouth of the river (Figure 3). Excavations were conducted in 1955 under direction of John W. Griffin (1960:63) and again in 1961 by William Jones (1967) under sponsorship of John Goggin. Judith McMurray (1973) discussed the excavations and artifact analysis in her master's thesis, the main emphasis of which was definition of the San Marcos ceramic series. Structural evidence was inconclusive and it could never be ascertained which part of the mission was examined. It was felt, however, that the excavations had been within the Spanish living area as suggested by the presence of numerous Spanish artifacts and a series of small shell heaps located some distance away from the area.

Another Eastern Timucuan mission, Nombre de Dios in St. Augustine, has been auger tested (Benton 1976) but not yet excavated. About 0.4 km away at the present site of the Fountain of Youth Park, three excavation sessions have been carried out during the past 40 years. Not a mission, this Timucuan village thought to have been Seloy, was possibly a visita. The park contains two shell middens, a village area, and a cemetery (Merritt 1977:61). The cemetery was excavated in part during 1934 under direction of J. R. Dickson who mentioned that over 100 burials were found. Subsequent reporting by Seaberg (1951) could only provide data for 74 burials (Merritt 1977:37). Roughly 93% of the burials were primary and extended with the feet toward the east; most of them had their arms crossed over the chest in Christian burial fashion. About 4% of the burials were bundle types and 3% were flexed (Merritt 1977:37). Burial accompaniments included glass and shell beads, aboriginal and Spanish ceramics (possibly incidental in midden deposits), a clay pipe, a projectile point, five metal cone-shaped "tinklers," an amber pendant, and an iron spike (Merritt 1977:43).

Interpretations, Inferences, and Hypotheses of Previous Research

Several problems, questions, and conclusions were raised by authors of the preceding reports which deserve consideration. Although not specifically directed toward examination of these interpretations and hypotheses, it will be obvious that Chapter Three and the following chapters will come to bear on them. Some conclusions reached by earlier investigators have already been touched on by later authors, albeit often implicitly. For instance, Smith (1951:130) stated that aside from pottery, the aboriginal assemblage at Scott Miller was almost negligible and it was, therefore, reasonable to assume that aboriginal items other than pottery had largely been discarded in favor of European trade items. If one were to consider for only a moment, the obvious explanation is not necessarily the one proposed by Smith but the fact that his excavations concentrated on Spanish living areas. Were he to have gained the same information from Indian sectors of the village, he would have been correct in stating this hypothesis which could be tested at other mission sites. Smith (1951:134) then went on to claim that through missionary work there was partial, if not complete, replacement of aboriginal ceremonial and "mental attitudes" that were undoubtedly reflected in the social and material culture of the Indians. One can hardly argue with the latter part of this statement but the entire basis for it lies on biased excavation data. Additionally, documentary evidence recounted in Chapter Three suggests that mental attitudes and ceremonial behavior were not replaced to the degree formerly assumed. This is not to say that Smith was incorrect; it is doubtful that we shall ever know or prove to what degree attitudes changed. There is enough evidence, however, historical and possibly archeological, that native behavior did not undergo radical modification of some aspects.

A rather questionable conclusion, but one considered by Seaberg (1955) and Deagan (1972), was Griffin's suggestion that any mission period site with much less than 33% European ceramics out of the total would not be an actual mission settlement (Griffin 1951:154). This is incongruous with the data since this "suspicion" was raised on the basis of excavations, one set of which was minor testing, at only two sites, both of which were in the Apalache region. Smith's bias plus incomplete testing at San Luis within the Spanish fort speak for themselves.

As is often the case, archeological evidence must depend largely on ceramics at one time or another. Several inferences have been based on Smith's timing of the appearance of the Leon-Jefferson complex in Apalache. Although seriation of other aboriginal ceramics and documentary evidence formed the basis for dating the Richardson site as pre-1650, the fact that no Leon-Jefferson ceramics were present was taken into consideration when that date was assigned (Milanich 1972:57). Deagan (1972:42) stated that at Fig Springs and Fox Pond prehistoric local ceramics were replaced by Leon-Jefferson ceramics after 1650. In fact, there is no absolute certainty concerning the first appearance of Leon-Jefferson ceramic types, although they are definitely late prehistoric, nor where they originated. The Richardson site may very well lack these types because of occupation span but it is also possible that potters making them never moved there or trade never brought them there. The whole question of Utina association with Leon-Jefferson types is confused since we do not know which pre-contact ceramic types are associated with the Utina. It is recognized by all authors that the Leon-Jefferson complex bears striking resemblance to central Georgia Lamar ceramics and Ocmulgee Fields types and that complicated stamping "appears suddenly" (archeologically speaking) in northern Florida. The question of whether or not "adoption of Georgia pottery styles by Florida Indians represents diffusion of techniques or actual population mixing remains unanswered" (Milanich 1978:75). The main thrust of this thesis is not the examination of ceramic type relationships and cultural affiliations. Hypotheses relevant to the above questions have been proposed (Loucks 1978b) and will be mentioned briefly in a later chapter.

A final word is offered in view of the remark that "cultures affected by the mission system apparently lost much of their self-determination and vigor in the process of acculturation. This can be seen in the almost total abandonment of traditional elements of the culture and ready acceptance of new ones such as the ceramic situation in the Leon-Jefferson period" (Deagan 1972:43). I would argue that Leon-Jefferson is not well-enough understood to support this statement and that documentary and archeological data do not suggest that native cultures lost their "self-determination" or "vigor" -- a rather ethnocentric concept. Rather, it is likely that Apalachian and Timucuan systems were as vigorous as possible, considering population decrements, and that many aspects of traditional patterns were maintained or integrated into new systems that, in many respects, differed little from old ones.

Milanich (1972:59, 60; 1978:68) and Smith (1951:134) have argued that the introduction of new subsistence techniques and tools led to increased agricultural intensity, self-sufficiency (of the mission), changes in aboriginal subsistence techniques, and, perhaps, increased productivity. Deagan (1978:113), on the other hand, stated that the introduction of European farming implements and horticultural techniques did not seem to cause basic changes among the Eastern Timucua. Iron tools, cultigens, and domestic animals were introduced by the Spaniards and in some places new <u>techniques</u> were also implemented (e.g. oxen-drawn plows, growing winter crops and planting orchards). It is not known how widespread these introductions were; for the "ordinary" village Indian, such practices may have little affect except when required to work on Spanish haciendas or in St. Augustine. Some Indians must have become involved with Spanish-introduced agricultural and pastoral practices although the documentary references regarding the need for Mesoamericans to teach the Indians how to farm, Calderon's description of horticultural practices, and Bushnell's research which indicated that Indians prepared and sowed gardens in St. Augustine using digging sticks all suggest that the introduction of new techniques was not as widespread as has been thought.

There are also considerable historical references which indicate that black and mulatto slaves were used on ranches and haciendas. These individuals may have been more involved with implementing Spanish techniques than Indians were. Major questions revolve around the fact that, despite documentary inferences and statements, it is not known how many tools, animals, etc. were allotted per number of Indians nor how these were distributed or managed. The simple introduction of new tools and practices does not increase efficiency or productivity without an added motivation (Boserup 1975; Salsibury 1976). The motivation, of course, was provided by religious regimentation of mission activities and requirements of paying tithes and taxes. Presumably, there were means used to enforce these requirements. It would have been difficult to increase productivity proportionate to the number of consumers and increased demands. Population decline, repartimiento labors in activities other than agricultural pursuits, and limited soil fertility all worked against increased productivity. Even if the bodies were willing, the potential was weak. In Apalache, however, where soil fertility was much higher to begin with than in other parts of Florida, agricultural activities may have been intensified. This is certainly the area upon which most Spaniards levelled their hopes and attentions with regard to subsistence production. I would tend to concur with Deagan that the introduction of farming techniques and implements did not produce major, basic changes in mission Indian horticultural practices. Even though the schedule had been altered, the physical aspects of the activities were probably unaffected. Intensification probably occurred but it is not certain that productivity increased. It is obvious that a great deal of historical and archeological research is needed to answer this question. It is necessary to ascertain how many Indians in which locations actually had and used Spanish tools and practices; how subsistence patterns changed in terms of food resources used and amount of food available. The documentary evidence can not be relied upon by itself since it is conceivable that reports of food shortages were fabricated or, at least, exaggerated. For all mission sites, it is necessary to ascertain how much access Indians had to domesticates as well as what proportion of the Spanish diet was comprised by cultigens and livestock. Where are the European tools located within a village and how many were there? Were European tools more common on Spanish-operated ranches and haciendas than they were at missions? These are some of the questions which need to be approached and answered, even tentatively, before definite conclusions can be reached regarding changes in subsistence practices, self-sufficiency, and productivity.

A final topic dealt with by Milanich (1978) and Deagan (1978) concerns Spanish efforts to change inheritance patterns and political organization. This appears to have worked in two ways. Governor Menéndez Marqués (1593) wrote to Philip II saying that the Indians desired to change the practice of inheriting from their mother to that of inheriting from their fathers. This might have been an attempt to gain Spanish goods, wealth, and concomitant prestige since Spaniards, especially soldiers, married Indian women. The Crown replied that at that time it was better to insist that old "laws" be kept but that it might be good to support the Indians in this desire at a later date (Marqués 1593).

Later documents, cited in Chapter Three, indicated that although the Spaniards cultivated special ties with influential Indians, they sought to protect this investment by determining that Indians who claimed to be caciques actually had the inherited right to be caciques. Indians whom Spaniards placed and supported in influential positions may have been those who would have been high-status individuals under traditional reckoning. It has not yet been determined, either historically or archeologically, if inheritance patterns actually changed. It might also be postulated that changes in inheritance patterns may have been more likely in St. Augustine rather than at the missions since there were more mixed marriages in the capitol city than in other places. In fact, it is unlikely, although not impossible, that Spaniards would have married Indian women at missions or villages and then have chosen to reside there. How many Indian men married Spanish women has not been determined and it is possible that this practice would have met with more Spanish resistance than the reverse situation.

The Utina

The Utina were reportedly the most populous Western Timucuan tribe; their region extended from the Suwannee River eastward to the St. Johns River and from the Santa Fe River possibly as far north as present day Valdosta, Georgia (Figure 3). Population concentrations within this area are not known. According to recent archeological surveys in northern Columbia County, however, there are few and scattered areas which would have supported large village populations (Siglar-Lavelle 1979).

The earliest Spanish contact was made in 1528 when the Narváez expedition passed through the western portion of their territory. In 1539 the de Soto entrada travelled north and west through the heart of Utina and was engaged in several skirmishes as well as one major battle (Milanich 1978:70).

Previous to sustained mission contact, the Utina (eastern?) received visits from Father López, residing at Cumberland Island, Georgia, between 1587 and 1599 (Geiger 1940:68). The impact and nature of these early forays are unknown. Westward expansion of the mission system did not begin until 1606 when Father Martín Prieto moved into Potano and founded the mission San Martín de Potano (Geiger 1937:227). In 1616, Father Luis Geronimo de Oré visited Florida in his official capacity as commissary of the custodio Santa Elena. Among the places he visited, he listed the town of Santa Fé de Teleco, San Martín de Potano, the convent of San Juan de Guacara (on the Suwannee River), and the guardiente Santa Cruz de Tarihica (Geiger 1937:257-260). It is known that prior to 1650 Alonso Escudero was guardian of Santa Cruz (Geiger 1940:48). By 1655, San Augustín de Urica, Santa María de los Angeles de Arápaha, and San Francisco de Chuaquin had been established (Geiger 1940:125-126). Locations of these missions are given in terms of leagues (roughly 2.5 miles or 4 km) from St. Augustine and whether or not they were measured along roads is unknown, although generally assumed. The map of the camino real from St. Augustine to Pensacola, executed by Joseph Purcell (1778), indicates an area of "old fields" and "cold spring" in the approximate area of Baptizing Spring, probably 1-2 km west of the site, at the most. Purcell (1778) also noted that between the Santa Fe and Seguana (Suwannee) Rivers, along the road, there were "many remarkable rocky springs from 20 to 30 feet deep said to run subterraneous into the rivers." The "old fields," a term applied to areas of past Indian occupation, shown east of the location of the mission San Juan de Guacara (where "old fields" were also noted as present) could have represented the site now referred to as Baptizing Spring. This is fortified by the fact that Purcell noted a "cold spring" in association, although there are at least five springs currently in the area of the Baptizing Spring site. _If_ the distances from St. Augustine given in the 1655 list of missions were measured along the road, then San Augustín de Urica (60 leagues from St. Augustine and 6? leagues from Santa Cruz de Tarihica; see Geiger 1940:125-126) would have been in the area of Purcell's "old field" and "cold spring" and the present site of Baptizing Spring.

Santa Catalina de Ajoica (also referred to as Ahoica and Afuerica) does not appear on mission lists until 1655 (Geiger 1940:125-126). It is also mentioned in Governor Salazar's (Geiger 1940:129) and Bishop Calderón's (Wenhold 1936:8) lists of 1675. By that year, there were only three missions listed among the Utina: Santa Catalina with about 70 persons in residence, Santa Cruz de Tarihica with about 80 persons, and San Juan de Guacara, also with roughly 80 persons in residence (Geiger 1940:131). In 1678 the cacique of Santa Catalina told Sergeant Major Domingo de Leturiondo that he had contracted with the Indian Nicolás Suarez to establish a cattle ranch between the mission (Santa Catalina) and the deserted village of Ajoica, three leagues away (Pearson 1968:279). Assignation of the name Ajoica to a village, mission, and cattle ranch has created some confusion for mission scholars but, apparently, by the late 1670s there was only the mission (with centralized population from the former village?) and the cattle ranch.

Sometime between 1655 and 1675, the missions in the western Utina region had been reduced to three. San Augustín de Urica is not known to be mentioned after 1655. There is no good supporting evidence for designating the Baptizing Spring site as that mission but it is possible that, since there were more missions in general in Utina up to the mid-1600s, the Baptizing Spring site could have been one of the missions present during the first half of the 17th century. It is possible that the epidemics, famine, and Timucuan revolt so reduced populations that Indians residing at these missions were removed to one of the three major missions that continued to exist until the late 17th-early 18th century. In that event, it is probable that Indians from San Augustín de Urica (if its location was as postulated) would have been moved to San Juan de Guacara which was the nearest mission.

Santa Catalina was reportedly destroyed by Yamassee slave raiders in 1685 (Bolton 1925:40) yet the 1689 census counted 40 families residing there (Boniface 1968:85-87). It is possible that some Indians returned to the village or that new Indians moved (were moved?) in. The 1689 census also indicates 30 families were living at San Juan de Guacara and that 20 families were at Santa Cruz de Tarihica. This was quite a population reduction from the early Utina mission period when Antonio de Cuellar claimed he converted almost 4000 Indians in the region of Tarchica [sic] (Geiger 1940:46). Of course, he might have been exaggerating. San Juan was destroyed in 1689-90 (Boyd 1951:11) and the fate of Santa Cruz is uncertain, although it is possible that it was also destroyed at the same time.

Baptizing Spring

The Baptizing Spring site is located adjacent to the freshwater spring of the same name (Figure 4). It is 3-4 km east of the crossroads town of Luraville. Luraville was established in 1878 and by 1886 had a population of 75. During the 1890s Luraville was larger than Live Oak, the present county seat, was at that time (Suwannee County Centennial

gure 4. Contour Map of Vicinity Around Baptizing Spring. Adapted from USGS 7.5 min series, Dowling Park (1954) and Mayo (1955) Quandrangles.

Inc. 1958:47). The town was the major shipping point (by steamboat on the Suwannee River) in that section of the state for Sea Island cotton, bright leaf tobacco, and vegetables. Sea Island cotton and tobacco plantations in the area were among the leading producers in the state. Also in the 1890s, Luraville was the center of phosphate industry in Florida. The town was a boom town; it consisted of four stores, a blacksmith shop, two churches, a schoolhouse, a cotton gin, and saw and grist mills. Forty years later, around the middle of the 1920s, Luraville was described as a "ghost town" (Suwannee County Centennial Inc. 1958:47). Current names of sloughs and springs reflect the settlers of the countryside in 1864: Colonel Washington LaFayette Irvine founded the town and named it after his daughter Lura; Reverends B. Telford (Tilford Spring) and W.H. Ivey and Dr. C. Peacock have all been immortalized in the landscape.

The exact history of the Baptizing Spring area has not been traced through the county records by the author. Late 19th-early 20th century artifacts -- ironstone and transfer printed whiteware ceramics, portions of glass jars and bottles -- indicate that the site was occupied during that period. The relative concentration of these artifacts in the area of Structure B and northward indicate that this might have been the location of the 19th-20th century structure. The only features from this later period which were identified during the excavations were a series of square fencepost holes cutting diagonally across the southwest corner of the Structure D excavation block. Just west of this area, in Trench #6, a military medal was recovered. It was embossed with the commemorative slogan "LOUIS KOSSUTH*THE GEORGE WASHIGTON [sic] OF HUNGARY" and a bust, presumably of Kossuth. It is probable that the previous occupants of the site were engaged in farming activities. It is not known presently where the name "Baptizing Spring" derived from. The only information discovered by the author while in the field was that Mr. Howe Land's father, who grew up in the area, had told him that Baptizing Spring was the spring located east (Walker Spring) of the spring shown on current maps as Baptizing Spring.

Environmental Characteristics

The southwestern portion of Suwannee County around Luraville is elevated only about 15 m (45 feet) AMSL. Oligocene Suwannee Formation limestone underlies this region at depths of 1.5 to 6 m below the present surface. The Suwannee Formation is primarily hard, interbedded strata of soft granular limestone, honeycombed with caves and solution pockets which collapse (i.e. "sinks") (Houston et al. 1965:95). These caves and solution pores serve an important function as underground freshwater reservoirs which, when they break through into sinks, provide water sources as springs.

According to the most recent soil survey (Houston et al. 1965) the area around Baptizing Spring is characterized by Blanton fine sand, low, with 0-5% slope. From testing and excavation, it is apparent that the area could equally well be classified as part of the Blanton-Kalmia-Leaf Complex (Houston et al. 1965:12-13) characteristic of floodplains along the Suwannee River. The most important feature of this complex is the sandy clay loam or clayey loam which occurs anywhere from 10-70 cm below the surface. All Blanton fine sand series are highly acidic and low in organic material and natural fertility (Houston et al. 1965:10-13). Soil fertility was probably somewhat enhanced due to the presence of sandy clay and clayey sand horizons close to the surface in many areas. These deposits of fine material would tend to trap and hold water for longer periods during wet seasons but would make it difficult for crop plants to get to water during drier seasons, particularly during drought conditions when the overlying sandy horizons become hard and compacted. The clay would, however, make certain nutrients available and would prevent rapid leaching out of organic material which is so typical of many Florida soils. Clay minerals, particularly aluminum, and organic material significantly enhance retention of many important mineral nutrients such as calcium, magnesium, potassium, and phosphorus (Thompson 1952:62). Organic matter content is especially important in the release and initial retention of phosphorus, one of the most important soil nutrients. Of the mineral phosphorus binders -- iron, calcium, and aluminum -- aluminum from clay sources is the most important to retention of soil phosphorus (Chaiwanakupt 1974:4, 5). The presence of these clay and sandy loamy clay deposits, then, would probably have made the area around Baptizing Spring more fertile than the adjacent "pure" Blanton soil series areas where nutrient leaching would have been a severe problem. Excavation did reveal that organic residues and humic content of the soil were greater in both deep and shallow features which rested on or were surrounded by clay.

Stratification indicated a considerable amount of water deposition lenses and sheet erosion throughout the depth of the excavation units (an average of 45 cm deep). Local informants (Edmond Montgomery, Howe Land, personal communication 1978) noted that prior to clearing, the area was relatively moist and had flooded during the high water flood stage of the Santa Fe and Suwannee Rivers in the spring of 1973.

With the exception of large live oaks (Quercus virginiana) and vegetation on the slopes of sinks and springs, all natural forest flora were cleared, bulldozed into windrows, and burned when Owens-Illinois Inc. prepared the land for planting pine seedlings. These windrows run diagonally from the NNW to the SSE across the entire eastern third of the section. Areas immediately north and west of this area have been planted in pine for a long time. Aside from the slash pine (Pinus elliottii) seedlings, current ground cover is limited to herbaceous invader species such as blackberry (Rubus spp.) and dog fennel (Eupatorium spp.), small woody invaders (winged sumac, Rhus copallina; persimmon, Diospyros virginiana), and remnants of the forest population which include pignut hickory (Carya glabra). Plant species identified in windrows, around springs and sinks, and in small areas of hammock south of Baptizing Spring and around Walker Spring are listed in Table 2. This is not a complete listing and does not take into account many of the forbes and grasses.

From Table 2 it is obvious that most of the trees characteristically occur in open woodland/mesic hammock associations. Florida maple (Acer barbatum), pignut hickory (Carya glabra), sugarberry (Celtis laevigata), and American elm (Ulmus americana) tend to prefer rich hammock soils with limestone or clayey soils. With the exception of button bush (Cephalanthus occidentalis) and parsley haw (Crataegus marshallii), none of the species typify aquatic or poorly drained soils. Both of the exceptions were found only near springs.

To what extent modern vegetational associations approximate former conditions is impossible to say. The potential climax stage of this area, however, seems to be southern hardwood forest. Charred hickory nuts (probably pignut) recovered during excavation indicate that at least one

Table 2. Flora Local to Baptizing Spring Vicinity.

Trees and Shrubs

Acer barbatum	Florida Maple (near spring)
Asimina longifolia	Pawpaw
Baccharis halimifolia	
Callicarpa americana	French Mulberry
Carya glabra	Pignut Hickory
C. tomentosa	Mockernut Hickory (rare)
Celtis laevigata	Sugarberry
Cephalanthus occidentalis	Buttonbush (at spring edge)
Crataegus cf. uniflora	Haw
C. marshallii	Parsley Haw (near spring)
Diospyros virginiana	Persimmon
Ilex opaca	American Holly
I. vomitoria	Yaupon (also, cassina)
Liquidambar styraciflua	Sweetgum
Morus rubra	Red Mulberry
Myrica cerifera	Wax Myrtle, Bayberry
Pinus elliottii	Slash Pine (planted)
Prunus anugustifolia	Chickasaw Plum
P. serotina	Black Cherry
Quercus hemisphaerica*	Laurel Oak
Q. nigra	Water Oak (rare)
Q. virginiana	Live Oak.
Rhus copallina	Winged Sumac
Ulmus americana	American Elm
Vaccinium arboreum	Sparkleberry
Xanthoxylum clava-herculis	Hercules Club, Toothache Tree

Herbs, Forbes

Cnidosculous stimulosus	Stinging Nettle
Crotalaria sp.	
Desmondium tortuosum	Beggarlice
Eupatorium capillifolium	Dog Fennel
E. compositifolium	Dog Fennel
Hypericum galliodes	
Physalis sp.	
Phytolacca americana	Pokeweed
Polypremum procumbens	
Rhus radicans	Poison Ivy
Rubus cuneifolius	Blackberry
R. trivialis	Blackberry
Verbena sp.	

Grasses

Paspalum notatum	Bahia Grass

Table 2--continued

Vines	
Ampelopsis arborea	
Anisostichus capreolata	Cross Vine, Goat's Foot
Ipomea pandurata	Wild Potato, Wild Morning Glory
Parthenocissus quinquefolia	Virgina Creeper
Passiflora incarnata	Passion Flower
Smilax bona-nox	Catbrier
Smilax spp.	Catbrier
Vitis aestivalis	Wild Grape
V. rotundifolia	Wild Grape
Ferns	
Polypodium polypodiodes	Resurrection Fern

* This nomenclature follows Kurz and Godfrey (1976; first printing 1962) and my own training under Dr. Dana Griffin , a research botanist with the Florida State Museum, in 1976. The controversy concerning the proper designation of laurel oak as Quercus laurifolia (the name also applied to the Diamond-leaf Oak) or as Q. hemisphaerica favors either name every few years.

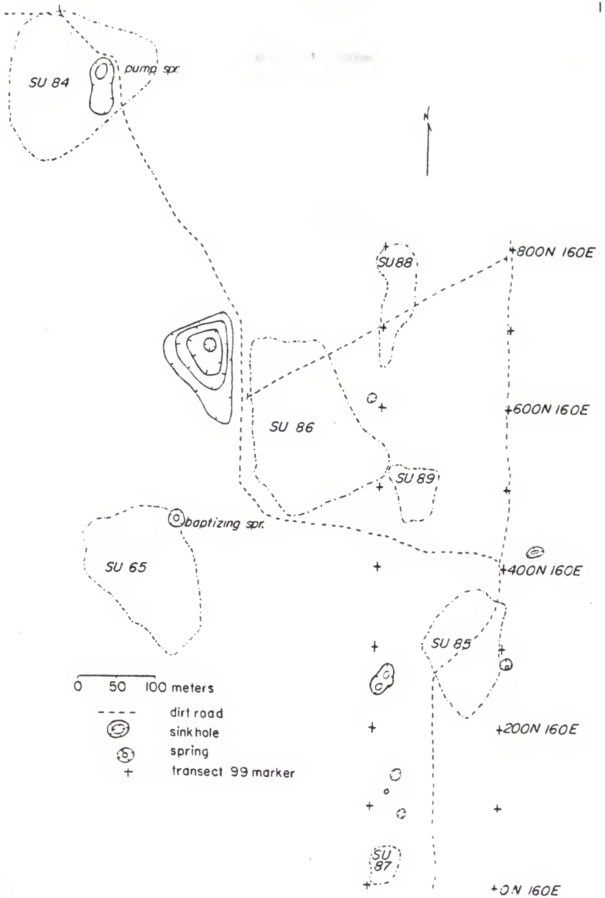
of present-day species was extant during the mission period. With controlled, periodic burning and abandonment of old fields, such as might be expected of slash and burn horticulture, a variety of plant food resources would have been available. Old field vegetation, forest habitats, and the artifical "edge effect" also would have supported a varied wildlife population. Due to the currently altered state, wild fauna observed were also invader species: rodents, a shrew, quail, and non-poisonous snakes (black racer, yellow corn snake), the latter probably following the former. No indication of the presence of white-tailed deer (Odocoileus virginianus) was observed during the excavation season or the 1977 survey. Mr. Lynne Johnson (personal communication 1977) told us that deer had not been seen in this area for a long time. Game and Wildlife attempts to introduce them to a nearby hunting preserve had failed. Howe Land (personal communication 1978) indicated that when the windrows were burned, there were numerous raccoons and rattlesnakes.

Suwannee County claims long, warm summers and mild winters. From June through August daily maximum temperatures average 91°F with a minimum average of abour 70°F. Temperatures reach or exceed 90° roughly 95 days a year; 100° or higher only once or twice a year. Humidity is relatively high during the summer and conditions can be extremely oppressive. Freezing temperatures occur, on the average, 15 times a year from late December through February. Monthly rainfall averages 5 to 19 cm and almost half the annual total falls during the four month period of June through September (Houston et al. 1964:93-95).

Sites Adjacent to Baptizing Spring

During the fall of 1977, a transect 800 m north-south by 160 m east-west was surveyed as part of a research project undertaken by the author

Figure 5. Sites Adjacent to Baptizing Spring. (Located during Suwannee County Survey. Coordinates refer to Transect 99.)


pump spr.
SU 84
SU88
+800N 160E
SU 86
+600N 160E
SU 89
baptizing spr.
SU 65
+400N 160E
SU 85
0 50 100 meters
dirt road
sink hole
spring
transect 99 marker
+200N 160E
SU 87
+0N 160E

(Loucks 1978a). It was hoped that a survey of randomly selected sampling units in southwestern Suwannee County would provide answers to hypotheses concerning mission period and pre-contact settlement patterns. Lack of funding precluded completion of this project but the sites which were located in Transect 99 are of substantial interest. At the time, the six sites were treated as separate entities and have been recorded as such. Presently, the possibility that five of these sites are actually extensions of Baptizing Spring cannot be overlooked.

Site 8 Su 87 lies farthest away from the mission at 500 m while 8 Su 86 is nearest, just across the road, at 150 m (Figure 5). It is fairly obvious from Figure 5 that clearing and mechanical bedding operations have skewed site boundaries along the axis of plowing. The 10-15 m wide windrows obscured surface visibility in some areas and made identification of site limits rather difficult. Surface collections made at the sites employed various sampling schemes. Physical characteristics of the sites will be discussed briefly below and detailed presentation of artifactual data will be included in Chapter Six.

The Pump Spring site (8 Su 84) was the only site lacking a late prehistoric/protohistoric component. The major occupation appears to have been Deptord (ca. 500 B.C. to A.D. 0). Cultural debris surrounded Pump Spring but the main surface concentration of artifacts occurred west of the spring and covered roughly 2.31 hectares (HA). Scattered lithic artifacts extended 40 m to 60 m west of this core area. Seventeen 25 m by 20 m unites were laid out with respect to a grid reference point (0N 0E) blazed on a large live oak. This "point" was located 20 m due west and 12 m due south from the western, middle edge of the spring.

The 17 units, plus two other areas encompassing 1,870 square meters, were intensively examined and all artifacts within these areas were collected. Surface collections involved roughly 45% of the site (1.4 HA). Greatest artifact concentration occurred between 20 m to 80 m west of the spring and from 35 m south to 85 m north of the spring. The grid, therefore, was imposed over the main site area as determined by surface observation.

Eight shovel tests, 50 cm on a side, were dug and the contents were screened through 1/4" mesh hardware cloth on wood frame. Four of the tests were within the core area, two were located in the extreme northern portion, and two were in the easternmost portion 25 m and 75 m east of the main dirt road. All ceramic material with the exception of one plain sherd came from 0-30 cm below the surface (BS). This sherd occurred at 50-60 cm BS. Since the plow zone averaged 15 cm to 28 cm in depth, it is fair to say that ceramics were primarily confined to this disturbed zone and the surface. An estimated 20-25 cm of the original topsoil had been removed while clearing the site for pine planting. Lithic materials continued to a maximum depth of 79 cm BS.

The vast majority, about 93%, of the inorganic artifacts were lithic. Both in the field and during analysis, it was evident that this site differed from the other five primarily in the preponderance of chert, and some silicified coral, artifacts. Only about 58% of the ceramics were identifiable, the remainder being too small or eroded for identification. Undecorated ceramics predominated but the presence of Deptford Simple Stamped and Check Stamped plus fiber-tempered ceramics gives this site an early "ceramic period" date. The single Carrabelle Punctated sherd, irregular punctated sherd, and cob marked sherd suggest cursory visitation by later individuals. A single olive jar sherd, found in the shallow depression just south of Pump Spring, was an anomaly. It lay immediately on the surface of a heavy mat of vegetation and it is probable that its presence does not relate to the main site occupation. This depression only contained a couple small chert flakes besides the sherd.

A wide variety of worked and unmodified tools indicate a complete set of activities being carried out at the site. Evidently, therefore, this was not simply a quarry site. The majority of lithic artifacts, 85.78%, was debitage or wastage. It is probable that quarrying and initial working into transportable size was performed elsewhere; no large cores and very few small, expended cores were recovered. Quarrying sites were not located during the survey but this is more a problem of scope than of absence. Large chert boulders were fairly common in nearby fields and their presence in piles or fencerows indicates that many have been removed from fields over the past years.

Six of the 17 units yielded faunal material -- minute, unidentifiable, and poorly preserved fragments. Five fragments were tentatively identified at a general level: three large mammal longbone fragments, one possible turtle carapace fragment, one mammal longbone fragment.

Su 85 is located wholly within Transect 99 of the Suwannee County Survey (Figure 5). It lies west of and adjacent to a small, unnamed spring, and about 400 m ESE of Baptizing Spring. It covers an area of about 1.06 HA, 94% of which was gridded into 25 m by 25 m squares and intensively surface collected. The site grid was tied into a tree serving as a property marker and distinguished by having two white bands painted around it. This tree also represented the 400N 160E point of Transect 99 (Figure 5). Only four shovel tests were put in at this site. Subsurface artifacts derived principally from the plow zone (ca. 0-30 cm BS) although some lithic artifacts, one undecorated sherd, and one cob marked sherd were found below the disturbed zone between 45 cm and 55 cm BS. Not found in the surface material but recovered from the plow zone were two fiber-tempered sherds.

A complete contrast to Su 84, only 32% of the artifacts were lithic; of these, 83% was debitage. One thousand and seventy-six sherds were recovered, 67% of which were potentially identifiable. Of the six sites, this one had the most varied ceramic assemblage which appeared to cover occupations from early ceramic Archaic (ca. 1000 B.C.) up to or through protohistoric/historic periods. Complicated stamped ceramics constituted the largest portion of the pottery when treated as an aggregated group (11.57%). Cob, cord, and fabric impressed sherds which are usually associated with the Alachua tradition (Milanich 1971) but also found at mission period sites, were also represented. Three olive jar sherds, found in close proximity to each other, were also recovered. The artifact assemblage will be described in greater detail in a later chapter.

Worked and unmodified lithic tools compried only 17% of the total lithic assemblage. A waisted, planar adze and Pinellas Points were among the recovered tools. The number of lithic artifacts (n=503) contrasts sharply with the total of 2,503 from Pump Spring although the amount of debitage was proportionately equivalent.

Faunal remains were in a worse state, if possible, than those from Su 84. Only nine small bone fragments were recovered; all were mammal. One interesting artifact was found in an informal test made to collect clay samples. A mineralized manatee/dugong (order Sirenia) rib portion, possibly worked to form a burin-like point at the thinner end, was recovered from clay matrix at 23-25 cm BS.

One possible cultural feature was discovered in Test A (323N 104E on the transect grid). It was a relatively circular, amorphous-edged stain which first became evident at 55 cm below the surface. Approximately 35 cm in diameter, the fill was mottled grey, tan, and light tan sand in a matrix of mottled tan and light tan sand. The base was irregular and sloped downward from the northwest (50 cm BS) to the southeast (70 cm BS) and ended on an orange-tan clay stratum. There were no associated artifacts to suggest a particular function nor did the shape lend any clues. The irregular bottom was not suggestive of a posthole and it might have been simply humic stain from a former tree.

Su 86 was the largest of the six sites, covering 2.39 HA. Its limits were hard to determine since a large area of artifact concentration was not apparent on the surface. Following analysis, weighting artifact counts per square by factors for surface visibility, it was apparent that the site concentration lay within the northwest third of the site (Figure 5). A smaller area of artifact concentration was located in the southeastern quadrant. Problems of surface visibility created by windrows were extremely acute at this site particularly since the decision was made to use a random, systematic sampling scheme for surface collection. Thirty-three squares, each 10 m on a side, were used for the sample. This provided 16% coverage but three squares (9%) were totally lost to windrows and 20 more were partially obscured. Only 30% of the sampling units had good surface visibility. In order to partially correct these problems, four additional squares were prejudicially selected (i.e. they had good surface visibility and artifacts) and surface collected. In all, 14% of the site surface was examined.

Five hundred and six sherds, 71% of which were identifiable, were recovered. Of these, 13.5% were complicated stamped types. The ceramic situation was much the same as at Su 85 although earlier Orange period fiber-tempered ceramics and Deptford ceramics were lacking. Weeden Island and St. Johns types were represented in small numbers, six and eight respectively. One Swift Creek-like complicated stamped sherd was found. Mission period aboriginal ceramics were well represented and one small blue on white majolica sherd was recovered.

Approximately 29% of the artifacts were lithic. Considering the small total count, a "real" large proportion of these were worked or unmodified tools. Point types included Pinellas and a possible Ichtucknee (see Bullen 1975). In terms of aggregated lithic categories, this site is more similar to Su 88 and Su 89 (discussed below) than to the other three sites.

No tests were dug in this site or the three remaining sites since time did not allow and recent rains, although fairly slight, had rendered the ground very moist and screening with hand screens became too time-consuming.

Faunal material was of the same general state of uselessness noted earlier. Exceptional to this were four mineralized turtle bones, one rather large and rugged. The problem of cultural association is acute; the fossilized nature of the bone may indicate natural deposition in clay strata prior to human arrival or it may indicate deposition in clay as recently as 100 years (or less) ago.

Located in the extreme southwestern corner of Transect 99, Su 87 lies approximately 500 m southeast of Baptizing Spring. Artifact surface concentration covered only 0.15 HA but scattered lithic material, and fewer ceramics, extended over an additional 50 m north and about 40 m east of the delimited site. This was the smallest site in terms of surface area and artifacts encountered. One hundred artifacts (7% lithic) were collected from one 25 m by 25 m square in the main site locale and four other small areas, each roughly four square meters. This provided an estimated 43% surface collection. It should be noted that the southwest quarter of the transect contained highly scattered cultural material over its entire surface. Only this area, which had definable limits, was given site designation. No subsurface testing was accomplished.

Seventy-two percent of the ceramics were identifiable; 83% of these were undecorated. Types included Weeden Island Incised, St. Johns eroded, four complicated stamped sherds, and three brushed/scraped sherds. Historic material was limited to one-half of an opaque, blue glass bead which was 7 mm in diameter with a large hole diameter of 2.8 mm. It is probably late, dating from the 18th or 19th century (Charles H. Fairbanks, personal communication 1977). Seventeen lithic artifacts were recovered: two thick cross-section triangular points, one Pinellas Point, one sidescraper on a blade, and 13 debitage flakes or fragments. Faunal remains were in better condition here than at the other five sites: one small turtle carapace fragment and eleven fragments of a tooth, probably white-tailed deer, were recovered from the surface.

As mentioned above, Su 88 and Su 89 bore close resemblance to each other and were more similar to Su 86 in artifact assemblage than they were to the other three sites. The fact that all three of these sites were in close proximity (Figure 5) suggests that they may have actually been part of the same cultural unit, perhaps representing differentiated living or activity areas. Most remarkable was the small percentage of lithic material (11% of the total artifact counts) and the large portion of complicated stamped ceramics. Of the total identifiable ceramics, 56.13% from Su 88 and 25.54% from Su 89 were complicated stamped types.

Su 89 lies about 300 m ENE of Baptizing Spring, adjacent to the western-most boundary of Su 86. It covers an area of 0.30 HA. Su 88 lies approximately 375 m northeast of Baptizing Spring and about 75 m from Su 86, covering a slightly greater area than Su 89 (0.45 HA) although the area of artifact concentration was only 0.25 HA. Both of these sites were completely surface collected but no subsurface tests were made.

The percentage of complicated stamped ceramics at Su 89 is biased by counting 45 scraped sherds individually even though they were from the same reconstructable one-third of a vessel. Had these been treated as one "sherd", the complicated stamped ceramics would have comprised a larger proportion of the identifiable ceramics (33.57%). It is often impossible, however, to determine which sherds came from the same or different vessels therefore each sherd was counted separately for inclusion in the raw data tables.

Ten of the 13 faunal fragments recovered from Su 88 were identified as medium-large mammal, one was the distal end of a white-tailed deer phalanx, and one was a small fragment of turtle carapace.

Baptizing Spring: 1976 Excavation

The first excavations at Su 65 were carried out by a University of Florida Archeological Field School under direction of Dr. Jerald T. Milanich (Florida State Museum) during a ten day period. Site limits were roughly mapped on the basis of "posthole" testing and surface observation. During the following two years, enthusiastic collecting by local inhabitants removed most surface indications of artifact concentration. On the basis of what remained, site boundaries were tentatively defined

(Figure 6). The Baptizing Spring site covers an estimated 2.83 HA which includes Baptizing Spring in the northeast corner. A moderate-sized sink lies about 40 m south of the site. Windrows cover and obscure one-quarter to one-third of the surface.

Both the 1976 and 1978 excavation personnel utilized the same grid system (with some alteration during the latter period in order to maintain the previous grid lines) and designated excavation units by their southwest corner stake number given in meters north and meters east. A stake designated 500N 500E provided initial grid reference and was located roughly 40 m west of the spring. The 1976 datum plane was established at 17.6 m AMSL or 2.4 m above the ground surface at 500N 537E. Grid north was set at 9°10" west of magnetic north in order to parallel the windrows as much as possible. Much of the data which follows was reported in a preliminary report by Ling (1976) therefore the discussion presented below will be brief.

A total of 346 square meters was excavated in four portions of the site: (1) Group A, (2) Group B, (3) Group C, and (4) two two-meter wide trenches south and southeast of Group A (Figure 6). Since Group A represented the area of Structure B and Group B the area of Structure A, the structure designations will be utilized throughout the rest of this dissertation because the structural areas are more important. Structures A and B were mission buildings as evidenced by architectural features; Structure B had a well-defined packed, red clay floor. Structures and cultural features will be discussed in the next chapter.

Four 3 m by 3 m squares were excavated (Group C) within the Indian sector of the village. Overlapping posthole patterns, several features, and charred corncob-filled pits provided good evidence of an Indian

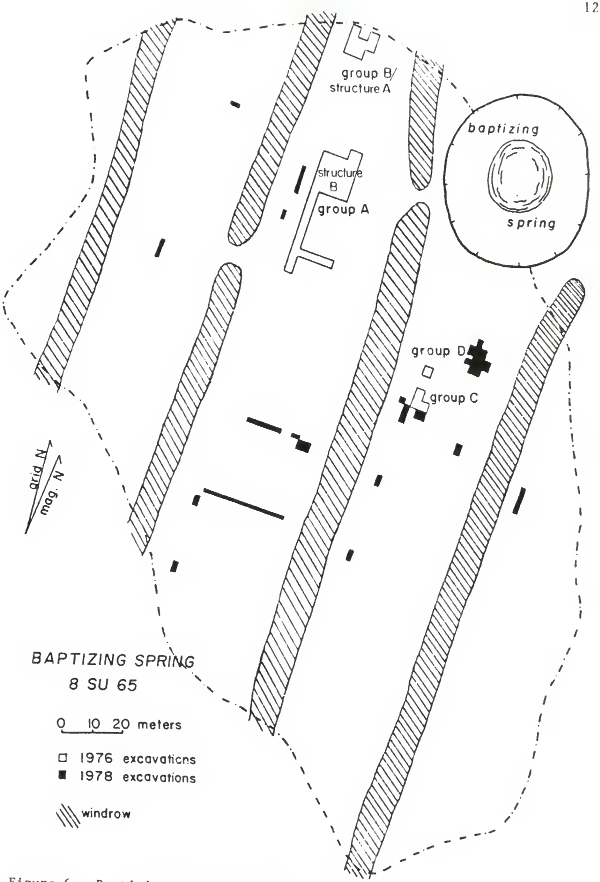


Figure 6. Baptizing Spring Site Plan.

living/activity area. In addition to these four excavation blocks, 180 posthole tests and a test trench north of Structure A (Group B) were made in an attempt to locate a cemetery.

All excavated dirt from Structures A and C were sifted through mechanical shaker screens outfitted with wide gauge (3/8" by 3/4") diamond mesh. Trench and Structure B materials were not screened. Contents of Structure C features were screened through 1/8" by 1/8" fine screen (Heath 1977:8) or were simply troweled carefully.

Photographic records and plan maps were kept for all units, as is customary. Stratigraphic record forms and profile maps were made only for Structure B units, primarily to reveal construction details. These latter were not made for other excavation areas due to lack of time and because the site was judged to be single component of fairly short duration with a general lack of stratification in the village area.

Divers explored the spring but heavy silting and poor visibility prevented much useful investigation. The only find was a badly rotted wooden plank which could have dated from later (post-mission) activity. Excavations in 1978 revealed a late 19th century occupational period and several of the iron artifacts recovered during both seasons dated from this later period.

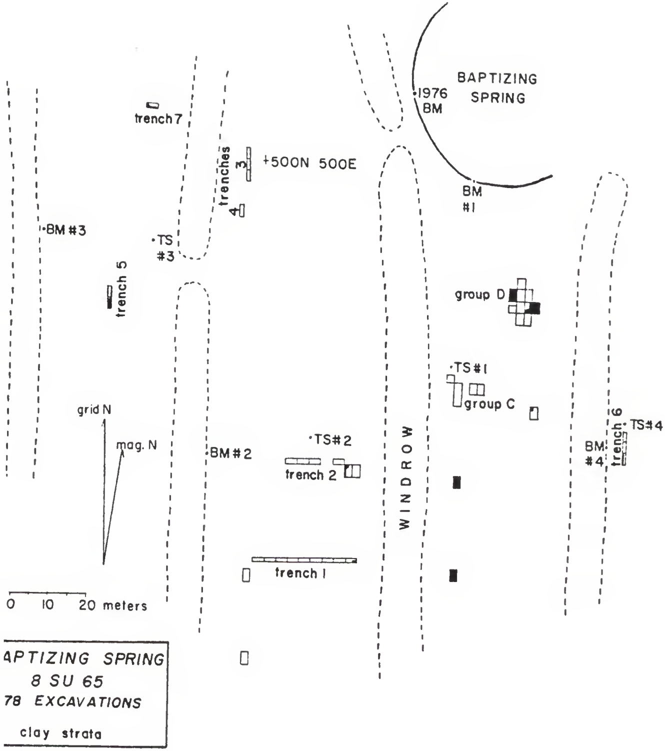
1978 Excavations

In preparing to go into the field to continue excavations in the aboriginal sector of the village, the possibility of utilizing various sampling schemes was considered. Initial priority was given to completing Group C excavations and following that it was hoped that a series of tests would locate other structural evidence and that these areas would then be sampled. Considering the length of time it eventually took to finish

Group/Structure C, the fact that there were only three full-time students participating in the summer field school (weekend volunteers were later recruited from the University of Florida prehistory class), and the time involved in training and re-training new volunteers, all hopes of systematically sampling the site were abandoned. In the end, excavation units were selected on the basis of surface artifact concentration -- a poor indicator in most cases since amateur collecting had been extensive -- and on the basis of testing areas close to presumed site boundaries. The last four weeks were spent in putting in one-meter wide trenches, of varying lengths, in areas which could not be extensively tested using larger units. Volunteers returned for three weekends during the fall of 1978 to backfill and excavate three additional units in Group/Structure D (Figures 6 and 7).

A total of 197 square meters were investigated across the site. With some exceptions, all excavated soil was screened through 1/4" by 1/4" hardware cloth over expanded diamond mesh on mechanical shaker screens. Parts of Trench #1 and all of Trench #6 (Figure 7) were screened through 3/8" by 3/4" expanded diamond mesh on standing screens when structural and mechanical breakdown temporarily prevented use of mechanical screens. Bagged contents from five features were water screened through fine mesh (1/16" by 1/16") during later analysis.

Aligning the grid and datum plane with the 1976 system presented some logistical problems. We were able to locate iron pipe stakes and the 1976 bench mark but alignment on previous grid north was futile as checking and cross-checking from various points showed that old stakes in Group/Structure C were aligned 8.25° W of N versus the 1976 designation of 9°11" (about 9.17°) W of N. Since all remaining old stakes in the village



gure 7. 1978 Excavations and Location of Transit Stations and Bench Marks.

area were aligned with the former axis, we maintained this orientation for the 1978 seasons. The location of transit and wye level stations, their corresponding bench marks and datum plane elevations, and the location of trenches are described in detail in Appendix A and illustrated in Figure 7.

Initially, it was planned to excavate every other unit (3 m in length) in a two-meter wide trench running south and east from the 1976 Group/Structure C excavations. This soon proved to be impractical since many features were encountered in the Group C area and there were not enough people to deploy to trench excavation. Alternatively, we planned to excavate single 2 m by 3 m units located along transect lines according to surface artifact concentration. The six-square-meter units were retained since they could be excavated in (slightly) less time than the 3 m by 3 m units used in 1976. A total of 20 2 m by 3 m units was excavated plus two 2 m by 2 m units which were used to avoid Transit Station #1, in one case, and to shorten excavation time on a fall weekend foray, in the other case. One-meter wide trenches were used during the last few weeks when it became apparent that there was not enough time left to extensively investigate other areas of the site. It was felt that these trenches would allow a greater area of the site to be investigated in a shorter period of time. Trenches were designated by numbers but we continued to excavate in 3 m lengths (Appendix A; Figure 7). A three-meter break in Trench #2 was made to accomodate a clump of young live oaks.

Units were excavated until cultural material had decreased significantly (less than 10 lithic artifacts per 10 cm level) or sterile strata were reached. This generally occurred from 0.22 m BS (in square 392N 549E) where a solid, sandy clay horizon was reached, to a maximum of 0.74 m BS. Features sometimes extended down into sterile levels. Average unit depth over all units was 0.46 m. Maps of excavation unit "walls" (i.e. profiles) were drawn in order to record presence of different strata across the site and to record feature profiles (i.e. cross-sectional views).

It was determined in the field that the major occupation was shallow and single component, dating from the historic period, although we distinguished several "zones" which could be aggregated or analyzed separately during later research phases. These zones were defined on the basis of soil coloration (degree of "greyness" resulting from organic material present and leaching to lower levels) and constituents (e.g. "sand" versus clayey sand versus clay). In some excavation units, certain of these zones were not represented due to the fact that zonal definitions were kept consistent throughout the summer excavation period. This attempt to maintain definitions was not always possible. It was observed in the field that there was a correspondence between the amount of organic matter (grey to dark grey-brown zone coloration) and the amount of cultural material. In units where there was very little cultural material, or the deposit was thin, zone designation and coloration varied accordingly. Low cultural material density corresponded with lighter, less grey soil color.

In very general terms, Zone I was divided into three levels: IA was was the litter/root zone, ranging from 3 cm to 19 cm in thickness, or was completely absent; IB was either grey, greyish tan, or tan with grey and brown mottling and it ranged from 8 cm to 36 cm in thickness; IC was distinguished only in a few instances (primarily in Group/Structure D) and was simply a leaching zone from IB to Zone II. Zone IC was usually greyish tan or tan with grey and brown mottling, lighter than IB, and ranging in thickness from 15 cm to 23 cm. Zone II was basically the culturally sterile zone and features extended down into it; it was dark to light tan in color. Zone III was simply used to designate clay or clayey sand strata and was never excavated although four clay samples were taken. Zone IV was located only in a deep feature in square 443N 547E and was an almost white sand devoid of organic matter, lying between Zone II and a limestone/clay substrate approximately one meter below the surface.

Eleven units terminated at clay or sandy clay strata located 0.23 m to 0.59 m below the surface (Figure 7). Five of these clay strata contained pockets of limerock or were mixed with limerock. In general, clay was tannish orange or orange in color; in square 464N 563E the clay was very sticky (it had been raining very regularly), light grey with tan streaks and some hematite inclusions. The base of square 461N 459E (Trench #5) was irregular-surfaced, orange-tan sandy clay with pockets of sticky grey and pink clay and limestone. The clay samples have not been analyzed at the time of this writing.

It is difficult to generalize surface contours since the pine planting has left furrows and ridges, filled in some areas and scooped out others. Overall, the borders of the site are lower and elevation increases toward the area of the site around Group/Structure C and Trench #2 from whence it continues to increase toward the mission buildings but drops off toward the spring. From Structure B (Group A), the land falls off regularly to the north.

CHAPTER FIVE
STRUCTURAL REMAINS AND MATERIAL CULTURE AT BAPTIZING SPRING

Definite remains of two Spanish structures and two Indian structural/activity areas were encountered at the Baptizing Spring site. Clearing, stump removal, plowing, and bedding had severely disturbed structural features in the Spanish building areas (Structures A and B). Disruption of these remain was greater than that of the aboriginal structural areas primarily because the former were nearer the surface. Since the Spanish structures were defined largely on the basis of packed red clay floor areas (Structure B) and red clayey sand areas (Structure A) rather than postholes which would be afforded greater protection by being deeper below the surface, there is little that can be said about the two presumed Spanish structures. Shape and size were estimated from location of red clay flooring and/or wall rubble, a few postholes/molds, charred wood remains, and concentration of nails and spikes. To begin this discussion, it will be instructive to review architectural information elicited from less disturbed mission sites.

The four mission buildings, two at each site, uncovered at Scott Miller and Pine Tuft had been destroyed by fire as indicated by charred wood remains and differentially fire-baked clay flooring (Morrell and Jones 1970; Smith 1951). The Morrell and Jones architectural study of the two Spanish buildings at Pine Tuft is more detailed than Smith's and will be discussed first. The two buildings faced each other and stood roughly 20 m apart (Morrell and Jones 1970:41). The smaller building measured approximately 5 m by 6 m and was designated the "convento," living quarters for the priest. Large upright posts, resting on or slightly below the

the original ground surface, possibly supported a central beam which suggests that the roof was gabled. At least two outer walls and a possible interior partition had been constructed of wattle and daub: small upright poles were interlaced with thinner wattles and the frame was then packed with clay on both sides. The authors postulated that the two remaining walls were vertical plank construction. The only threshhold encountered faced the southwest (Morrell and Jones 1970:33).

The larger Pine Tuft structure was actually a complex of building and "compound", or palisade, walls. Designated the "church", this building consisted of five separate rooms within the covered area (approximately 18 m NW-SE by 9 m NE-SW). The compound wall, one long outer wall of the structure, and four sections of partition walls were wattle and daub. Upright wattles, indicated by postmolds, averaged 4 cm in diameter and were spaced roughly 15 cm apart. Horizontal wattles -- twigs or vines -- averaged 1 cm in diameter. Impressions of plank shoring in the clay wall base suggested that wattle uprights had been placed in soft clay confined by plank forms, thus removing the need to dig individual postholes. Daub fragments occasionally showed evidence of a fine clay and sand stucco applied to one side and painted with whitewash. Two varieties of plank wall construction were identified. In one method, wall planks were nailed to horizontal timber shoes at the floor level (and presumably at a wall cap). In the other method, wall shoes were not used and upright planks were simply buried 1-2 cm below ground surface (Morrell and Jones 1970:35,36).

Extensive areas of undisturbed clay floor indicated that all construction was preceded by levelling the site. Large supporting timbers were then erected directly on the surface, the walls were constructed, and the threshhold planking laid. Clay flooring was spread as a final stage (Morrell and Jones 1970:37).

At Scott Miller, six to ten large postholes plus clay floor rubble defined the "convent" (priest's living quarters) as roughly 5 m by 6 m. The area was badly disturbed by plowing, however, and actual dimensions could not be ascertained. Fragments of unplastered daub indicated that this building was also wattle and daub but posts were apparently sunk into the ground. No room partition evidence was found. Smith (1951:119) concluded that the walls of this building were not over "2 feet," about 61 cm, high. This is either a typographical error or the structure was not a living area for priests. Possibly, erosion had been so extensive as to render calculation of wall height unfeasible.

The larger building plan was very similar to the "church" at Pine Tuft. Smith (1951:120) interpreted the remains as representing two buildings connected and enclosed by a compound wall. The larger building or room within this complex measured about 8 m by 5 m and the smaller one was approximately 6 m by 3 m. Interior wall faces of the larger unit had been plastered (1951:120). In general, it is difficult to compare Smith's description with Morrell's and Jones'. It is obvious that interests were directed toward different aspects of the sites. In addition, disturbance seemed to have been more extensive at Scott Miller than at Pine Tuft.

Structures at Baptizing Spring

Attempts have been made to keep the description of the structures at Baptizing Spring as brief as possible. More detailed descriptions are included in Appendix A, however, which summarizes data from both the 1976 and 1978 field seasons. The greatest difficulty lies in presenting depths below surface and depths below datum of the various features and living floors. Depths below surface are misleading because the surface was naturally undulating and plow troughs and ridges created differences of 20-30 cm in datum readings within a single excavation unit. In addition, below surface measurements reflect erosional deposition as well as other mechanisms of soil deposition, or removal, in the last 300 years. The larger Spanish structure (B) was situated on a hummock and cultural and construction debris were exposed on the surface. In general, occupation floors occurred between 20 cm and 40 cm below the present surface in all structural areas. There were features which first appeared at greater depths but these were few in number.

Spanish Structural Areas

Conditions of the two Spanish living/activity quarters at Baptizing Spring were not conducive to accurate or extensive description. The larger Structure B showed evidence of destruction by fire (Ling 1976:33). Remains of packed red clay floor, some charred wood, five charred posts, and sections of two wall "trenches" defined a structure roughly 10 m east-west by 8 m north-south (Figure 8). No evidence of compound walls or adjoining structures was located. Since this was the larger structure and artifact density was considerably less than in the smaller Spanish structure, this building was tentatively identified as the "church". The outline of the building may have been marked with a shallow trench and posts set upright and then anchored with packed clay in a manner similar to that suggested at the Pine Tuft site for the "convent" and at San Pedro de Potohiriba. "Trench" remains were situated around the northwest corner and southwest corner of the structure. The latter trench/floor section first appeared at 1.86 m below datum (mBD), or about 0.30 m below the surface.

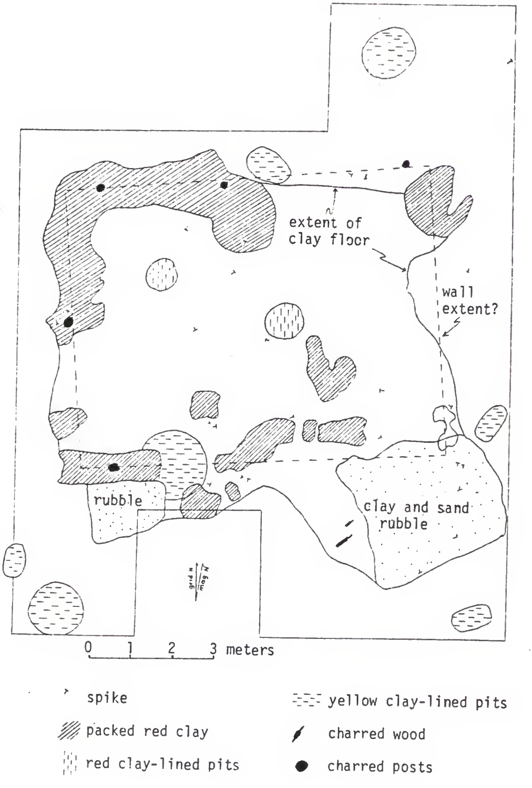


Figure 8. Excavation and Floor Plan of Structure B. Adopted from map executed by Dr. J.T. Milanich (1976).

Burnt daub fragments and wrought iron nails and spikes were recovered from the wall "trenches" and were also found scattered within the structure. The southernmost trench overlapped a yellow clay-lined, circular pit which was roughly 1.44 m in diameter (Figure 8). This feature was filled with consolidated red clay beginning about 0.58 m below the surface and extending for 0.37 m. It was postulated that this may have been a "puddling" basin where daub clay was mixed. This pit was bisected by the wall which would have allowed workers to apply daub to both sides of the wall at the same time. After the erected wall frame had been daubed, the floor was laid down, further anchoring the walls and covering the pit (Jerald T. Milanich, personal communication 1979). The pit first became visible roughly 0.20 m below the surface of the floor; upper portions of the pit, if they existed, may have been disturbed during plowing.

Seven or eight other basin-shaped, clay-lined features were associated with Structure B: two within the structural limits and the rest outside. Clay linings varied from 5 cm to about 9 cm in thickness. Those features outside the structure were lined with yellow clay whereas the two within the structure were filled with red clay. All were below the general elevation of the structure floor. The clay basin in the central area of the structure was about 45 cm below the present ground surface and extended to a depth of roughly 70 cm below the surface. The other interior feature was roughly 30 cm below the present surface.

Five of the six basin features outside the structure were lined with yellow clay. The possibility that these features represented grave pits had been postulated (Ling 1976) but there does not appear to be any basis for that designation. No known prehistoric burials and none of the historic burials reported from other mission sites have occurred in clay-lined crypts. Bone recovered from these pits was very fragmentary and scarce. Recovered bone from one of the features, however, could be identified as gopher tortoise (Gopherus polyphemus). Soil samples from inside one of the features and outside another of the features were taken to be tested for phosphorus content. Cornwall (1958:196) stated that a concentration of phosphate at any level in an archeological site could be taken as an indication of a surface occupied by man or by animals. Since phosphorus in chemically bound forms is retained in soil (i.e. does not leach downward or migrate), its presence can be useful in determining old living floors. It was suggested that high phosphorus content within the basin-shaped features might indicate use as burial pits although, in actuality, it would only indicate that organic residue were more common within the pit than outside the pit. Higher phosphate content could not be attributed solely to human burial. The retention of phosphorus in soils was discussed in Chapter Four. Organic matter content, the presence of calcium, iron, and clay minerals (aluminum) all influence phosphorus retention. The fact that the pits were lined with clay (and sometimes the fill was mixed with clay) and organic matter content may have been higher simply because the humic acids could not leach through the clay as they could in sand would serve to enhance phosphorus content within these features. In addition, humic acids are responsible for releasing phosphorus from compounds which are insoluble in water.

The two soil samples mentioned above plus a sample from a clay-lined feature in the village and an area of brown stained earth west of Structure B were all tested for phosphorus (elemental). The fill from the village feature had the highest phosphorus content (about 165 ppm) and this fill sample was also the only one which contained substantial organic matter and calcium (1300 ppm). Fill from within a clay-lined feature near Structure B had a phosphorus content of about 24 ppm and 98 ppm of calcium. The other two samples from outside a clay lined feature and from the soil stain area were low in calcium (60 ppm and 42 ppm, respectively) and phosphorus (12 ppm and 10 ppm, respectively). The only "high" phosphorus reading, then, was from the feature fill of the clay-lined pit in the village (see below) and this seems to have been correlated not only with the higher organic content of the sample but also the high calcium content and, probably, the presence of clay minerals. The data from the phosphorus test, then, is inconclusive except that, on the basis of only two samples, phosphorus content is slightly-to-greatly higher within the features than outside the features. These differences, however, are influenced by a number of factors and cannot be attributed to the presence of bone, let alone human bone.

The features associated with Structure B varied in size from 76 cm by 47 cm up to 115 cm by 109 cm. If these were burial pits, individuals would have to have been either buried in flexed positions or children. The former is unlikely since Jones only found two semi-flexed burials out of the numerous burials excavated at several mission sites. The common burial mode was "Christian" -- supine, extended, hands crossed over chest. In addition, if this was a burial area, it does not follow the pattern of other mission cemeteries wherein individuals are laid in tight rows.

Another pit of the same type associated with Structure B was located during the 1978 season in squares adjacent to Trench #2, roughly 100 m away from the Spanish area. This feature contained very few artifacts and lumps of what appeared to be hard, yellow-brown clay. The results of the soil analysis were mentioned above.

At this time, there is no obvious explanation of the function of these clay-lined features. They may have served as specialized storage or processing pits where the clay-lining acted to prevent animal infestation or to enhance moisture retention. Why they were clustered around Structure B is not apparent. If the structure was a church, and possibly, therefore, the center of village focus and activities, these features may have been related to storage or special activities carried on under the guidance and watchfulness of the priest. A single pit was located in the village, however, and another was associated with the smaller Spanish structure. Possibly more of these features are present in the village and have not been located yet. The actual function of these features is still undetermined .

Both structures in the Spanish sector of the village seem to have been oriented more or less east-west along their long axes. Structure B was situated on a noticeable rise (approximately 20-30 cm above the next highest structures, C and possibly one adjacent to Trench #2) about 40 m west of the spring. Structure A, the smaller of the two Spanish structures, was located about 30 m NNW of Structure B. Artifact concentration, as determined by surface observation and mapping in 1978, indicate that this structure was at the northern limit of the main village area. Structural evidence had been severely disturbed by plowing. Dimensions were tentatively determined from the red sandy clay which outlined the western end, two postholes, and other areas of sandy clay (Figure 9). On this basis, calculated size of the structure was roughly 7 m by 7.5 m. No architectural or construction features could be identified although the structure did not have a clay floor. Walls were probably wattle and daub.

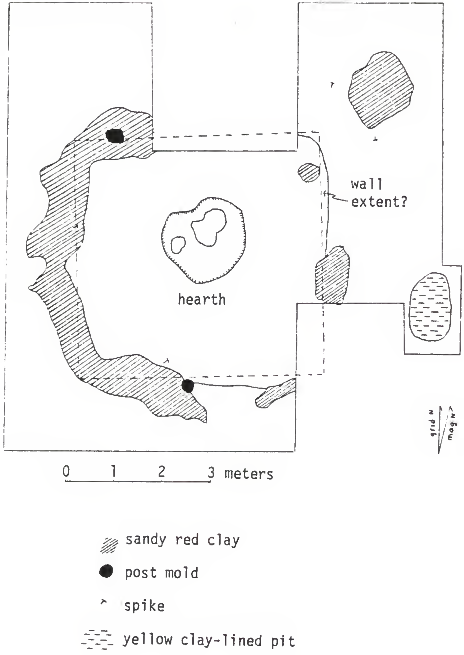


Figure 9. Excavation and Floor Plan of Structure A. Adapted from map executed by Dr. J.T. Milanich (1976).

The outstanding feature in Structure A was large (1.35 m by 1.38 m), centrally located hearth (see Appendix A). It was characterized by two circular areas of ashy sand and charred wood which could first be mapped at 3.51 mBD (about 20 cm below the surface); they were 11 cm thick and located in the center of the hearth (Figure 9). The depth below datum reflects the fact that this area of the site was one of the "lowest" (i.e. furthest down slope).

Roughly 2 m east of the southwest corner of Structure A was another clay-lined pit. Exterior dimensions were 1.28 m by 0.87 m. The top of this feature was first mapped at 3.80 mBD although the surface had sloped downward from the center of the structure; therefore it was probably only 20-30 cm below the surface.

Neither of the two structural areas compared with those at Pine Tuft and Scott Miller although all three smaller structures ("convents") had similar dimensions. They were definitely of Spanish origin as indicated by hewn post contruction held together with wrought nails and spikes and by the red clay flooring (in Structure B). Ling (1976:32) has suggested that the smaller structure may have been a detached kitchen which might explain the large, central hearth. If this were a kitchen, then the other structure may have been the actual living quarters for the priests, however artifact concentration was lower in Structure B than might be expected if this were the case. On the whole, both structures were less elaborate than the ones in Apalache, particularly the hypothesized churches. The latter missions, however, served more people than did the Utina doctrinas and were probably more important in view of the greater potential for agricultural productivity and participation in trade networks with Indians outside Spanish influence.

From the point of view of this research, the important fact is that these two building areas probably constituted Spanish living/activity areas during the period of major habitation activity at this site. Spanish artifacts, including nails and spikes and ceramics, made up a larger proportion of the material assemblage here than in other parts of the village. Artifact concentration, especially of ceramics, was greater in Structure A than in Structure B. The mission at Baptizing Spring would have been earlier than the Apalache missions which were not established until 1633 or later. The probable earlier occupation and smaller congregation may explain the less elaborate floor plan of the larger building if it was the church. In addition, there was a greater need to build more fortified structures in Apalache since that area was closer to openly hostile Indian tribes to the north.

It has been presented as fact that Baptizing Spring was a doctrina with a resident priest rather than a visita which a priest visited on weekly or less regular occasions. The basis for this assumption has rested primarily on the architectural evidence and (discussed in Chapter Six) comparison of the artifact assemblage with the assemblage from the Richardson site (Milanich 1972), a Potano site which has been tentatively identified as the visita of Apalo. The latter site contained fewer Spanish ceramics and other Spanish artifacts than did Baptizing Spring.

Aboriginal Structures

The only good data on previously excavated Indian structures dating to the period of this mission is from the Potano village, the Richardson site (ca. A.D. 1600–A.D. 1650). Three areas of concentrated features, postholes, and smudge pits (small pits packed with charred wood) were located. Milanich (1972) summarized structural evidence and patterning as follows:

> houses were built about 70 feet apart . . . The houses were circular, about 25 feet in diameter, and were constructed of vertical posts set 2 to 3 feet apart . . . Cooking was done within the house structure in circular or oval, often bell-shaped pits 1 to 2 feet in diameter and 1 to 1.5 feet deep . . . Multiple fire pits containing bone from the same animal and sherds from the same pot suggest coeval usage of the pits (Milanich 1972:54-55).

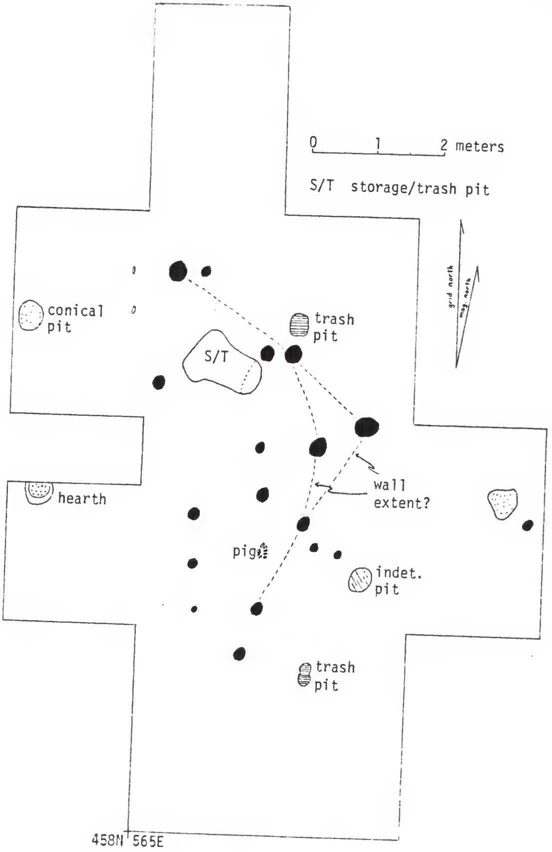
Milanich suggested that the "smudge pits" were lit beneath bed platforms in order to ward off mosquitoes and that these smudges were cleaned out and re-used (Milanich 1972:55).

The two definite and almost completely excavated aboriginal structures at Baptizing Spring were easily definable on the basis of clustering of postholes/molds, features, and artifacts. Structure D (Figure 10) was the less complex of the two in terms of posthole patterning. Five large postholes (ca. 25 cm in diameter) described roughly one-third of a circular, oval or squarish structure which was probably about 6 m across. Identification of structure shape can be extremely misleading and it is preferable to note merely that a structure was represented.

First appearance of postholes and features occurred between 20 cm and 60 cm below the surface (roughly 2.37 mBD to 2.81 mBD). It is probable that some posts were replaced at different times, although the degree of overlap and irregular spacing was minimal. An additional factor in depth below datum variation of the postholes would be introduced by rotting or burning which affected varying lengths of the posts.

Eight features were identified within Structure D. The largest was a rectanguloid, deep pit which was probably used for storage and later filled with refuse. The articulated, partial skeleton of a pig

Figure 10. Excavation and Floor Plan of Structure D.

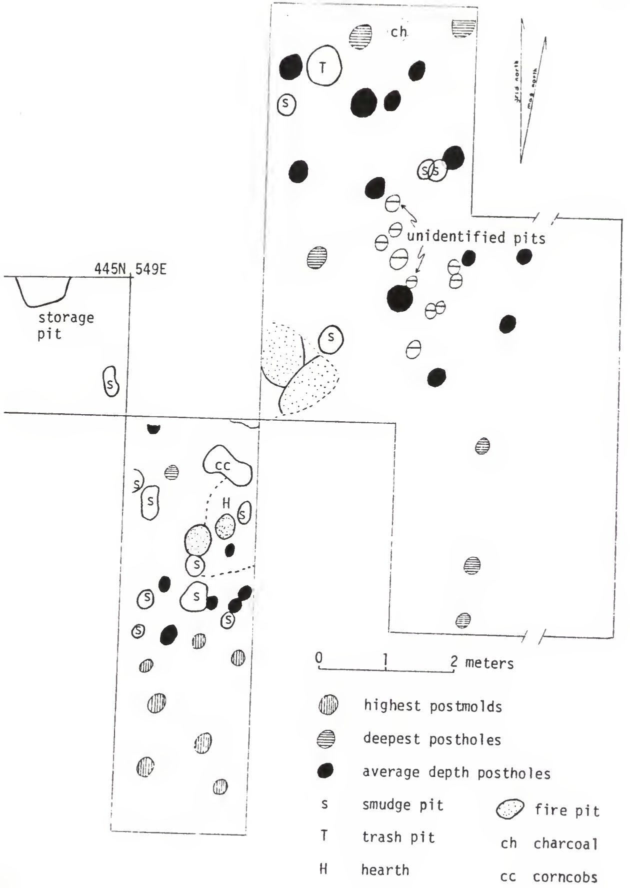

0 1 2 meters
S/T storage/trash pit
grid north
mag. north
conical pit
trash pit
S/T
hearth
wall extent?
pig
indet. pit
trash pit
458N 565E

(Sus scrofa) was recovered within the structural limits. It consisted of the vertebral column, ribs, and a scapula. The bone was in extremely poor condition and it was repeatedly treated with an ethulose-carbowax solution before removal (in a block of dirt) to the laboratory for cleaning. No pit or evidence of intrusion was visible.

Other features included two round-bottomed, conical pits -- 40 cm and 45 cm in diameter -- dug into clay. These may have been postholes, pits formed when clay was removed, or the result of some natural process such as the decay of pine tap roots. They did not contain any artifacts. A small, possible hearth surrounded by areas of sand which had been burned orange, and two small refuse pits were the only other features in this structure. One of the latter contained a relatively large amount of well-preserved faunal material: remains of gopher tortoise, raccoon, fish, and unidentifiable mammal and other bone fragments. The other refuse pit contained very fragmentary corncobs and charcoal. A possible feature of indeterminate nature was a shallow, circular pit, 32 cm in diameter. This may have been a large posthole or cleaned-out trash pit.

The other intensively examined aboriginal area, Structure C, was located approximately 20 m SSW of Structure D. The complexity of overlapping posthole patterns precludes reasonable attempts at estimating structure size and shape (Figure 11). The seven southern postmolds were closer to the surface than other postholes and most of the features. The fact that these southernmost postmolds consisted of chunks of carbonized wood suggests that a later addition to the original structure, or a completely different structure, had burned. In general, most cultural features first appeared between 2.13 mBD and 2.19 mBD, roughly 30-35 cm below the surface.

Figure 11. Excavation and Floor Plan of Structure C. (Break indicates length of 1 m.)


ch
T
S
unidentified pits
445N 549E
storage
pit
cc
H
0
1
2 meters
highest postmolds
deepest postholes
average depth postholes
s smudge pit
T trash pit
H hearth
fire pit
ch charcoal
cc corncobs

Thirteen possible "smudge pits" filled with carbonized corncobs were encountered and were the primary distinguishing features between the two aboriginal structures. Ten of these features were shaped like postholes (i.e. circular in shape with rounded bases) and the other three were bilobed or basin-shaped. The latter usually had heavily packed cobs in one end of the feature and their appearance suggested that they were actually the same as the round pits only they had been scooped out in cleaning and re-used.

Two fire pit areas were discovered, at least one of which might be classified as a hearth area (Figure 11). One of these areas consisted of two, deep, overlapping pits which contained a great amount (relatively) of faunal material, principally parts of three white-tail deer (Odocoileus virginianus). The other area of fire pits, the probable hearth area, was more or less centrally-located in the structural area. It consisted of two circular fire pits, 30 cm and 40 cm in diameter, which joined via a "bottleneck" at their bases. These pits contained only large chunks of charcoal. The vicinity around these co-features was stained dark grey and contained some artifacts and scattered corncobs. At the northern end of the stained region there was a concentration of corncobs which was only 3 cm thick.

Other features in this structural area included a deep trash pit, 58 cm in diameter, in the northernmost excavation unit and a large, deep storage pit in the westernmost excavation unit. The majority of food bone was found in the two 3 m by 3 m squares excavated during 1976.

The remaining excavations in the Indian sector of the village were directed toward testing a larger area of the site. Features were encountered in two other areas but time did not allow extensive excavation. A possible structural area -- certainly an activity area -- was located 30 m southwest of Structure C in the area of Trench #2. Two postholes which were 20 cm in diameter and a large, clay-lined pit were discovered in this area rich in artifacts (Figure 12). The postholes first appeared at 1.61 mBD and 1.74 mBD (about 30-40 cm below the present surface) within the range of depth below datum of the postholes in Structure C even though the surface in this area is currently about 30 cm higher in elevation than in the Group C region. The clay-lined pit was 1.45 m by 1.30 m and was 0.28 m deep. Stratification within this sloping-walled, basin-shaped feature was rather complex (Figure 13) compared to most features. The rounded base sloped gradually downward from the southern end, then rose sharply at the northern end. There were very few artifacts associated with this feature: eight sherds, a few waste lithic flakes, and fragments of an artiodactyl (probably deer) tooth.

The last area where features were encountered was in the central portion of Trench #1, roughly 24 m SSW of the area just described. An ovoid trash pit, two conical pits, three definite postholes, one possible pit, and a large posthole or small pit of indeterminate function were discovered in a three square meter area (Figure 14). The rectanguloid trash pit, 70 cm long and 28 cm deep, contained well-preserved faunal material (including fish vertebrae), sherds, and lithic artifacts. Several large sherds were also recovered from a dark stain tangent to this feature. Again, the primary living floor appeared to lie roughly 40 cm below the surface, although the undulating contours created by the plow troughs and ridges make this generalization difficult.

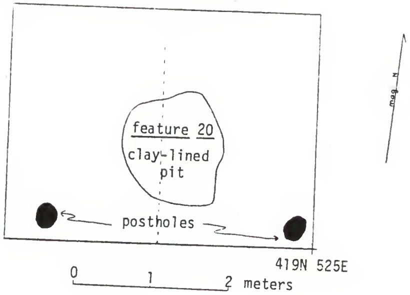
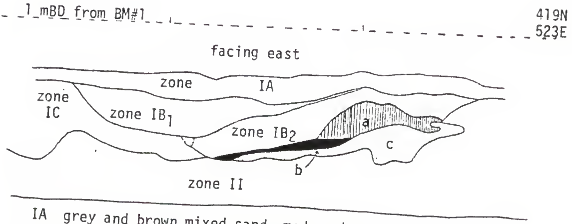


Figure 12. Clay-lined Feature (20) in Squares Adjacent to Trench #2.



IA grey and brown mixed sand, modern humus
IB_1 grey-brown and tan mottled sand with charcoal flecks
IB_2 grey-brown sand flecked with charcoal
IC dark tan sand with grey mottling
II tan sand with dark tan mottling

a brown sand with charcoal and orange clay "flecks"
b lens of grey-brown sand with orange clay "flecks"
c brown-orange clay with charcoal flecks

} feature 20

Figure 13. Profile of Clay-lined Feature (20) and East Wall of Square 419N 521E in Village, Adjacent to Trench #2.

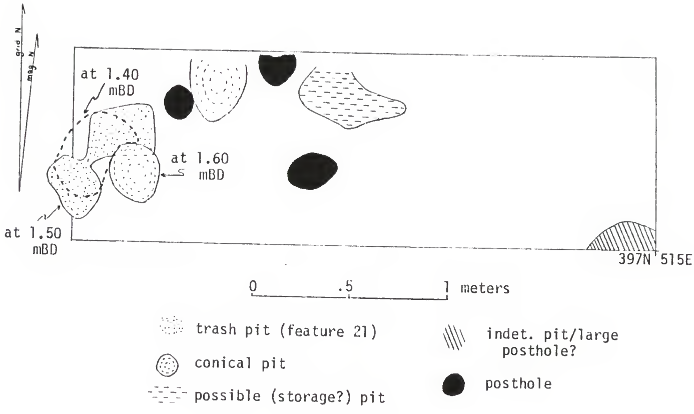


Figure 14. Cultural Features in Central Portion of Trench #1 at Baptizing Spring.

Structural Relationships

Structure A, the smaller Spanish building, was approximately 30 m NNW of the larger Spanish structure B. It was situated at the apparent northernmost boundary of the primary mission village, further downhill than any of the other structures. Stake elevations varied considerably, as already mentioned, but Structure B appears to have been located in one of the highest regions of the site. (At one time, two transit stations had been established during the 1976 field season and at least one reported change in datum elevation occurred. It has been assumed that the latest entry in the field notes is the correct one and that all elevation readings had been corrected to the new datum.)

Structures C and D were in roughly the same relationship to Structure B, 85 m and 80 m away, respectively. Structure D, however, was located ESE of Structure B and Structure C was more directly south of it. The area of Feature 20/Trench #2 was about 97 m SSE of Structure B and the cultural area of Trench #1 was 130 m south of Structure B.

If the two areas described in the previous section were living areas, a possibility further enhanced by their positions relative to Structures C and D, it would appear that structures were situated 20-30 m apart and were more or less linearly arranged, in this case along a NNE-SSW axis. This hypothetical pattern rests on incomplete excavation data and spatial relations other than those elicited in the excavation are unknown. This particular pattern may be merely a reflection of the areas excavated although choice of these units was coincidental with structural remains.

The 1976 trenches were very low in artifact concentration and it is possible that a plaza was centrally located within the village just south of Structure B. Excavation units located near mapped site boundaries were also low in artifact concentration.

Lithic Artifacts

Lithic artifacts will be considered by aggregated tool or debitage groups in this section. Raw data is presented in Appendix B. Data was computerized and stored on disk in an SPSS system file (Nie *et al.* 1975:81-88) at the Northeast Regional Data Center on the University of Florida campus. Since each provenience was treated as a single observation, it was necessary to provide each lithic tool or debitage type with a variable label and separate identity. This produced almost 200 lithic variables, many of which were functional or form duplicates but differed in the presence or absence of thermal alteration.

Three very broad categories were recognized: (1) worked, or deliberately flaked tools; (2) utilized tools which showed use wear but were otherwise unmodified; and (3) debitage or wastage. Within these categories, subdivisions were made dependent on characteristics specific to each group. Worked tools (e.g. points, knives, scrapers, choppers, etc.) were classified functionally, on the basis of flake removal locations (unifacial, edge-retouched, etc.), and by presence or absence of heat treatment. Wear was also identified on worked tools in order to place them in hypothetical functional categories. Utilized tools were classified according to type of use wear and form (e.g. flakes, blades, blocky fragments, etc.). Debitage was grouped according to form. Both latter groups were also subdivided according to thermal alteration or lack thereof. In addition, use of silicified coral was noted for all categories.

Most of the terms used will be familiar ones but a general comment on identification of use wear is necessary. Although identification of use wear, particularly the assignment of functional meaning, is often questioned, it is believed that the classification system used here is a fairly common one. Whether or not actual function can be ascribed to these tools is not necessarily a matter of great concern to this study. It is important to note that the analysis of lithics from Baptizing Spring and the adjacent surveyed sites were performed by the same individual employing the same criteria. There is, therefore, consistency in the identification of the various lithic artifacts and the different sites can be compared. A very brief discussion of criteria used in classification is presented below.

Use Wear and Form Classification

Projectile points were identified according to type descriptions in Bullen (1975) when applicable, or were assigned descriptive names. In all cases, only those points and preforms (point blanks) which did not exhibit use wear were considered in these categories. A few small points, usually Pinellas types, had been reworked into scrapers or drills. In some instances, fragments of points or whole preforms could only be identified according to size: "small" was less than 4 cm in length and "medium-large" (abbreviated "med-lge") was greater than 4 cm in length.

Most of the classification groups listed in Appendix B need no further mention since unifacial flaking, retouching, and so forth are self-explanatory terms. What is needed, however, is definitions of the various use wear categories since these will be used in the following discussions. Some of the following "types" will be illustrated in Figure 15.

Scrapers were the most common kinds of tools. The criterion used in identification was presence of uniform, crescentic flake scars along one face of an edge (Figure 15a). Tools were classified as sidescrapers

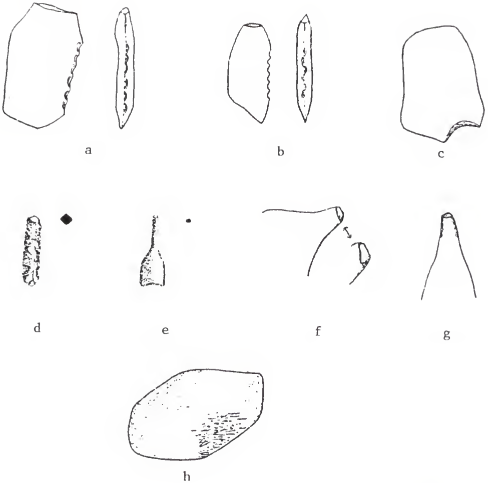


Figure 15. Simplified Examples of Use Wear (Flaking Scars Exaggerated). (a) scraper; (b) knife; (c) spokeshave; (d) worked drill; (e) worked awl; (f) graver, note flake removal only on one edge and at edge of tip; (g) perforator, flakes removed on more than one edge; (h) hammerstone/peckingstone.

(use wear along the long side), endscrapers (use wear along the short side and/or opposite the bulb of percussion), and others depending on location of wear. This kind of flake scar pattern is produced when tools are scraped along a surface at an angle to it.

Criteria used to identify knives included (1) uniform flake removal, usually crescentic, producing rounded notches along an edge; and (2) flake removal from both sides of the edge, producing a somewhat "wavy" scar pattern (Figure 15b).

Spokeshaves have also been referred to as shaft straighteners and are characterized by the presence of semi-lunar notches (Figure 15c). Since these tools are, theoretically, used in a scraping manner (down the shaft of bone, a length of cane or wood, etc.), only those tools which had scraper-like flaking scars around the notch edge were classified as spokeshaves.

Drills and awls were identified only for worked tools, primarily on the basis of form. Drills were identified as long, narrow tools with squarish cross-sections and which showed flake removal at and just above a pointed or blunted tip (Figure 15d). Theoretically, awls are used for puncturing softer materials such as leather rather than for drilling bone or wood although the general purpose of both is to make a hole. Tools with relatively narrow and sharp points were classified as awls. In general, awls were thinner than drills and oval or circular in cross-section near the tip (Figure 15e).

Engraving tools, gravers, show use wear similar to scrapers since they are dragged or forced at an angle across a surface in order to score or groove it. These tools were identified by use wear at a point or corner which showed evidence of flake removal. The engraving end is usually blunted (Figure 15f).

Perforators are basically the same as awls but this tool type designation was reserved for unworked tools. Use wear entails a blunted corner or tip and small flakes removed part of the way up the edges. Gravers and perforators were differentiated by the presence of these flake scars along the edge near the tip (Figure 15g).

Peckingstones and hammerstones were aggregated during the analysis (although they were idenitified separately during the classification stage). Use wear is identical -- step fractures and signs of battering -- although the peckingstone may be more pitted since it is smaller and not used with as much force. Both are nodular in shape (Figure 15h). Choppers show the same battering as hammerstones but the evidence of major impact occurs along an edge as opposed to on a flat or blunt surface.

Adzes were probably the least abundant tool type. This tool is a relatively large planar scraper and flake removal predominates on the adjacent upper edge surface of a flat-bottomed lithic piece.

Several utilized and a few worked tools showed combinations of use wear patterns but, in general, composite tools were uncommon. Both utilized and debitage artifacts, and a few worked tools, were classified in form categories as well as use wear categories. These are reported for worked and utilized tools in Appendix B and for debitage in the body of the text.

Flakes, the most abundant form, were identified as any relatively flat lithic artifact with a bulb of percussion (the bulbous projection just below the point of impact which removed the flake from a larger core) which was not a blade (Figure 16a). Blades are often idenitifed on the basis of proportion -- a common formula is length equal to or

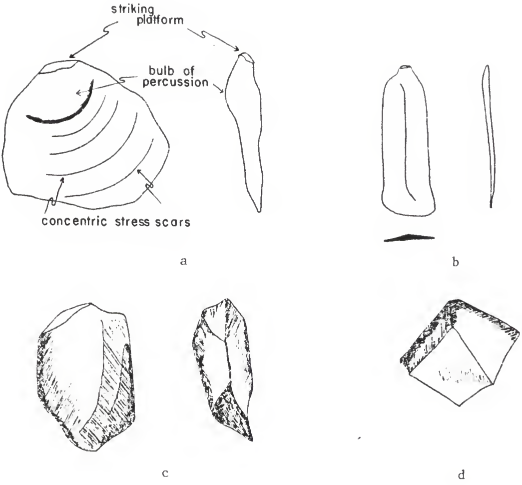


Figure 16. Generalized Lithic Artifact Forms. (a) flake; (b) blade; (c) blocky flake; (d) blocky fragment.

greater than two times the width. This, however, represents an inaccurate simplification since blades are formed using a special technique which results in (1) a thin fragment, (2) usually longer than it is wide, with (3) a very small or almost imperceptible bulb of percussion, and (4) one or two longtitudinal ridges which taper off to the side(s) at the end opposite the very small striking platform (Figure 16b). In cross-section, blades may be either triangular or trapezoidal. Blade-like flakes was the term used to designate flakes which were linear and had one or two central ridges but were thick in cross-section and had large or prominent striking platforms and bulbs of percussion.

Blocky flakes, as the name implies, were flakes which were thick and/or angular (Figure 16c). Blocky fragments were completely angular chunks of chert or coral (Figure 16d).

Debitage was classified into relative size categories which are not reported except for those flakes described as "very small" (less than or equal to one square centimeter in surface area). This category was tabulated since it constituted a large proportion of the 1978 sample. Very small flakes and thinning flakes are underrepresented in areas which were not screened or where screening was accomplished through larger mesh. Low relative abundance of these categories in some areas, therefore, cannot be attributed to actual proportions since recovery techniques probably introduced bias. Relative abundance of these categories is, however, considered to be accurate in the non-Spanish area where screening techniques were fairly consistent (although the 1976 trenches were not screened) and all lithic objects were sought and saved. Thinning flakes were also "very small", in general, and were differentiated on the basis of thinness, often transluscence, and absence of surface flaking and bulb of percussion.

Spalls and expended cores have been aggregated since they are similar in shape, although cores show evidence of flake removal, and were uncommon. Spalls may be considered as lookinh like bulbs of percussion without the attendant "flake." The final category, simply referred to as "cortex," consisted of blocky fragments or blocky flakes from the cortical region of a chert/silicified coral nodule.

Worked Lithic Artifacts

Of the total village lithic sample numbering 16,527 chert and silicified coral items, only 3.13% (n=518) were worked. Eighty-eight and eight-tenths percent of the worked tools were recovered from the Indian sector of the village versus 11.20% from the Spanish area. Table 3 presents raw and relative frequencies of worked lithic artifacts in Structure A, Structure B, the Spanish area (A+B), and the village, or Indian, area. Frequencies within areas A,B, and the village can be compared and Spanish versus Indian (i.e. ethnic areas) can be cross-compared since the area excavated in the aggregated Spanish group was approximately equal to the area excavated in the non-Spanish area. For purposes of general discussion, it is more appropriate to compare Structure A with Structure B and Spanish total with Indian total.

Small points, including such types as Ichtucknee, Pinellas, and Tampa Points, comprised 31.96% of the total worked lithic artifacts. Together, the Spanish areas contributed only five small points versus 142 from the village. In the latter area, Pinellas Points made up 74.29% of these. Ten small points, described here as having parallel sides and straight (n=9) or concave (n=1) bases, were the second most numerous small point type. These were recovered only from the village.

A number of medium to large points were recovered from both Spanish

Table 3. Worked Lithic Tools in the Spanish Areas, Spanish Area (Aggregated), and Village.

Description	Structure A	Structure B	Spanish Area	Village Area
Ichtucknee Point	0	1(3.57%)	1(1.72%)	8(1.74%)
Pinellas Point	2(6.67%)	0	2(3.45%)	78(16.96%)
Tampa Point	0	0	0	6(1.30%)
small point frag.	2(6.67%)	0	2(3.45%)	36(7.83%)
small point preform	0	0	0	4(0.87%)
straight sides & base point	0	0	0	9(1.96%)
straight sides & concave base	0	0	0	1(0.22%)
TOTAL SMALL POINTS	4(13.33%)	1(3.57%)	5(8.62%)	142(30.87%)
Thonotossassa Point	0	0	0	1(0.22%)
Archaic Stemmed Point	0	1(3.57%)	1(1.72%)	7(1.52%)
Morrow Mountain Point	0	0	0	1(0.22%)
Hamilton Point	0	0	0	1(0.22%)
Gadsden Point	0	0	0	1(0.22%)
Bolen Plain Point	2(6.67%)	0	2(3.45%)	3(0.65%)
Hardaway Point	0	0	0	1(0.22%)
Sumter Point	1(3.33%)	0	1(1.72%)	0
Oleno Point	0	0	0	1(0.22%)
Duval Point	1(3.33%)	2(7.14%)	3(5.17%)	2(0.43%)
crude eared point/ ear frag.	0	0	0	2(0.43%)
assymetrical thick point	0	0	0	1(0.22%)
med-lge point frag.	2(6.67%)	2(7.14%)	4(6.90%)	40(8.70%)
med-lge point preform	2(6.67%)	4(14.29%)	6(10.34%)	16(3.48%)
TOTAL MED-LGE POINTS	8(26.67%)	9(32.14%)	17(29.31%)	77(16.74%)
drill	0	0	0	20(4.35%)
awl	0	0	0	5(1.09%)
graver	1(3.33%)	0	1(1.72%)	3(0.65%)
scraper	5(16.67%)	7(25.00%)	12(20.69%)	80(17.39%)
knive	4(13.33%)	1(3.57%)	5(8.62%)	36(7.83%)
knife/scraper	0	0	0	3(0.65%)
spokeshave	1(3.33%)	0	1(1.72%)	0
spokeshave/scraper	0	0	0	6(1.30%)
graver/scraper	0	0	0	2(0.43%)
heavy chopper/ scraper	0	0	0	1(0.22%)
adze	1(3.33%)	0	1(1.72%)	5(1.09%)
chopper/hammer-pecking stone	2(6.67%)	4(14.29%)	6(10.34%)	8(1.74%)

Table 3--continued

gunflint	0	0	0	1(0.22%)
square biface, gunflint blank?	0	0	0	6(1.30%)
UID biface	3(10.00%)*	4(14.29%)	7(12.07%)	39(8.48%)
UID uniface	0	1(3.57%)	1(1.72%)	15(3.26%)
UID frag.	1(3.33%)	1(3.57%)	2(3.45%)	11(2.39%)
TOTAL WORKED	30(100.00%)	28(100.00%)	58(99.97%)	460(99.80%)

* UID is used an an abbreviation for "unidentifiable" throughout this manuscript.

and Indian areas. These points, dating from the early pre-ceramic Archaic up through Weeden Island periods (see Bullen 1975:6) constituted proportionately more of the worked lithic tools in the Spanish area (29.31%) than in the Indian area (16.74%). There were two to three times as many of these larger points in the Spanish sector than there were small points which are characteristic of the later prehistoric-protohistoric periods. On the slight chance that there might have been a correlation between depth and point type, nonparametric correlations were calculated using the SPSS (Statistical Package for the Social Sciences) version H subprogram NONPAR CORR (Nie et al. 1975:288). This routine was used because it does not depend on the assumption of normal distribution or metric quality of interval scales, although variables must be at least ordinal type.

All lithic artifacts were used as variables in various runs and were ranked by absolute abundance correlated with depth (zone). Only lithics from the 1978 excavation were used. Kendall's tau seemed to provide the more appropriate coefficient, as opposed to Spearman's r_s, since there was a fairly large number of cases classified into a relatively small number of categories and the chance of getting numerous ties in ranking was considered to be high. Both coefficients vary from -1.0 to +1.0; both were output using Option 6 of the subprogram. The only worked lithic variable which even approached a significant alpha (=.001 for Kendall's tau) provided a very weak, negative correlation with depth. This variable was heat-treated Pinellas Points with a tau value of -0.2679, the largest (absolute) coefficient of association.

In view of the lack of association between point type and depth, in addition to the scarcity of early ceramic markers at this site in general, the presence of these early point types may reflect collecting by priests and Indians. The fact that they were more numerous, relatively, in the region of the Spanish buildings suggests that they might have been collector's items much as all points are today. Conversely, earlier points were common in the vicinity and the nearby Pump Spring site had been identified as a probable Deptford period site. Occurrence in mission period midden may have been incidental, especially since none of the points exhibited signs of having been utilized or reworked.

It can be stated now that no lithic type showed significantly strong association, or even insignificantly strong association, with depth. The certain effects of plowing, erosion, flooding, root action, and animal burrowing cannot, however, be gauged.

The predominant tool type of the remaining worked lithic artifacts was the various kinds of scrapers which comprised 20.69% of the worked tools in the Spanish area and 17.39% of the worked artifacts in the village. The variety of worked lithic artifacts was considerably greater in the village with 36 aggregated categories than it was in the Spanish sector which had 18 categories. In addition to "traditional" worked lithic types, one aboriginally manufactured gunflint made from local chert was recovered from Structure D. Six square bifaces which showed evidence of percussion along one edge were also found in the village. These latter could not, however, be identified as gunflints.

Utilized Lithic Artifacts

Tools modified only through usage made up 7.25% of the total site sample. In proportion, utilized lithic artifacts were slightly more abundant in the Spanish area (9.89% of the total) than in the village area (6.82% of the total). Slightly more than 14% of the lithic artifacts in the larger Spanish structure were utilized compared to 7.08% in the smaller Spanish structure (Table 4). Again, variety of tool types was greater in the village and scrapers predominated with 66.37% of the utilized lithic artifacts in the village and 68.70% of the Spanish sector utilized lithic artifacts. Between the two Spanish structures, variety was slightly greater in the larger one which had eight categories as opposed to five categories in Structure A. Gravers and scrapers were relatively more abundant in Structure A than in Structure B and spokeshaves and scraper/spokeshaves were proportionately more numerous in the larger Spanish structure.

A well-worn, quartzite grinding/pounding stone (Figure 17b) was found above a corncob-filled feature in Structure C. Another atypical tool was a large, prism-shaped chunk of silicified coral whose pointed ends appeared to have been modified through use as a gouging tool (Figure 17a). Silicified coral, although not uncommon along the Suwannee River and around springs, made up a very small percentage of the raw material used in manufacturing tools. It was most abundant in the debitage group where it comprised only 1.50% of the raw material in the Spanish area and 1.37% of the debitage in the rest of the village.

Debitage

Overall, 86.82% of the lithic artifacts were debitage with a high of 89.98% in the village (probably inflated by the presence of very small and thinning flakes) and a low of 80.71% in Structure B. Flakes were the most common form of lithic waste and made up over 50% of the total (Table 5). Blades were least common in the village (0.50%) and cortical fragments and spalls and expended cores were least common in the

Table 4. Utilized Lithic Tools Aggregated by Functional (Use-wear) Group.

Utilized Group	Structure A	Structure B	Spanish Area	Village Area
scrapers	41(73.21%)	49(65.33%)	90(68.70%)	671(66.37%)
knives	2(3.57%)	2(3.67%)	4(3.05%)	93(9.20%)
gravers	7(12.50%)	6(8.00%)	13(9.92%)	61(6.03%)
spokeshaves	4(7.14%)	7(9.33%)	11(8.40%)	125(12.36%)
perforators	0	0	0	4(0.39%)
scraper/spokeshave	2(3.57%)	7(9.33%)	9(6.87%)	15(1.48%)
scraper/graver	0	1(1.33%)	1(0.76%)	9(0.89%)
scraper/knife	0	2(3.67%)	2(1.53%)	12(1.19%)
graver/knife	0	0	0	5(0.49%)
spokeshave/graver	0	0	0	2(0.20%)
perforator/scraper	0	0	0	1(0.10%)
spokeshave/knife	0	0	0	1(0.20%)
spokeshave/graver/knife	0	0	0	3(0.30%)
battered cf. peckingstone	0	1(1.33%)	1(0.76%)	7(0.69%)
utilized core	0	0	0	2(0.20%)*
TOTAL	56(99.99%)	75(99.99%)	131(99.99%)	1011(99.99%)**

* One of these core tools is a "palm-sized", prism-shaped gouging tool made from silicified coral.

** This total includes only chert and silicified coral tools. A quartzite grinding stone was recovered from the village.

Figure 17. Coral Core Gouging Tool (a) and Quartzite Grinding Stone (b).


a
b
1 2 3 4 cm

Table 5. Debitage by Form Group for Chert and Silicified Coral.

Form	Structure A	Structure B	Spanish Area	Village Area
flakes	504/5* (71.49%)	278/6 (64.50%)	782/11 (68.54%)	7238/116 (54.78%)
blades	8 (1.13%)	14/1 (3.25%)	22/1 (1.94%)	66/4 (0.50%)
blade-like flakes	25/1 (3.55%)	20 (4.64%)	45/1 (3.96%)	123/1 (0.93%)
blocky flakes	67/1 (9.50%)	48 (11.14%)	115/1 (10.12%)	698/14 (5.28%)
thinning flakes	12** (1.70%)	13/1** (3.02%)	25/1** (2.20%)	849/9** (6.43%)
"very small flakes" (less than 1 squ.cm)	29** (4.11%)	27** (6.26%)	56** (4.93%)	3449/22** (26.10%)
blocky fragments	58/1 (8.23%)	27/1 (6.26%)	85/2 (7.48%)	735/14 (5.56%)
spalls, expended cores	1 (0.14%)	3 (0.70%)	4 (0.35%)	19/1 (0.14%)
cortical fragments	1 (0.14%)	1 (0.23%)	2 (0.18%)	36 (0.27%)
TOTAL	705/8 (99.99%)	431/9 (100.00%)	1136/17 (100.00%)	13213/181 (99.99%)
% silicified coral of column total	1.13	2.09	1.50	1.37

* Number to right of slash indicates number of silicified coral.

**These numbers are probably biased by recovery techniques. Structure A material was not screened and the 1976 trenches (92 squ. m area) also was unscreened.

Spanish area (0.18% and 0.35%, respectively). In the village, flakes less than or equal to one square centimeter in surface area were the second major category comprising 26.10% of the total village debitage.

Spanish Artifacts

The majority of Spanish artifacts were recovered from Group B (Structure A) units and the vast majority of these were ceramics which, overall, made up the bulk of the Spanish artifacts (91.24%). Of the 40 non-ceramic items which were identifiable, 20.00% came from the Structure A area, 47.50% from Structure B, and 32.50% from the entire non-Spanish areas. Scraps of iron, fence staples, an iron pot leg, and iron ring were not included in these artifact counts because they came from mixed 17th and 19th century contexts. Over half of the non-ceramic artifacts were wrought nails (n=15) and spikes (n=8). Most of these, 69.56%, came from Structure B; 21.74% from Structure A, and 8.70% (n=2) from the village (Table 6). An iron axe head (possibly post-mission period) was recovered from the northeast, interior corner of Structure B and two possible knife blades were recovered from Structure D in the village. One iron knife blade was also recovered from Structure A.

Four lead shot, three approximately .62 caliber (musketballs) and one .20-.22 caliber, were recovered. The smaller shot was recovered from Zone II in Structure D and the three musketballs were recovered from Structure A, Structure B, and Trench #3 just west of Structure B. Both shot from the Spanish structures were distorted and heavily oxidized while the other two were in good condition, suggesting that they had either not been fired or had been fired into yielding objects or the ground.

Nine ornamental or potentially ornamental objects were recovered

Table 6. Non-ceramic Spanish Artifacts in Spanish Area (Structures A and B, combined) and Village Area.

Description	Spanish	Village	Excavation Total
copper rectangle	0	4 (30.77%)* (100.00%)	4
sheet copper	1 (3.70%) (100.00%)		1
copper bead	0	1 (7.69%) (100.00%)	1
religious medallion	0	1 (7.69%) (100.00%)	1
glass bead	1 (3.70%) (50.00%)	1 (7.69%) (50.00%)	2
wrought nail/spike	21 (77.78%) (91.30%)	2 (15.38%) (8.70%)	23
iron cf. knife blade	1 (3.70%) (33.33%)	2 (15.38%) (66.67%)	3
axe head	1** (3.70%) (100.00%)	0	1
lead shot/ musketball	2 (7.41%) (50.00%)	2 (15.38%) (50.00%)	4
TOTAL	27	13	40
% total of sample	67.50	32.50	

* First bracketed percentage below raw frequency is % of column total; second is % of row total.

**The axe head may not be Spanish but, rather, an artifact of a later 19th century occupation.

and seven of these were from the village. Two dark blue, spherical glass beads, one from Structure A and one from Structure D, were found. The latter's surface was pitted and slightly patinated; the bead from Structure A has not been seen by this author. The one bead was about 7 mm in diameter with a hole diameter of about 1.5 mm. Three cut, sheet copper rectangles and one pentangle were found in the village area (Figure 18). These are similar to the copper rectangles reported from San Juan del Puerto (McMurray 1973) which had holes punched in them. One of the copper rectangles from Baptizing Spring had been punctured. Possibly these copper pieces had been sewn or otherwise attached to clothing or had served some other decorative function. A small fragment of sheet copper was recovered from Structure B.

The village area yielded two other metal ornaments: a copper-alloy religious medallion and a rolled, embossed copper "bead". The medallion was more or less oval with small projections representing the stations of the cross, one of which was a loop eye (Figure 19). The obverse side was embossed with a seated (?), bearded male and the abbreviation "S. GIO. RVANGEL" (St. John the Evangelist in Italian). The reverse side showed the Virgin Mary standing on a crescent moon, surrounded by rays (?) and cloud (?) symbols. The New Catholic Encyclopedia (1967, Vol. 7:381) indicates that Mary on the crescent moon is a classic symbol of the Immaculate Conception popularized by the Spanish artist Murillo (1617-1682) during the 17th century. Murillo spent his entire life in Seville and at one time had considered the priesthood. His son eventually became a Franciscan. The artist studied under Velazquez from 1642 until 1645 and it was presumably during or shortly after this period that he painted the Virgin on the crescent moon. This symbol was

Figure 18. Copper and Glass Ornaments.
(a-b) copper squares;
(c) copper bead with bosses;
(d) blue glass bead


a
b
c
d
1
2
3
4
CM

Figure 19. Religious Medallion Found in Structure C. Left side illustrates reverse side, the Virgin standing on a crescent moon. Right side shows obverse with St. John the Evangelist, seated and possibly holding lamb (?) or other animal or infant on his lap. Actual maximum dimensions are 14 mm by 20 mm. The illustration is 6.6X actual size.

widely adopted in Catholic Europe, especially in Spain (New Catholic Encyclopedia 1969, Vol. 10:83). The medal was recovered from the upper 15 cm level (Zone IA) in the southeastern section of Structure C. When this symbol was first used on religious medals is unknown to this author but, conceivably, it was authorized by the Church shortly after its initial representation on canvas. Its presence at Baptizing Spring could indicate that the structure was occupied up to the middle of the 17th century, certainly post-1640.

The copper "bead" came from Zone I in Trench #2. It was almost triangular in cross-section and the rough-cut edges did not quite meet. The edge of one end was beveled and smooth while the other edge was jagged. Eight bosses, punched out from the interior (prior to folding the bead) were spaced below the beveled end and along the meeting edges (Figure 18). It was 14 mm long and 9-10 mm in cross-section.

Spanish Ceramics

Four hundred and twenty-seven European sherds were recovered: 71.43% from the Spanish structures and 28.57% from the village. Almost 87% of the Spanish ceramics in the Spanish area were from the smaller structure. Table 7 presents raw frequency and relative abundance (%) of types within areas and for the site as a whole. The most common European ceramic was utilitarian/storage -- unglazed olive jar, or tinaja, and a minor amount of green, lead-glazed olive jar, or storage jar. The next most common type, a tin-enamelled earthenware (i.e. majolica), was Ichtucknee Blue on White which comprised 33.96% of the total Spanish ceramics. The majority of this type came from Structure A and was reconstructed into most of a medium-sized plate (Figure 20).

Table 7. General Distribution of Identifiable Spanish Ceramics in Spanish and Indian Living/Activity Areas.

Type Name	Structure A	Structure B	Spanish Area	Village	Total per Type (% sum total)
Olive Jar	65(24.90%)	19(47.50%)	84(27.91%)	94(77.05%)	178 (42.08%)
Storage Jar	4(1.53%)	1(2.50%)	5(1.66%)	5(4.10%)	10 (2.36%)
Honeyware	3(1.15%)	0	3(1.00%)	0	3 (0.71%)
Santo Domingo Blue on White	27(10.34%)	12(30.00%)	39(12.96%)	10(8.20%)	49 (11.58%)
Ichtucknee Blue on Blue	4(1.53%)	2(5.00%)	6(1.99%)	1(0.82%)	7 (1.65%)
Ichtucknee Blue on White	139(53.26%)	2(5.00%)	141(46.84%)	4(3.28%)	145 (34.28%)
Columbia Plain	19(7.28%)	2(5.00%)	21(6.98%)	2(1.64%)	23 (5.44%)
Fig Springs Polychrome	0	0	0	3(2.46%)	3 (0.71%)
San Luis Blue on White	0	1(2.50%)	1(0.33%)	3?(2.46%)	4 (0.95%)
Green-glazed Columbia Plain	0	1(2.50%)	1(0.33%)	0	1 (0.24%)
TOTAL	261*(99.99%)	40*(100.00%)	301(100.00%)	122(100.00%)	423 (100.00%)

? Identified on basis of enamel and paste color/texture. No design visible and only blue flecks in enamel.

* Does not include two unidentifiable (too small) sherds.

Figure 20. Ichtucknee Blue on White Plate.


1 2 3 4
CM

Besides the olive jar, neck sherds of which belonged to the "Middle Variety" ca. 1580-1780 (Goggin 1960), and two to three plates, three other vessel forms were identifiable. Two partially reconstructed Columbia Plain vessels were of the common, shallow bowl form with flat to slightly concave bases (Goggin 1968:117-119). Goggin (p. 124) dated this type of majolica from ca. 1493 to pre-1650, noting that it appeared to be the most common form of the second half of the 16th century. Lister and Lister (1974:24) suggested the possibility that some Columbia Plain pottery was manufactured in Mexico and that these vessels were characterized by a glossy surface versus the grainy matte surface of Columbia Plain manufactured in Spain. Both matte and glassy finished sherds were represented although there appears to be little difference in plate form.

Santo Domingo Blue on White majolica, manufactured between 1550 and 1630 (Goggin 1968:131-134), was represented by two paste and vessel types. The most complete vessel form was a wide-mouthed, medium-sized bowl which had an acutely flared lip and small loop handles (Figure 21). On the exterior, enamel covered the lip-to-shoulder area and presumably covered the entire interior surface. The lip was decorated with blue "dashes". Vessel walls were thin and the paste was compact and bright orange in color. This paste color is atypical of the range described by Goggin's (1968) sample. The other Santo Domingo Blue on White vessel appears to have been an <u>albarelo</u> (tall jar). Vessel walls and base were relatively thick and the bottom was flat with a flaring foot. The interior surface was enamelled but enamelling on the exterior surface was apparently confined to the upper section. The surface was too badly weathered to determine design. The paste was soft and chalky, similar to

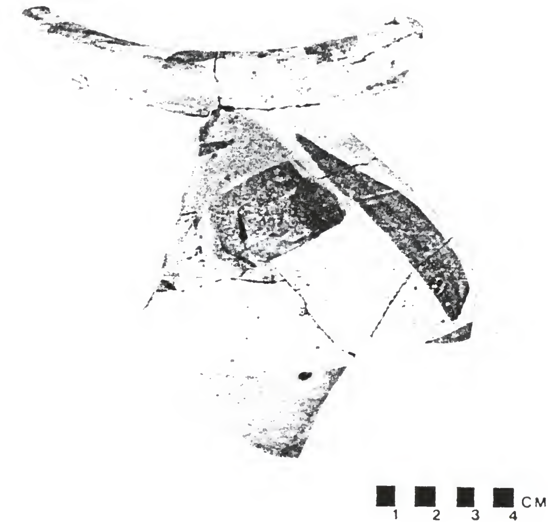


Figure 21. Santo Domingo Blue on White Handled Bowl. (Handle located in approximate center.)

Columbia Plain, and pinkish in color. The enamel was grainy matte and varied in color from greyish white to yellowish white.

Seven Ichtucknee Blue on Blue sherds were recovered; one was definitely part of a plate. This was a minor type, only 1.64% of the total Spanish ceramics. Goggin (1968:139) dated this type as mid-16th century, peaking ca. 1600 and disappearing by the mid-1600s. It represents an Italianate tradition in Spanish ceramics.

As mentioned above, Ichtucknee Blue on White dominated majolica in terms of abundance. Its chronological position has been estimated as the first half of the 17th century. It has been most closely associated with Fig Springs Polychrome but is often found with Ichtucknee Blue on Blue and Columbia Plain during the early portion of its range (Goggin 1968:150). At least two plates were represented.

The remaining majolica ceramics were minority types: Fig Springs Polychrome (ca. 1610-1660) and San Luis Blue on White (ca. 1630-1685) comprised 0.70% and 0.94%, respectively. Lister and Lister (1974:26) state that both of these types were manufactured in Mexico.

In the absence of documentation for this mission site, it had originally been assigned an occupation span in keeping with missions in this region. This span would cover most of the 17th century from around 1610 until 1685. The majolica types present corroborate this range and, on the basis of relative abundance, suggest that major activity occurred during the first half of the 17th century. It is possible that the mission declined after this period but the very small frequencies of Fig Springs Polychrome and San Luis Blue on White could reflect either the ineffectualness of the situado (royal subsidy) or the fact that very few goods imported from Mexico reached this mission.

The South Mean Ceramic Date Formula (South 1972) uses ceramic type raw frequencies and the estimated or known median date of the manufacture period to calculate an estimation of median occupation date for a site. In effect, it summarizes the ceramic seriation in a single index, the date of major historic activity at a site. Since the index is based on sherd frequencies, however, one must assume random sampling within the site and a normal distribution of sherds. One must also assume that all vessels were broken into the same number of sherds, which is unlikely, or must use numbers of vessels present instead of numbers of sherds. It is obvious that at Baptizing Spring the first two assumptions cannot be accepted. Excavation units were not randomly selected and Spanish ceramics were concentrated in a very limited area of the site. The third assumption cannot be accepted for any site.

Attempts were made to use the minimum number of vessels represented by the 232 identifiable majolica sherds. This was possible when identifiable parts of vessels, ware differences, and/or differences in enamel and decoration coloring were observable. Using this method, however, one must assume that a single sherd representing a minority type actually indicates that an entire vessel was present at one time and was used during the site occupation. It is important to note that the mean ceramic date formula could only approximate a median occupation date if ceramics were introduced, used, and discarded at a constant rate over the time span of occupation. The formula can be useful if no information is available regarding occupation period of the site. The assumptions which must be made, many of which are impossible to accept, must be kept in mind and discrepancies between the mean ceramic date and known date of occupation for historic sites ought to be examined.

In the face of all these problems with the mean ceramic date formula, it was used with Spanish majolica data from Baptizing Spring (Table 8). South's median dates (x_j) were derived by adding or subtracting an "index" from certain of Goggin's median dates when the latter did not produce a mean ceramic date in keeping with known median occupation dates for Spanish colonial sites (South 1974:96-122). Although the resulting dates may have produced concurring results, this seems a rather unsound method for adjusting one's formula to fit the data and, from a statistical standpoint, is questionable.

Dates calculated using both sherd and vessel frequency with Goggin's median dates and the three "corrected" median dates supplied by South, ranged from 1600.45 to 1617.10. Dates yielded using vessel number were lowest, possibly because vessel number was underestimated. The 1606.46 date ($x_j \cdot f_i$) would seem too low since Franciscans did not begin mission establishment in the interior until that date. Friars did visit the interior as early as the 1580s, however, and the question becomes one of whether or not they would have brought ceramic vessels as gifts or to use.

An obvious problem with the use of manufacturing dates is related to the previous point. Using a median date of 1535 (South's) or 1572 (Goggin's) for Columbia Plain is unreasonable considering the fact that until the late 1500s mission activities were confined to the Georgia/northeastern Florida coast. If, instead, median dates are calculated on the basis of earliest possible settlement within the area and the end manufacturing dates, very different results are obtained.

The beginning date of 1587 was used as the time of earliest possible Franciscan visitation to the interior although actual "settlement" did not occur until around 1606. The greatest influx of Spanish ceramics

Table 8. South's Mean Ceramic Date Formula Applied to Spanish Majolica from Baptizing Spring: Raw Sherd Frequency and Estimated Number of Vessels.

Type	Number $(f_i)/(n)$	Goggin Median Date (x_i)	Sherds $(x_i)(f_i)$	Vessels $(x_i)(n)$	South's Median Date (x_j)	Sherds $(x_j)(f_i)$	Vessels $(x_j)(n)$
Santo Domingo Blue on White	49/ 2	1590	77010	3180	1547	75801	3094
Fig Springs Polychrome	3/ 1	1635	4905	1635			
San Luis Blue on White	4/ 1	1660	6640	1660			
Ichtucknee Blue on White	145/ 2	1633	236785	3266			
Ichtucknee Blue on Blue	7/ 2	1600	11208	3200	1675	11725	3350
Columbia Plain	24/ 3	1572	37728	4716	1535	36840	4605
TOTAL	232/ 11		175168			372698	
Mean Ceramic Date			1617.10	1604.73		1606.46	1600.45

FORMULA: $MCD = \frac{\sum (x_i)(f_i)}{F}$, where x_i (or x_j) = median date for ith (jth) type
f_i = raw frequency of ith (jth) type
F = total raw frequency of sample

into the interior would not, however, have occured until missions were established. As pointed out, the mean ceramic date actually measures the mean date of maximum acquisition. The following ranges and median dates were used; 1587 was substituted when beginning manufacturing dates were earlier than that time (end dates taken from South 1974):

Santo Domingo Blue on White	1587-1630	1608
Fig Springs Polychrome	1610-1660	1635
San Luis Blue on White	1630-1690	1660
Ichtucknee Blue on Blue	1587-1650	1619
Ichtucknee Blue on White	1615-1650	1633
Columbia Plain	1587-1650	1612

Performing the same calculations as before, a median date of 1625.62 is obtained using sherd frequency and a date of 1622.82 is obtained using vessel number. The effect of employing the above date ranges is to negate the importance of changes in type frequency as manufacturing first occurs, peaks, and declines -- the classic popularity or battleship-shaped curve. Overall popularity and demands, however, do not account for the factor of differential access. Two households occupied during the same period may appear to have different median occupation dates simply because one could not afford or get access to Ichtucknee Blue on White plates, for instance, but had to settle for Columbia Plain bowls. The other household may have been able to, and preferred to, concentrate on collecting Ichtucknee Blue on White vessels. An additional assumption of the formula, therefore, is that persons at a site had equal access to all ceramics represented at the site. This is an oversimplification but it does point out that the mean ceramic date formula is also affected by consumption (and attendant factors) as well as production, distribution, and disposal.

Indian Manufactured Ceramics

A total of 10,710 non-European ceramics were recovered from the Baptizing Spring excavations, representing 96.20% of the total ceramics. In terms of different site areas, 91.16% of the total ceramics in Structure A were aboriginal, 91.95% of the sherds in Structure B were aboriginal and 98.40% of the village ceramics were non-European. Raw and relative frequencies according to identified categories and decorated ceramics are presented in Table 9. A few comments on identification are necessary before comparing types represented in the different areas. The primary discussion in this section will be concerned with decorated (i.e. surface modified) ceramics. The description of surface modification includes many informal "types" previously unclassified. The majority of ceramics were undecorated: 75.06% in Structure A, 70.31% in Structure B, and 58.16% in the village. There are several differences among undecorated ceramics which involve paste texture, color, surface finish, aplastic inclusions and size classes, and vessel forms. Often during analysis, however, "plain" sherds are given type names on the basis of association with particular decorated types. It is preferable to determine origin and nature of undecorated ceramics, at least, on the basis of technical attributes. Since this phase of the analysis has not been completed and wares cannot be grouped by identifying clusters of various attributes at this time, discussion of ceramics in this paper will be largely confined to decorated types. Some undecorated types such as St. Johns Plain, Miller Plain, and some Jefferson Ware plain will be mentioned since they are defined by either specific vessel forms or peculiar paste characteristics (e.g. St. Johns wares are characterized by moderate to abundant amounts of sponge spiculues in the clay body, producing a "chalky" ware which is easily identifiable).

Table 9. Raw and Relative Frequencies of Aboriginal Ceramics in Spanish and Indian Living/Activity Areas: Individual and Category Frequencies.

Sample Table Set-up

Name1 raw frequency (relative abundance in category)
Name2 raw frequency (relative abundance in category)

TOTAL CATEGORY category raw frequency
(% of total ceramics identified to category)
(% of decorated ceramics identified to category)

Name (Type or Descriptive)	Structure A	Structure B	Village
Aucilla Incised	3(16.67%)	4(57.14%)	2(5.88%)
Ocmulgee Fields Incised	14(77.78%)	2(28.57%)	3(8.88%)
Pinellas Incised	0	0	1(2.94%)
Weeden Island Incised	0	0	8(23.53%)
bold incised	0	0	2(5.88%)
red-filmed incised	0	0	4(11.76%)
cross-incised (cf. Keith Incised)	0	0	1(2.94%)
UID incised	1(5.55%)	1(14.29%)	13(38.23%)
TOTAL INCISED	18 (0.86%) (2.98%)	7 (1.82%) (6.14%)	34 (0.65%) (1.56%)
Carrabelle Punctated	6(66.67%)	0	4(7.84%)
Lochloosa Punctated	0	0	16(31.37%)
triangular punctated	0	0	8(15.69%)
round punctated	0	0	1(1.96%)
semi-circular punctated	0	0	1(1.96%)
cloven punctated	0	0	1(1.96%)
irregular punctated	0	0	10(19.61%)
fingernail gouged	0	0	4(7.84%)
stab n' drag	3(33.33%)	0	6(11.76%)
TOTAL PUNCTATED	9 (0.43%) (1.49%)	0	51 (0.98%) (2.35%)
Thomas Simple Stamped	8(72.73%)	0	9(10.47%)
Alachua Cob Marked	2(18.18%)	0	3(3.49%)
cord marked	1(9.09%)	0	56(65.12%)
fabric impressed	0	1(100.00%)	3(3.49%)
shell-edge impressed	0	0	12(13.95%)
"corn on cob" impressed	0	0	3(3.49%)
TOTAL IMPRESSED	11 (0.53%) (1.82%)	1 (0.26%) (0.88%)	86 (1.66%) (3.96%)

Table 9--continued

Name (Type or Descriptive)	Structure A	Structure B	Village
Chattahoochee Brushed	7(36.84%)	0	12(7.55%)
scraped	12(63.16%)	4(100.00%)	147(92.45%)
TOTAL SURFACE SCRAPED	19 (0.91%) (3.14%)	4 (1.04%) (3.51%)	159 (3.06%) (7.32%)
Jefferson Complicated Stamped			
Type A	2(0.45%)	2(2.47%)	6(0.36%)
Type B	45(10.20%)	7(8.64%)	209(12.67%)
Type C	1(0.23%)	2(2.47%)	1(0.06%)
Type D	1(0.23%)	0	3(0.18%)
loop cross CS	39(8.84%)	3(3.70%)	60(3.64%)
solid cross CS	40(9.07%)	3(3.70%)	58(3.52%)
UID cross CS	1(0.23%)	0	11(0.67%)
rectilinear 'A' CS	0	0	2(0.12%)
"simple stamped" CS	38(8.62%)	5(6.17%)	26(1.58%)
fret/volute CS	0	0	3(0.18%)
rectilinear with raised dot CS	1(0.23%)	0	0
linear with central bars CS	30(6.80%)	0	1(0.06%)
line block CS	0	1(1.23%)	4(0.24%)
obliterated rectilinear CS	10(2.27%)	1(1.23%)	18(1.09%)
UID rectilinear CS	2(0.45%)	2(2.47%)	19(1.15%)
herringbone with checks CS	0	0	2(0.12%)
concentric circles CS	2(0.45%)	2(2.47%)	13(0.79%)
joined curved lands CS	1(0.23%)	1(1.23%)	3(0.18%)
arc,straight,bullseye CS	1(0.23%)	2(2.47%)	6(0.36%)
curvilinear 'B' CS	0	0	2(0.12%)
bullseye with scroll CS	0	0	1(0.06%)
barred bullseye CS	0	0	1(0.06%)
bullseye with check CS	0	0	1(0.06%)
cogs CS	0	0	1(0.06%)
"snowshoe" CS	0	1(1.23%)	0
interlocking circles CS	16(3.63%)	2(2.47%)	5(0.30%)
curvilinear 'A' CS	2(0.45%)	0	4(0.24%)
curvilinear 'C' CS	0	0	1(0.06%)
straight/curvilinear CS	0	0	3(0.18%)
UID curvilinear CS	136(30.84%)*	29(35.80%)*	641(38.85%)*
obliterated CS	28(6.35%)	8(9.88%)	225(13.63%)
incomplete CS	41(9.30%)	10(12.35%)	195(11.82%)
small/obliterated CS	4+(0.91%)	?**	125(7.58%)
TOTAL COMPLICATED STAMPED	441@ (21.08%) (72.89%)	81@ (21.09%) (71.05%)	1650@ (31.77%) (75.93%)

Table 9--continued

Name (Type or Descriptive)	Structure A	Structure B	Village
St. Johns Check Stamped	78(75.73%)	2(9.52%)	28(18.79%)
square check stamped	2(1.94%)	0	37(24.83%)
rectangular check stamped	14(13.59%)	3(14.29%)	47(31.54%)
diamond check stamped	5(4.85%)	3(14.29%)	12(8.05%)
check with raised dot	4(3.88%)	13(61.90%)	23(15.44%)
linear check stamped	0	0	2(1.34%)
TOTAL CHECK STAMPED	103 (4.92%) (17.02%)	21 (5.47%) (18.42%)	149 (2.87%) (6.86%)
Mission Red Filmed	0	0	19 (0.36%) (0.87%)
Jefferson pinched rim	0	0	11(44.00%)
lumpy	2(100.00%)	0	13(52.00%)
UID pinched	0	0	1(4.00%)
TOTAL "HAND MODIFIED"	2 (0.10%) (0.31%)	0	25 (0.48%) (1.15%)
St. Johns Plain	33(2.22%)	2(0.74%)	26(0.86%)
undecorated	1454(97.78%)	268(99.26%)	2995(99.14%)
TOTAL UNDECORATED	1487 (75.06%)	270 (70.31%)	3021 (58.16%)
Jefferson Ware handle	2		
St. Johns eroded	0	0	11
eroded	9	27	429
small/eroded	?[a]	?[a]	849
less than 1 squ. cm surface	612	69	1034
GRAND TOTAL	2713	480	7517
Total Identifiable to Category	2092	384	5194
Total Decorated Identified to Category	605	114	2173
% of total identifiable	28.92	29.69	41.84

* Most of the unidentifiable curvilinear complicated stamped ceramics was probably Jefferson Ware Complicated Stamped Type B ("bullseye" design motif).

**The symbol "?" is used to indicate uncertain frequencies for groups from the 1976 analysis which were not broken down in the same manner as groups in the 1978 analysis. Small sherds had been discarded.

Table 9--continued

@ Complicated stamped is abbreviated "CS".

[a] These sherds were obviously not complicated stamped and, although they were small (less than 1 squ. cm in surface area) and eroded they were tabulated separately from other small and eroded sherds. Again, counts are uncertain because small versus eroded versus small and eroded groups were not distinguished during the 1976 analysis and these sherds had been discarded.

Decorated Ceramics

A sizeable proportion of the sherds (28.38%) were too small and/or too eroded to be identified. Of the remaining 71.62%, 2,892(37.71%) were at least identifiable as decorated categories. There were proportionately fewer decorated ceramics associated with Structures A and B (28.92% and 29.69%, respectively) than with the Indian sector of the village (41.84%). This frequency of decorated ceramics in the village is high compared to many sites.

Fifty-three informal and formal design types were recognized. Where type names could not be designated, descriptive names were devised. Many of these descriptive names, such as "fabric impressed" and "cord marked", do not require further definition. Many descriptive categories, however, do need to be described and illustrated. This is particularly true of the complicated stamped types which, as a category, comprised 75.10% of the total identifiable decorated ceramics. Brief descriptions of informal types are presented below. Vessel and rim forms, identified primarily from the 1978 sample, are illustrated in Figure 22 and are included in the following discussion when appropriate.

Cloven punctated (n=1) exhibited punctations in groups of two, mirror-image semi-circles which approximated a cloven hoof in appearance. These punctations were fairly sparse over the surface of a single, small sherd. Punctations may have been made with a bifurcated twig, bone tool, or similar object.

Thomas Simple Stamped (n=17) is a formal Weeden Island type but is mentioned here because all specimens were impressed with the back side of variously sized, ribbed shells. On a single sherd, all impressions

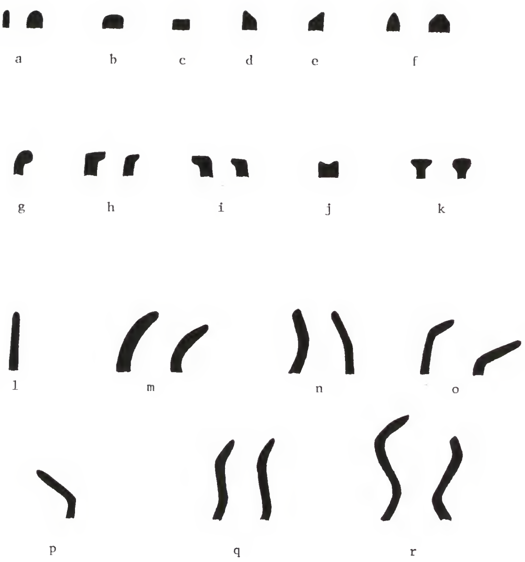


Figure 22. Lip Profiles (a-k), Rim Profile (l-p), and Visible Body Profiles (q-r). (a) round; (b) flat with round corners; (c) square; (d) beveled, exterior; (e) beveled, interior; (f) "pointed", beveled on both sides; (g) rolled; (h) projecting, exterior; (i) projecting, interior; (j) indented; (k) waisted; (l) straight; (m) curved everted; (n) curved inverted; (o) acute everted; (p) acute inverted; (q) curved, composite; (r) acute, composite or "S-shaped".

were made by the same shell, however. Four rimsherds were present in the village sample: three of these had "pointed" lip profiles and one was rounded (Figure 22f, a). Two rims were straight (Figure 22l), one was slightly curved toward the interior (22n), and one was acutely everted (22o).

Shell-edge impressed (n=3) sherds had variously dense or sparse impressions of scalloped shell edges (i.e. moderately or strongly ribbed shells) over their surfaces. These impressions were usually "wavy" lines, deeper in the middle of the impression than at the ends.

Kernel or corn-on-cob impressed (n=3), for lack of better name, sherds had been lightly impressed with an ear of corn still bearing kernels. The single rimsherd exhibited kernel impressions of equal size in paired rows (Figure 23c). Another sherd appeared to have been impressed with the butt end of a cob as the kernels were uneven in shape and row alignment. "Normal" kernel impressions measured 6-7 mm by 3 mm. General rim profile of the one sherd was rounded lip and curved, everted profile.

Scraped (n=163) ceramics may be variants of Chattahoochee Brushed although surface scraping was much deeper and lands and grooves were wider than if they had been brushed (Figure 23b). It often appeared as if the scraping had been purposefully smoothed over although flattening of small clay lumps might be attributed to handling the vessel while the surface was still plastic. Two scraped sherds which fit together and had broken along a coil fracture bore complementary impressions of a small feather. Five out of ten rimsherds had rounded lips, three were slightly pointed, one was square, and one was flat with rounded corners. Only five of the sherds were large enough to allow identification of rim profile; all were straight.

Figure 23. Surface-Scraped and Impressed Ceramics. (a) Chattahoochee Brushed; (b-c) scraped; (d-e) Thomas Simple Stamped [shell-back impressed]; (f) kernel-on-cob impressed.


a
b
c
d
e
f
1 2 3 4 CM

Loop cross complicated stamped (CS) (n=102) was one of two variants of cross motif complicated stamped designs. This is probably a Jeffersone Ware complicated stamped type and is characterized by an "open" or outlined central cross design with two to three outlining lands (Figure 24). Four rimsherds from the village sample had rounded lips (n=3) or exterior beveled lip (n=1). Rim profiles were either straight (n=2) or curved, everted (n=2).

Solid cross CS (n=101) sherds are similar to the above type but the central element is a solid cross (Figure 25) usually with three outlining lands. The four arms of both solid and loop crosses are not equal in length nor are they always at right angles to each other although this could be idiosyncratic. The axes cross in the proximate centers in the form of a Cross of St. George (Meiszner 1978:22). The innermost land around the central element may curve over the ends of the cross or may be squared off. Succeeding lands are squared off at the ends of the arms (1978:23). Of the four rimsherds from the village sample, one lip was rounded, one flat with rounded corners, one round and projecting slightly inward, and one was flat with a central indentation. Rim profiles were either acute everted, straight, or curved, everted. One large rimsherd from 1976 showed the composite vessel profile "S" form (Figure 22g). This latter sherd probably came from a medium-large vessel which was constricted below the rim then curved outward and tapered back inward below rounded shoulders.

Rectilinear 'A' CS (n=2) was a minority type and the sherds were too small to allow complete identification of a stamp. Visible stamped patterns were slightly dendritic (Figure 26a).

Figure 24. Loop Cross Motif Complicated Stamped Ceramics.

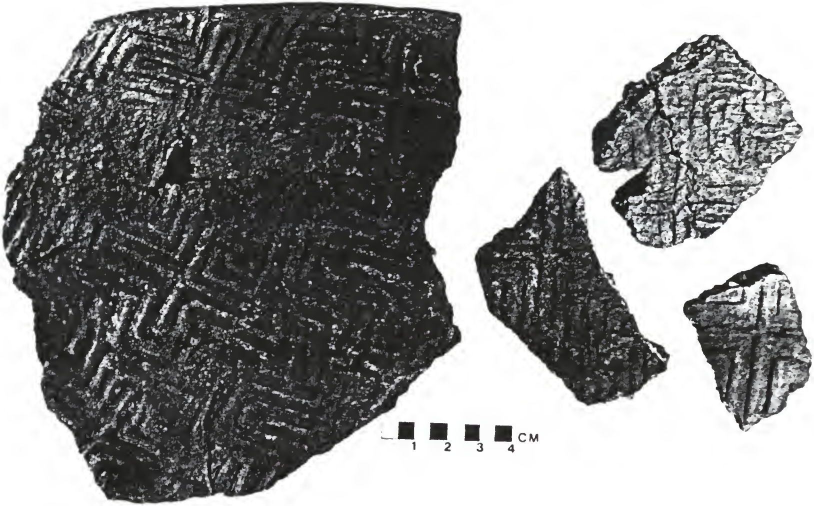


Figure 25. Solid Cross Motif Complicated Stamped Ceramics.

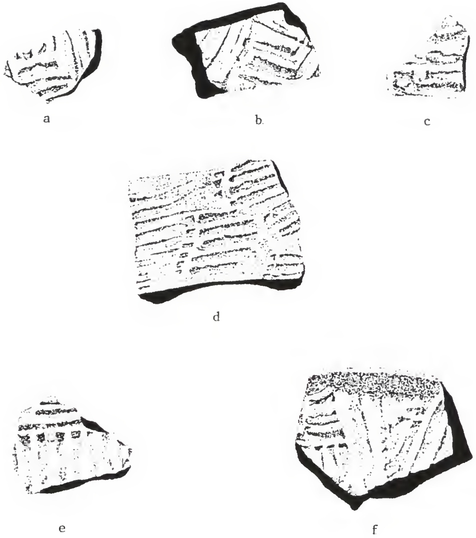


Figure 26. Rectilinear Complicated Stamped Design Motifs. (a) rectilinear 'A'; (b) fret/volute; (c) rectilinear with raised dot; (d) linear with central bars, overstamped; (e,f) line block. (Sherds not drawn to scale but designs on sherds are to scale.)

Fret/volute CS (n=3) may have been the same as Deagan's Jefferson Ware Complicated Stamped Type E (Deagan 1972:28, 29) although these sherds did not have raised dots. Only sections of volutes or frets were discernible on the surface and no pattern was completely represented (Figure 26b).

Rectilinear with raised dot CS (n=1) was another minor type. The design on this sherd consisted of a single square with central, raised dot and parallel straight lands running perpendicular and parallel to the sides of the square (Figure 26c).

Linear with central bars CS (n=31) was recovered predominantly from Structure A, with only one sherd found elsewhere (Structure C). It was also a possible Jefferson Ware complicated stamped type. The paddle design consisted of about 11 parallel, straight lands with two centrally located parallel lands running at slightly oblique angles across the main set of lands. These latter two lands formed a series of checks down the center of the main design (Figure 26d). Two sherds with impressions of paddle edges indicate that lands extended to the edge of the paddles. In some cases, paddle impressions were carefully lined up from one stamp to the next but it was more usual to see paddle impressions which overlapped. Paddle stamping was present up to the lip, which was folded over the design, but not over the entire body of the single (?) vessel. Rim forms from the Structure A sample consisted of square lips and curved, everted profiles. All appear to be from the same vessel.

Line block CS (n=5) was represented by two variants which were placed in this single category since it was a minor type. One sub-type exhibited neatly executed, closely spaced parallel lands perpendicular to more widely spaced lands (Figure 26e). The other sub-type was characterized by parallel and perpendicular sets of lands spaced at roughly the same distance apart. A curving land appeared on one sherd above the block (Figure 26f). In general, this latter sub-type was less neat.

Simple stamped was a residual category unrelated to Deptford Simple Stamped but probably partial representations of either line block or linear with central bars complicated stamped types. Sixty-nine sherds were placed in this category.

Joined curved lands CS (n=5) sherds were probably concentric circles or "bullseyes" which had one or more bars between the lands (Figure 27a).

Arc, straight, bullseye CS (n=10) was a type mentioned and illustrated by Willey (1949:599, Plate 60) and designated as probable Leon-Jefferson period. The design is a small, single-land circle with a central dot and tangential arched and straight lands (Figure 27b). One rimsherd from the village had a square lip with rounded corners and a second had a rounded lip. Both rimsherds had curved, everted profiles.

Curvilinear 'B' CS (n=2) was similar to the above type except that the central dot within the circle was joined to the circle creating what looked like an apostrophe (Figure 27c).

Barred bullseye CS (n=1) was a Jefferson Ware Complicated Stamped Type B ("bullseye") motif with two central bars running across the raised dot perhaps only as far as the second concentric land (Figure 27d).

Bullseye with scroll CS (n=1) was another single occurrence type which was over-stamped and incomplete in terms of design. Visible was one rounded, rectangular land with a central, elongated, cleft "dot" and adjacent nested scrolls (Figure 27e).

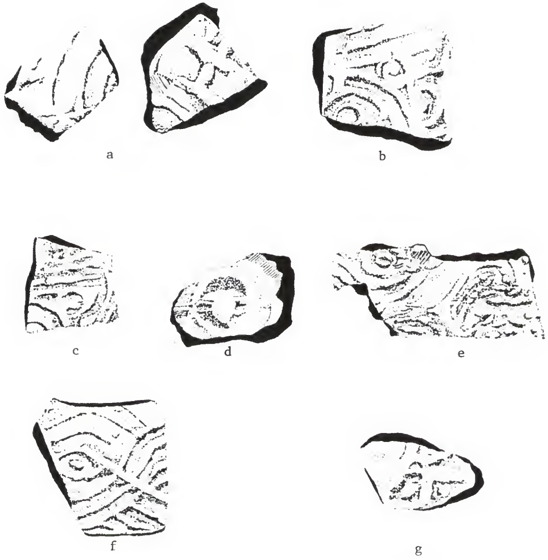


Figure 27. Curvilinear Complicated Stamped Design Motifs. (a) joined curved lands CS; (b) arc, straight, bullseye CS; (c) curvilinear 'B' CS; (d) barred bullseye CS; (e) bullseye with scroll CS; (f) interlocking circles CS; (g) bullseye with check CS. (Sherds not to scale but design on sherds is to scale.)

Interlocking circles CS (=23) was named after Wauchope's (1966) designation of related design elements. This design approximates nested "figures-of-8" and only one of four lands cuts across the center (Figure 27f). Designs were cut to the edge of the paddle and in some cases care was taken to match up adjacent paddle stamps. Five rimsherds were recovered from the entire excavation. Two of these definitely came from the same vessel. Four squared lip and curved, everted rimsherds and one straight rim with rounded lip sherd were represented.

Bullseye with check CS (n=1) was too small to permit identification of a complete pattern. The design consisted of a curved land, branching curved land off the first, and two checks with central dots below the second curved land (Figure 27g). It was a very sloppy design execution.

Cogs CS (n=1) consisted of a combination of nested scrolls with central dot and tangent circle with central dot. Straight lands extended between these two elements and, presumably, to other elements in the design (Figure 28a).

Snowshoe CS (n=1) exhibited acutely curving lines, two of which were joined by at least five parallel lands (forming rectangular checks between the two curving lands) and ended at right angles to a slightly curving land. Three parallel, straight lands were adjacent and at an angle to this element (Figure 28b).

Curvilinear 'A' CS (n=6) consisted of two variants: (1) curved lands joining straight lands at an angle with very narrow, perpendicular lines between the closest curved and straight land; and (2) sets of curved lands which face each other but do not meet. The former is illustrated in Figure 28c.

Curvilinear 'C' CS (n=1) was similar to bullseye with checks CS but

Figure 28. Curvilinear Complicated Stamped Design Motif and Cross-Incised Sherd. (a) cogs CS; (b) snowshoe CS; (c) curvilinear 'A'; (d) curvilinear 'C'; (e) straight/curvilinear; (f) herringbone with checks; (g) cross-incised. (Sherds not to scale but design on sherds is to scale.)

the sherd was too small to distinguish. Design shows branched curving lands and rectilinear (possibly checks) lands (Figure 28d). It was another one of the rather sloppily executed complicated stamped sherds.

Straight/curvilinear CS was a residual category containing three sherds with lands that were both straight and curved. An example is illustrated in Figure 28e.

Herringbone with checks CS (n=2) was characterized by a gently curving herringbone pattern with three to four checks in the apical area (Figure 28f).

Cross-incised (n=1) was reminiscent of the Weeden Island type Keith Incised but a single sherd did not allow certain identification. It exhibited more or less parallel incised lines with slightly "S-shaped" incisions at oblique angles to the linear incisions (Figure 28g).

Lumpy was a very descriptive name applied to 15 sherds which were poorly (deliberately?) finished and whose surfaces were quite literally lumpy and ridged even though interior surfaces were well-smoothed. One fairly large rimsherd appeared as if the potter had run closed fingers over a very plastic surface, squishing the clay between his/her fingers. Three rimsherds were present: lips were either rounded (n=2) or pointed (n=1); rim profiles were straight (n=2) or curved slightly inward (n=1).

Complicated Stamping and Manufacturing Techniques

As was evident from Table 9, many of the complicated stamped designs were obliterated either by smearing, over-stamping, or smoothing over stamped designs. Notwithstanding application techniques, the variety of stamped designs and intricacies of some motifs indicate that stamping was not always viewed simply as an expedient means of compressing coils and flattening surfaces.

An examination of ten Jefferson Ware Complicated Stamped Type B sherds (hereinafter referred to as "bullseye"), 16 cross motif rimsherds, and 18 unidentified complicated stamped rimsherds suggested that paddle malleating was performed during the construction phase (Meiszner 1978:18). On all of these sherds and some of the types previously noted, the stamp had been applied before the lip was finished as indicated by clay that had been pushed down into grooves or lapped over lands when the lip was folded. Additionally, stamped designs were located in the curvature of excurvate rims and distortion of the design indicates that flaring the rim was performed after stamping.

None of the complicated stamped rimsherds had pinched or punctated rims, two attributes described as common at Fig Springs (Deagan 1972:29) and Scott Miller where Smith (1951:167-169) described these rim decorations as the typical style rim for Jefferson wares. In only one case studied by Meiszner did the stamping stop short of the rim. The pattern of stamping to the lip predominated any other paddling practice although some sherds did indicate that stamping was not always over the entire vessel surface.

From a sample of 106 "bullseye" sherds which had clear designs, ten were selected for measuring radii on the basis of having more or less complete impressions from bullseye center to the outermost land. The number of concentric lands varied from two (element diameter of 5 cm) to five (element diameter of 4.8 cm). Overall, diameters varied from 4.8 cm to 8.0 cm (Meiszner 1978:19-20). Three attempts by different persons were made to define a few distinct paddles responsible for stamping several vessels. It appears that there are as many variations among stamped elements (therefore paddles) as there are numbers of sherds. Some distinctions were possible but there are too many problems in assuming that sherds with the same patterns and measurements came from different vessels.

In some respects, cross motif complicated stamped elements showed less variation than did the "bullseye" ceramics, although there were fewer sherds of this category present. Whether loop or solid cross, both seem to have more regularity in element diameter than do "bullseyes". One sherd which had a clear paddle edge impression demonstrated that a single cross element occupied a paddle face, at least in this one case. The relative consistency of element diameter for the three solid crosses and five loop crosses measured (diameter varied from 6.6 cm to 8.4 cm) may be related to a consistent use of four outlining lands (Meiszner 1978:22). Unfortunately, the sample of sherds with measurable elements was extremely small.

There is considerable variation in design from element to element and within the cross element. The four arms of both solid and loop crosses are not of equal length and the two axes do not always cross at right angles. Three loop cross paddles and/or elements and three styles of solid cross elements could be identified using design anomalies. These groupings are depicted in Figure 29. Group 1 has asymetrical lands over the arm; the first land comes up and curves over the arm then falls away at an angle not parallel to the arm. Sherds in this group were recovered from Structure A, Structure D, and Trench #2.

Group 2 sherds have a slightly curving arm, the edge of which is not rounded off symetrically. The outlining lands are also asymetrical but have different land and groove widths than loop crosses in Group 1.

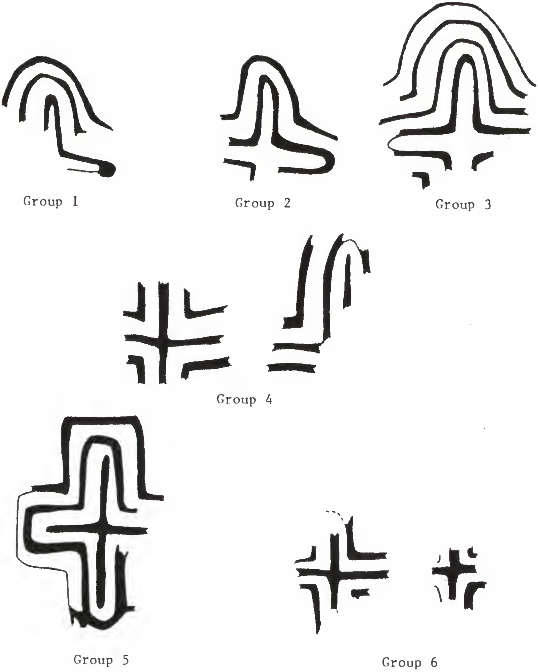


Figure 29. Identifiable Paddle Variations: Groups of More than One Sherd Each for Cross Motif Complicated Stamped. Groups 1 through 3, loop cross; Groups 4 through 6, solid cross.

Examples of Group 2 were recovered from Structure A. Loop crosses in Group 3 have symmetrically rounded arms and the second land follows the outline of the innermost land. The outer third and fourth lands, however, are asymetrical, bending fairly sharply on one side and sloping gradually outward on the other. Examples of Group 3 were recovered from Trench #1 and Structure A.

Groups 4 through 6 pertain to solid cross motifs. These groupings do not include all variations but only those for which more than one sherd was present. Group 4 crosses have one arm, and outlining lands, angling away from the axis at the point where the four arms meet. In addition, the second outlining land is rounded over the arm(s) rather than squared. Sherds in this group were recovered from Structure D and were probably part of the same vessel. Group 5 crosses have one arm angling toward the first outlining land which is slightly squared over the ends of the arms. The second outlining land is strongly squared. Structure A, Structure C, and the trenches just south of Structure B yielded sherds of this group. The last group, 6, was identifiable by the irregular shape of the arm juncture and the fact that one of the arms was curved. Group 6 sherds were recovered from Structures A, C, D, Trench #1, and Trench #2.

Other Ceramic Types and Forms

More than 90% of the non-St. Johns check stamped ceramics were probably Leon Check Stamped, including the variant with a central raised dot in each check. Only five rimsherds of check stamped ceramics were recovered from the 1978 excavations: two rim profiles were straight and three were curved, everted. Lip profiles were flat with round corners (n=2), square (n=1), indented (n=1), and round (n=1).

The most common lip on curvilinear complicated stamped, "bullseye" complicated stamped, and undecorated sherds was the round form; the most common rim profile was flared, either acute or curved. Rim and lip form distribution for the 1978 sample and some of the 1976 sample are presented in Table 10. Sherds not summarized above are included. It was difficult to assign Jefferson Ware pinched/punctated rims to these categories because of their decoration. A variety of these rimsherds are illustrated in Figure 30. Overall, the two most common rim forms were straight and curved, everted. The most common lip profile was round.

The major incised types associated with the mission period -- Aucilla Incised and Ocmulgee Fields Incised -- were relatively more common in the Spanish areas than in the village. Two Aucilla Incised rimsherds, both from the same vessel, had an exterior-projecting lip and were slightly curved toward the interior. These may have been from a low, globular vessel. Ocmulgee Fields Incised lips were all rounded but rims included "acute 'S' composite" (n=1), curved, everted (2 from the same vessel), and acute, inverted (2 from the same vessel). The latter two sherds were probably from a cazuela. The composite form sherd had fine hatched incisions between the bottom of the rim flare and the shoulder. Incising on the cazuela may have been restricted to the rim. The other Ocmulgee Fields Incised sherds were all incised with bold lines but extent over the vessel surface could not be determined.

Check stamped ceramics comprised the second most populous category. Over the entire excavated site, St. Johns Check Stamped contributed almost 40% to the total, 29% of which was from the two Spanish structures. Structure A check stamped ceramics were predominantly St. Johns (chalky)

Table 10. Summary of Lip and Rim Forms for Selected Ceramics: Undecorated, Curvilinear Complicated Stamped, Bold Incised, Weeden Island Incised, Mission Red Filmed, Chattahoochee Brushed, Cord Marked, Alachua Cob Marked, St. Johns Types, Carrabelle Punctated, Punctated, and Jefferson Ware Complicated Stamped Type B (i.e. "Bullseye).

Rim Form	Lip Form	Ceramic Types (n of sherds)*
Straight	flat, round corners	undecorated (7), curvilinear (2)
	square	undecorated (5), curvilinear (2), bold incised (1)
	beveled interior	undecorated (1), St. Johns (1), bullseye (1)
	beveled exterior	undecorated (10), curvilinear (3), Weeden Island (1), punctated (1), cord marked (1)
	pointed	undecorated (13), curvilinear (4),
	projecting, interior	undecorated (1)
	projecting, exterior	undecorated (2), bullseye (1)
	waisted	undecorated (1), curvilinear (1), Weeden Island (1)
	rolled	undecorated (3)
	indented	undecorated (3)
	round	undecorated (11), curvilinear (10), Carrabelle Punctated (1), cord marked (1), Mission Red Filmed (1), Chattahoochee Brushed (1), bullseye (1)
Acute, everted	flat, round corners	undecorated (2)
	beveled exterior	undecorated (1)
	pointed	undecorated (2)
	round	undecorated (6), bullseye (1)
Acute, inverted	flat, round corners	undecorated (1)
	round	undecorated (1)
Curved, everted	flat, round corners	undecorated (9), curvilinear (2), bullseye (1)
	square	undecorated (10), bullseye (2)
	beveled exterior	undecorated (4), curvilinear (1),
	pointed	undecorated (4)
	projecting, interior	undecorated (1)
	projecting, exterior	undecorated (1), curvilinear (1),
	waisted	bullseye (2)
	rolled	undecorated (1), curvilinear (1), punctated (1)

Table 10--continued

Rim Form	Lip Form	Ceramic Types (n of sherds)
	indented	curvilinear (1)
	round	undecorated (14), bullseye (1), curvilinear (12)
Curved, inverted	square	undecorated (1), Weeden Island (1)
	beveled interior	St. Johns (2)
	beveled exterior	undecorated (2)
	pointed	undecorated (1)
	round	undecorated (4)
Acute, composite	square	undecorated (1)
	beveled exterior	Alachua Cob Marked (1)
	round	undecorated (1)
Curved, composite	round	undecorated (3), Weeden Island (1)

* This sample taken only from 1978 excavated material. Total number of sherds in the sample are:

undecorated	129
curvilinear	40
bullseye	10
Weeden Island	4
Carrabelle Punctated	1
bold incised	1
St. Johns	3
Alachua Cob Marked	1
cord marked	2
punctated	2
Chattahoochee Brushed	1
Mission Red Filmed	1

Figure 30. Jefferson Ware Pinched Rims.

wares (75.73%). In terms of (1) frequency relative to sherds identified to category and (2) decorated sherds identified to category, check stamped ceramics were most common in Structure B. In this area, the variant of Leon Check Stamped with a central raised dot predominated (61.90% of the total check stamped).

St. Johns Plain ceramics, the only undecorated type which was assigned a type name, comprised 36.09% of the St. Johns wares. Relative to other wares, St. Johns Plain was a minor component with less than 1% in Structure B and the village. It was relatively more common in Structure A (2.22% of undecorated types).

The third most common category of decorated ceramics was composed of Chattahoochee Brushed and "scraped" types. The latter contributed most to the total number of this category in all three areas. This group was more common in the village area (7.32% of sherds in decorated categories) than in the Spanish area (3.20%). It was about equally represented in Structures A and B, 3.14% and 3.15% of the sherds in decorated categories, respectively.

Impressed design types were fairly minor and more common in the village (3.96% of decorated sherds identified) than in the Spanish sector (1.67%). These ceramics were more common in Structure A (1.82%) than in Structure B (0.88%). Of the various types in the group, Thomas Simple Stamped (shell-back impressed) predominated in Structure A (72.73%) and cord marked, largely from Structure D, predominated in the village (65.12%). Only one sherd of this category, a fabric impressed type, was present in Structure B.

Punctated sherds were not represented in Structure B and formed only a minor category in Structure A at 1.49% of the decorated sherds in categories. Carrabelle Punctated was the more common type in Structure A (n=6) whereas Lochloosa Punctated was the most common in the village (31.37% of the punctated sherds). Incised sherds were also minor in the village (1.56% of the decorated sherds) but were more important in the Spanish areas at 6.14% in Structure B and 2.98% in Structure A.

Mission Red Filmed and Jefferson Ware pinched/punctated rims occurred only in the village area, contributing 0.87% and 0.51% respectively, to the total decorated ceramics.

Colono-Indian Ceramics

Ware characteristics of Miller Plain have been described by Smith (1951:166): fine sand and grit in moderate to small amounts, interior surface finely scraped, exterior surface rougher, a hard compact paste. Others have used Miller Plain as a type name to characterize fine-textured, aboriginal pottery made in European forms. The form attribute appears to be the major distinguishing feature since inclusions, body color, black coring, hardness, and surface finish may be idiosyncratic according to the use of local clay sources and potters' techniques. Ceramics classified as Miller Plain during the 1976 field season lack most of Smith's attributes but the European forms are, apparently, the decisive factors. Jefferson wares may also be found manufactured in European vessel forms as may be un-typed plain ceramics. In general, these non-traditional Indian-manufactured vessels are referred to as Colono-Indian ceramics (Baker 1972). Forms represented may be plates, either plain or red slipped, footed bowls, pitchers, and handled bowls.

At Baptizing Spring, Miller Plain ceramics were thin-walled, fine-textured, and well-smoothed. No ceramics resembling this type were found in the village. It was primarily restricted to the smaller Spanish structure where it comprised at least three, possibly four, small, footed bowls. One bowl, which rather resembled a deep, handless cup, was reconstructed (Figure 31). Rim fragments of a probable Miller Plain plate were also recovered along with a small bowl rimsherd that had been pulled out into a small spout. Figure 32 illustrates some of these forms.

Jefferson Ware European forms were also present and included a small handle which appeared to have joined the rim of a vessel on both sides of the top, flat projection (Figure 32). Several sherds from a flat-bottomed, flared-footed vessel were recovered from Structure D. Although this vessel cannot be fully reconstructed, it appears to have been a fairly small dish with straight, flaring sides near the base (Figure 33c). One sherd of the same paste, color, texture, and finish suggests a constricted neck although this may be from another vessel. The form of this vessel looks as if it was copied from the Santo Domingo Blue on White jar. One foot ring sherd similar to those in the Spanish Structure A (Figure 33a, b) was recovered from another village structure, C. The only other identifiable Jefferson Ware European form was a possible plate rim fragment from the smaller Spanish structure. A Jefferson Ware fragment which may have nothing to do with Colono-Indian ceramics, appeared to be the arm off some kind of statuette. A similar "arm," only curved, was recovered from the area of Trench #2. Both had been broken off something at the wider end. The unbroken end was flattened (Figure 32). The Jefferson Ware "arm" was recovered in Structure B.

The final identified European vessel form was part of a Columbia Plain-like bowl base (Figure 33d) found in Structure A. It was neither Jefferson Ware nor Miller Plain.

Figure 31. Miller Plain Bowl from Structure A.

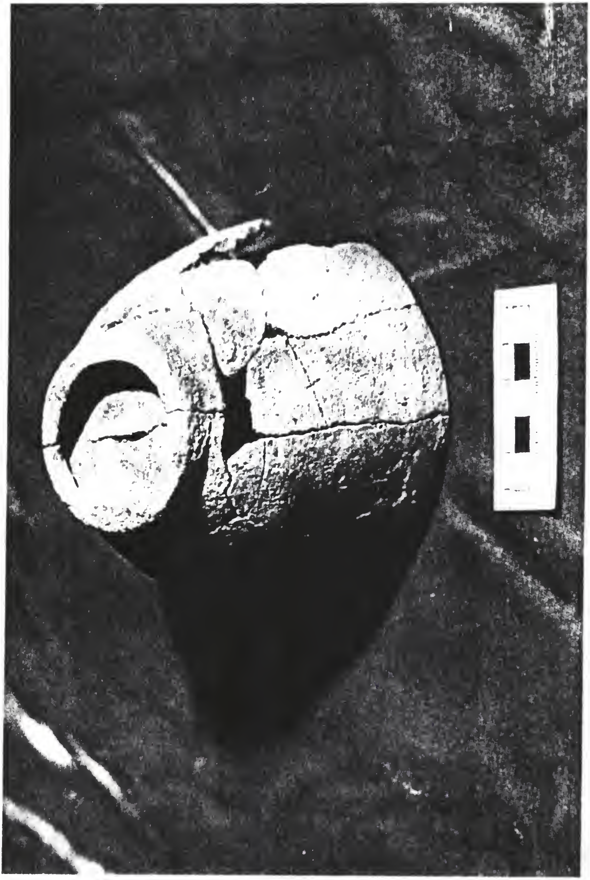


Figure 32. Colono-Indian Ceramic Forms. (a-e) footed basal sherds from small bowls; (f-g) possible effigy arms; (h) base of Columbia Plain-like vessel; (i) lip spout from small bowl; (j) handle; (k) plate rim fragment. (g,j, and k are Jefferson Ware and the rest are Miller Plain or unidentified plain.)


a
b
c
d
e
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g
h
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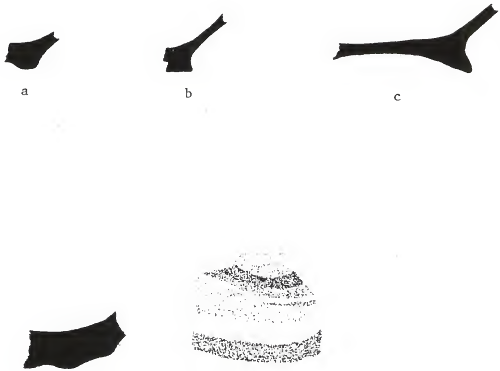


a b c

d

Figure 33. Colono-Indian Ceramic Sherds: Basal Profiles.
(a) small bowl, foot ring; types in Structures A and C
(b) small bowl, foot ring; types in Structure A
(c) small bowl with expanded basal ring from Structure D; possible copy of Santo Domingo Blue on White jar
(d) profile and basal views of possible copy of Columbia Plain bowl

Faunal Remains

Analysis of animal bone was carried out primarily by two individuals (Cynthia Heath analyzed the 1976 sample and Arlene Fradkin analyzed the 1978 sample) and the author re-examined the collection for butchering marks and some re-identification. Results of the 1976 faunal analysis were reported by Heath (1977) in an undergraduate honors thesis. In that report she failed to note identified elements and these have been added to the present discussion. With few exceptions, the faunal remains from Baptizing Spring were extremely fragmentary and demineralized. Preservative (ethulose-carbowax solution) was used in only one instance when the removal of an articulated, partial skeleton required special attention.

Problems associated with different screening (or non-screening) techniques have been mentioned in Chapter Four. There is little doubt that failure to screen the 1976 trenches and all material from Structure A introduced some bias into the sample even if no bone was missed in the excavation since the possibility always exists that some was. Additionally, only fine screening of features would have recovered very small bones, fish scales, etc. Fortunately, the majority of the features were fine screened although portions of large 1978 features were only screened using regular mesh (1/4" by 1/4" on 3/8" by 3/4" expanded mesh). Even using this larger sized mesh, minute bone fragments were recovered (about 0.25 square centimeter). If small bones such as fish vertebrae were encountered when reaming out features, the entire feature contents were bagged and returned to the lab for water screening through fine mesh. It is unfortunate, however, that recovery techniques were inconsistent with the goal of recovering all faunal remains.

Identification of faunal class and element type was determined using comparative collections at the Florida State Museum Zooarcheology Laboratory. Bones were classified to genus and species when possible or to the next possible ascending category (e.g. genus only, class, order). Some material was merely identifiable as "miscellaneous bone." The minimum number of individual animals (MNI) for each species was calculated by counting elements unique to a single individual and comparing sizes between elements which could have come from different individuals. MNI was computed for excavation blocks but material from features was counted separately under the assumption that they were from closed contexts. If, however, features joined or overlapped, counts were aggregated and MNI calculated for the resultant set of faunal elements. In instances where genus and species could not be identified but higher orders differed, MNI was computed. An example of this would be a block where turtle and mammal were present but could be identified only to this general level. MNI would be presented as one turtle and one mammal.

Heath (1977) calculated bone weight contributions of different faunal groups as well as raw numbers of fragments, relative frequencies, and MNI. Bone from the 1978 excavation was not weighed. Bone weight is employed principally in estimations of usable meat (or biomass) contributions to diet. Effects of mineral leaching and deposition confound such calculations, as do the assumptions of conversion factors. The decision made by this author not to report bone weights was based on the following factors: (1) bone was present in various stages of demineralization and mineralization; (2) recovery techniques and general fragmentary nature of the bone added bias to total recovery assumptions and true estimations of bone weight per individual animal. Although one of the hypotheses involved nutritional values of Spanish versus Indian diets, such calculations and presentation of statistics would insinuate a better data base than is actually present. Hypotheses related to faunal remains will have to be examined in terms of species represented, elements present, catchment, and distribution. These data should be viewed as a basis for deciding which aspects of hypotheses should not be rejected. Only gross dissimilarities between Spanish and Indian and Indian-Indian areas should be stressed along with the equivalent levels of similarities. The reader is cautioned against drawing definite information from conclusions, which must be advanced, based on these data.

Tables 11 and 12 show the raw and relative frequencies of fragments per species in the Spanish structures, Spanish area (Structures A and B), and the village, and the identifiable species number in the Spanish and Indian areas. Shells and the single shark tooth were not included in MNI frequency or fragment calculations since occurrence is rare and probably the presence of these species was not related to food consumption. Busycon sp. (whelk shell) was represented by a columella fragment which had been worked. Possibly the shell and shark tooth had been used as ornaments or tools. The minor occurrence of incomplete shell remains argues against their contribution as food resources, especially when at least three of the shells were non-local (marine). Their presence may be important, however, in terms of access to non-local items. The same argument could be raised concerning the hispid cotton rat dentary and the single non-poisonous Colubridae (black snake) vertebra, both of which may occur incidentally in the sample. They could conceivably have

Table 11. Species and Classes Represented in Structures A and B, Aggregated Spanish Area (A+B), and the Village: Number and % by Fragments.

Classification	Structure A*	Structure B*	Spanish	Village
MAMMALS				
Bos taurus dometsic cow	2 1.21%		2 1.12%	2 0.38%
Sus scrofa domestic pig	1 0.61%		1 0.56%	92+ 17.36%
Odocoileus virginianus white-tailed deer	24+ 14.54%	5+ 38.46%	29+ 16.29%	72 13.58%
Procyon lotor raccoon				1 0.19%
Sciurus sp. squirrel				1 0.19%
Sigmodon hispidus hispid cotton rat				1 0.19%
Artiodactyl (deer or pig?)				26 4.91%
UID** mammal	11+ 6.67%	2 15.38%	13+ 7.30%	120 22.64%
TOTAL MAMMAL	38+	7+	45+	315+
REPTILES				
Gopherus polyphemus gopher tortoise	103+ 62.42%	6+ 46.15%	109+ 61.23%	127 23.96%
Chrysemys cf. *scripta* yellow-bellied turtle				2 0.38%
Chrysemys sp. pond turtle				3 0.57%
Terrapene carolina box turtle				2 0.38%
UID Chelonia	23+ 13.94%		23+ 12.92%	65 12.16%
Total Chelonia	126	6+	129+	199
Alligator mississippiensis alligator				5 0.94%

Table 11--continued

Classification	Structure A	Structure B	Spanish	Village
Colubridae	1 0.61%			
TOTAL REPTILE	127	6	133	204
BIRDS				
UID passerine songbird				1 0.19%
FISH				
Mugil sp. mullet				1 0.19%
UID Osteichthyes cf. *Mugil* sp.				8 1.51%
TOTAL FISH				9
MISCELLANEOUS (probably not food resources; see text)				
UID Squaliformes shark				1
Rangia cuneata common rangia		1		2
Trachycardium sp. saltwater mussel	1			
Busycon sp. whelk				1
UID shell, probably marine				1

*Data taken from species cards prepared by Heath (1977). In many cases fragments were very small and numerous, therefore they were weighed or described (e.g. "numerous") but not counted. This is indicated by "+" symbol.

**UID used to indicate "unidentified" in this and subsequent tables.

Table 12. Class Percentage by MNI of Fauna in Spanish and Indian Areas and Identified Species Frequency with Percent Total Identifiable MNI.

Classification	Spanish Area	Indian Area (Village)
Mammal	46.15%	54.54%
Reptile	53.85%	38.66%
Bird		2.22%
Fish		4.55%
Bos taurus	1(7.69%)*	1(2.86%)
Sus scrofa	1(7.69%)	2(5.71%)
Odocoileus virginianus	4(30.77%)	12(34.29%)
Procyon lotor		1(2.86%)
Sciurus sp.		1(2.86%)
Sigmodon hispidus		1(2.86%)
Gopherus polyphemus	6(46.15%)	8(22.86%)
Chrysemys sp. cf. *scripta* (n=1)		3(8.57%)
Terrapene carolina		2(5.71%)
Alligator mississippiensis		2(5.71%)
Colubridae	1(7.69%)	
Passerine		1(2.86%)
Mugil sp.		1(2.86%)
TOTAL IDENTIFIABLE MNI	13	35
% domestic	15.38	8.57
% wild	84.62	91.43

* Percentage based on total identifiable MNI

been eaten, however, and the absence of more than a single bone suggests that they might not have died in situ. Both species are suspect since the elements were recovered from features containing numerous faunal elements.

Domestic animals are represented by cow (Bos taurus) and pig (Sus scrofa). There are some problems in accepting cow as a mission period domesticate, the most important of which is that cows currently range over this area (whenever they can escape the nearby pasture) and may have done so in the recent past. Heath (1977) reported surface occurrence of cow bones as common although the author did not note that situation. In the village (Trench #2), a second phalanx from a probable structural area represented the only occurrence of cow bone other than the longbone fragments from the 1976 trenches (which Heath states are of questionable contextual association) and a single tooth from the disturbed level just above the hearth in Structure A. Mid-to-late 19th century ceramics, glass, and cut nails were also present in Trench #2 in the same provenience (Zone IB) but numerous aboriginal artifacts were also present. Within this same provenience were remains of pig (a tooth), white-tailed deer foreleg elements, a gopher tortoise marginal, and unidentified turtle and mammal bone. The cow and deer bones exhibited butchering marks. One either has to discount mission period association of both cow and pig, not to mention the other species, from this provenience or accept this association with reservation. The latter course will be taken but it cannot be stressed enough that cow, and pig in this provenience, may not derive from the mission period.

Another problem is that of distribution. In Structure D, the partial articulated skeleton (roughly 91 fragments comprising vertebral column, ribs, and scapula) of a pig was found at the base of Zone IB (Figure 34). No evidence of intrusion was observed and very few, or no, 19th century artifacts came from this area. The mission period association of the pig is not doubted but the question is whether or not the two pig teeth recovered from Trench #2 and Structure A represent different individuals or portions of this one. The faunal material is too incomplete to allow distinction on the basis of size or age. It is safer to assume only that pig was present in Spanish and some Indian contexts and that probably some of the unidentifiable large mammal bone in the same proveniences as the two teeth may have been pig.

The problems discussed above preclude conclusive arguments of relative contribution of domestic versus wild fauna to the diet. If all necessary assumptions were true, domestic meat would have contributed more to Spanish area MNI (15.38%) than to Indian area MNI (8.57%). This, on the basis of faunal remains, does not take into account possible shipments of boned, salted or dried meat brought in from St. Augustine or other missions.

Overall, white-tailed deer contributed more MNI than any other species. The next most numerous species was gopher tortoise which in the Spanish area represented higher MNI (46.15%) than deer (30.77%). Of course, one gets a lot more meat from a deer than from a tortoise. This situation is reversed in the village area where deer comprise 34.29% of the total MNI and gopher tortoise constitute only 22.86%. This difference could be due to chance, however, since the sample was so small. Even if the sample were larger, it might be expected that the total MNI would be greater within the village where more people were involved than in the Spanish area. It will probably be more informative to examine

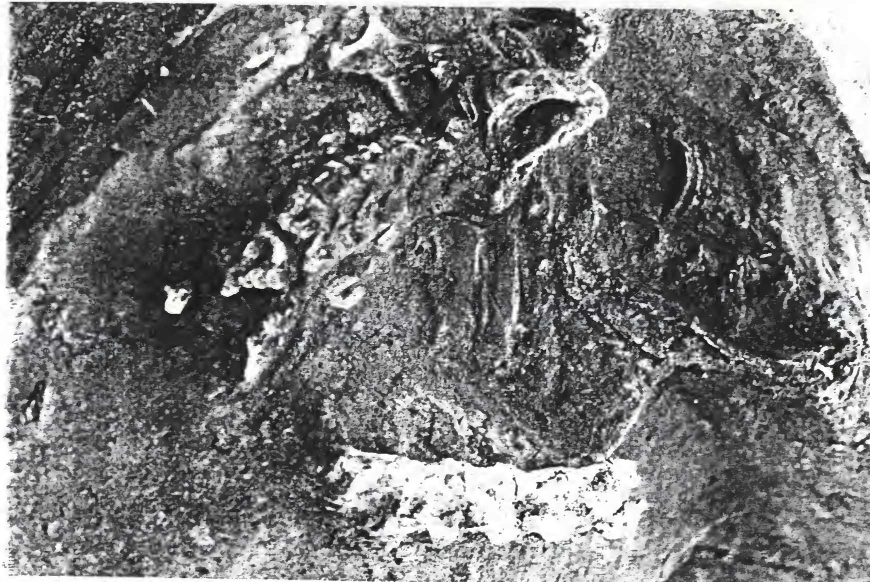


Figure 34. Partial Pig (Sus scrofa) Carcass Found in Structure D. (Scapula is located top, center.)

element distribution and butchering differences between the different structural areas as a means of comparison. This will be done in the following chapter.

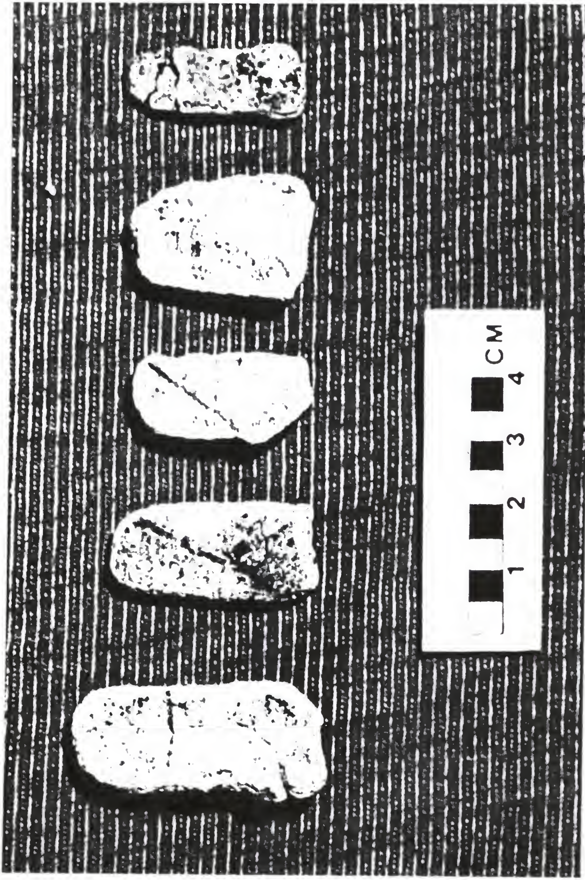
Fewer species (n=3) and MNI (n=3) were recovered from Structure B, which was totally screened, than from Structure A. If the former was a church, one would not expect to find much food bone within its confines. In fact, one would not expect to find food bone there at all if it was being cared for and was serving its religious function. The fact that only wild species were identified -- deer and gopher tortoise -- may indicate a non-religious (non-Spanish?) occupation of the structure for living purposes rather than worshipping. This possibility is also suggested by the presence of lithic tools in Structure B. It could be hypothesized that the structure which may have been a church was used in a different manner by Indians who, perhaps, had routed the priests during the Timucuan rebellion of 1656.

Bone Artifacts

The only worked bones were five "gaming pieces" manufactured from gopher tortoise shell fragments (at least one was a costal). All five were found in Structure D. These pieces had been cut straight along parallel long edges and were rounded off on the shorter edges (Figure 35). They ranged in size from 3-4 cm long and 1-2 cm wide. Only one in the smaller range was noted. There was no obvious use wear, although preservation was fairly poor, and no indication of function. They may have been counters or other gaming pieces, or they may have served a more practical function.

A few mammal longbone fragments appeared to have been fractured in a particular manner to produce pieces which could be manufactured into tools. These will be discussed in the next chapter.

Figure 35. Bone Counters or Gaming Pieces.


1
2
3
4
CM

Floral Remains

A great deal of wood charcoal was encountered, samples of which were saved, but will not be discussed in this manuscript. Except for one peach pit from a small trench west of Structure A, no floral remains other than charred wood were recovered from the Spanish structures (Heath 1977:25). All other floral remains, predominantly carbonized corncobs, derived from the village area. All of the corncobs (not counted but in excess of 250) except three came from Structure C. Fourteen hickory nut fragments (*Carya* cf. *glabra*), halves or quarters, were recovered from Structure D. Nine additional nut fragments were found: eight in Trench #3 west of Structure B and one in Trench #5. All were carbonized. Three carbonized peach pits (*Prunus persica*) were also recovered from the village: two from Features 5 and 6 (the overlapping fire pits) in Structure C and one from Structure D. The only other floral item was a carbonized legume seed from a small hearth feature in Structure D.

Corn

Analysis of corncobs from the 1976 excavations was performed by Dr. Hugh Cutler of the Missouri Botanical Garden. The 1978 cobs, plus a sample of the 1976 cobs, were analyzed by Dr. Timothy Kohler, currently of Washington State University. Kohler's report and associated tables appear as Appendix C of this manuscript. Data will be summarized in this section. Botanical terms used in the following discussion are described by Kohler (1979:1) and include:

> cupule - the slight, oval indentation in the cob which seats each of the kernels;

glumes - a series of floral bracts which surround the kernels in the cupule

lower glume - the most prominent of the above; glume width has been found to be a racially variable trait and a useful indicator of the basal width of a kernel (Nickerson 1953, in Kohler 1979:1)

A sample of 194 cobs from the 1976 excavations was examined and reported data included mean row number (8.3), median cupule width (7.6 mm) and relative frequency of row numbers for the sample (Cutler, personal letter to Dr. J.T. Milanich 1976). Eighty-eight percent of the cobs had eight rows per cob, 10% had 10 rows per cob, and 2% had 12 rows per cob.

On 121 cobs, Kohler measured (1) cob diameter at the widest point, including the contribution of the lower glumes to the total diameter; (2) number of rows per cob; (3) lower glume width at the widest point; (4) distance between lower glumes in the same row (estimates kernel thickness); (5) shank diameter which was measurable on only one specimen; and (6) cob length which was measurable on only six specimens. Table 13 summarizes the results of these measurements.

The four 9-rowed cobs were probably malformed 10-rowed ears but the 6-rowed ear was an anomaly. There is no correlation between lower glume width and estimated kernel thickness in the sample as a whole (r^2=0.09). Variation in row number does not account for variation in kernel thickness or width of lower glumes although there was a significant correlation between cob diameter and row number. SAS (Statistical Analysis System) ANOVA procedure yielded an F value (the ratio of explained to unexplained variation) of 2.09, alpha=0.09.

In terms of shape, no strongly cigar-shaped cobs or cobs with

Table 13. Summary Descriptive Statistics from 1979 (Kohler, Appendix C) Analysis of Carbonized Corncobs (n=121).

Lower Glume Width (mm)	Estimated Kernel Thickness (mm)	Cob Diameter (mm)	Cob Length (mm) (n=6)	Cob Shape (n=17)
3.0 - 6.5	2.5 - 4.6	9.0 - 21.0	42.0 - 50.0	straight - 53%
mean = 4.8	mean = 3.5	mean = 14.0	mean = 47.0	tapered - 47%
SD = 0.7	SD = 0.4	SD = 2.0	SD = 3.0	

Shank Diameter (n=1)
13 mm

Row Number % of Total Cobs				
6	8	9	10	12
1	82	3	13	1

Mean Cob Diameter (mm) by Row Number Groups				
6	8	9	10	12
15	14	15	14.9	19

expanded butts were noted. Neither kernel thickness nor lower glume width were significantly different for cobs from the various proveniences. Total cob diameter, however, did vary between proveniences. In general, the largest cobs were from features, the next largest from smudge pits, and the smallest were those scattered in zones. SAS ANOVA procedure yielded an F value of 2.92 (alpha=0.04) for cob diameter variance related to Kohler's implementation of the proveniences.

Kohler concluded that, on the basis of observable characteristics, the corn from Baptizing Spring corresponds with the definition for Maiz de Ocho, also referred to as "Eastern Complex" (Carter and Anderson 1945) and "Northern Flints" (Brown and Anderson 1947).

CHAPTER SIX
ARCHEOLOGICAL INDICATORS OF SOCIAL AND ECONOMIC RELATIONSHIPS

Most of the hypotheses expressed in Chapter Three dealt with some aspect of social ranking. In general, the hypotheses were directed toward discoverable associations of Spanish and Indian artifacts which would be restricted in distribution within the village. Postulated non-random distribution of artifacts was based on the hypothesis that traditional, native village settlement patterning and status reckoning would be maintained through the endeavors of Spaniards and high-status Indians. The ability of the latter to preserve their rank would be enhanced by their positions as "middle men" and behavior as "good Catholics."

The hypotheses related to identification of high-status households and material assemblages are seen, in restrospect, as tautological. Rather than considering individual, dependent hypotheses, the actual implied test is one of association or clustering. Items proposed as elite markers which occur together in restricted areas of the village establish a pattern if, and only if, the pattern can be validated for the entire site. The lack of random sampling and the discovery and extensive excavation of only two aboriginal and two Spanish structural areas restricts interpretive capabilities. In an attempt to mitigate some of the bias, only the four definite living/activity areas will be examined in detail. The archeological record itself is biased: many items are not preserved; valued items may not have been purposefully discarded; looters and curiosity seekers and natural forces have had 300 years to distort and disarrange artifact assemblages. Analysis has revealed, however, that several statistically and substantively significant patterns do exist and that co-occurrence of artifacts and distinctions between areas are not based on chance associations.

The functional nature of the structural areas will not be presumed. Up to this point, they have been referred to, basically, as activity/living areas, an all-encompassing designation for any area containing artifactual remains. Cursory description of some artifacts found within the four vicinities has already implied living quarters but this will have to be assumed until assemblages are depicted in greater detail. It also has been assumed that Structures C and D in the Indian sector represent individual household units. Relationships between occupants of those structures are unknown. Since a distinct eastern boundary to Structure C exists, as evidenced by posthole patterns and marked decrease in artifact numbers, it will be assumed that the two units were separate structures.

Ceramic Diversity

It is appropriate to begin this discussion with a subject that has been investigated at other sites. First, a review of the concept of diversity is in order. Diversity is a term employed commonly by ecologists and less commonly by archeologists. Misinterpretation of variety as a true reflection of diversity has led to inappropriate generalizations concerning artifact assemblages (see Kohler 1978:27-29, re: Otto 1975). Diversity is an index of uncertainty of occurrence: it refers to "the degree of uncertainty attached to the specific identity of any randomly selected individual . . . The greater the number [of species] and the more nearly equal their proportions, the greater the uncertainty [of selection or observation] and hence the diversity"(Pielou 1966:131).

What many individuals observe or measure is not diversity but variety (or richness), denoted by "s." Evenness of a sample or community reflects proportional occurrence of types or species. Both evenness and variety are functions of the relative abundance of types within a community and are summarized in a single number by the Shannon-Weaver diversity index (also referred to as the Shannon or Shannon-Weiner index) (Pielou 1974:290). The variety of types present is not necessarily a reflection of diversity since variety alone fails to account for proportional differences. A feature of this index, denoted by $\bar{H}$, is that it is relatively independent of sample size (Sanders 1968:279).

The Shannon-Weaver index has been employed by zooarcheologists in the examination of changing faunal resource exploitation through time (Wing 1963:5-6) and in comparison of faunal selection by groups of differing economic and status levels (Cumbaa 1975:210-211). It has only been used recently to describe inorganic data (Kohler 1978; Tainter 1977). The formula is written:

$$\bar{H} = -\sum(n_i/N)\log(n_i/N), \text{ where}$$

n_i = n of individuals in 1st through ith category
N = total n of individuals in sample

In its most basic form, then, it is simply the negative sum of the relative frequencies of each category multiplied by the log of their relative frequencies. Any base log can be used; in order to allow comparison of data, however, the log base ought to be stated explicitly. Log base e, or the natural log (ln), is commonly utilized and is the base used in this discussion.

The diversity value is given in relative terms. The lowest limit is zero, the case when all individuals are the same type (n_i=N). Maximum possible diversity, $\bar{H}_{max}$, depends on the variety (number of types) within the sample. Maximum diversity is equal to the log s. Evenness is calculated by dividing $\bar{H}$ by $\bar{H}_{max}$ and can serve as an index reflecting the degree to which a sample approximates total possible diversity. When all types are equally represented ($\bar{H}=\bar{H}_{max}$), evenness is unity or 100%. If n_i equals N, both diversity and evenness are nil.

Three hypotheses dealt with Spanish and Indian ceramic type diversity. Kohler (1978:27-29) used data from a Georgia Sea Island cotton plantation (Otto 1975) to show that differential access to goods and resources, an attribute of ranked societies, resulted in artifact assemblages of varying diversity for the planter, overseer, and slave. Otto hypothesized, and substantiated, that the more varied diet of the high-status group (i.e. the planter's family) was reflected in the wider range of vessel forms present in its refuse. Otto (1975:161, 219) also made the generalization that ceramics in high-status contexts were more diverse in form and type. Kohler examined these hypotheses using the Shannon-Weaver index to measure actual diversity. He found that while vessel forms were more diverse in the planter's midden than in the slave's midden, ceramic type diversity was lower in the planter's midden. The first index characterized a more varied diet and the practice of consuming multi-course meals in the plantation big house versus the one-pot meals of slaves. The lower ceramic type diversity for the planter's assemblage reflects purchasing of table services whereas slaves either received cast-offs from the planter kitchen or purchased dishes singly and sporadically whenever extra money and opportunity allowed.

The prehistoric case of ceramic diversity was reversed at one site thus far examined in Florida. At a Weeden Island ceremonial center (ca.

A.D. 150-A.D. 700) in northern Florida, Kohler predicted and found a positive correlation between higher ceramic diversity and high-status areas within the village (Kohler 1978:31-32, 198-199). His hypothesis was based on the assumption that elite individuals had greater access to trade and "high-status" ceramics.

Spanish Ceramic Diversity at Baptizing Spring

Results of diversity calculations at the plantation site and the prehistoric site were used in formulating hypotheses regarding expected diversity values for Baptizing Spring components. It was postulated that priests, with greater access to Spanish goods, might acquire "sets" of ceramics either because of preference or because of limited variety provided in situado shipments. Spanish ceramics in aboriginal contexts would represent smaller proportions of a greater number of sets if Indians were receiving cast-off vessels from priests or if they were buying ceramics on less frequent trips to St. Augustine and were more limited than priests in the type and bulk they could afford to acquire. Another possibility would produce the same results: rather than whole vessels, Indians may have obtained sherds to be used as ornaments, gaming discs, or majolica sherds may have been collected simply because of their "prettiness." Actual numbers of sherds of a single type would be greater in the Spanish area (producing lower diversity) if dishes owned by priests were broken there.

It was postulated that this same pattern would carry over into Indian-manufactured ceramics. Priests may have preferred certain designs and/or may have been receiving aboriginal vessels from a limited number of individuals. Following the prehistoric pattern evinced at the Weeden Island site, it was postulated that higher diversity values would be correlated with higher-status living areas among Indians.

There was not enough majolica recovered from Structures C and D to necessitate measuring diversity: Structure C had only one sherd of San Luis Blue on White. Structure D yielded five sherds of Santo Domingo Blue on White (two different variants), two Columbia Plain sherds, and one each of San Luis Blue on White, Fig Springs Polychrome, and Ichtucknee Blue on Blue. It is obvious, without quantitative appraisal, that variety, diversity, and frequency of majolica were higher in Structure D than in Structure C.

Although the village was not randomly sampled, $\bar{H}$ was calculated for the Indian assemblages as a whole. Data from Table 7 were used to compute diversity of Spanish ceramic assemblages in Structures A, B, the total Spanish area (A+B), and the village area. The following indices were computed:

Total Spanish Ceramics:

Structure(s)	s	$\bar{H}$ (nats)
A	7	1.29
B	8	1.44
A+B	9	1.39
Village	8	0.94

Majolica Only:

Structure(s)	s	$\bar{H}$ (nats)
A	4	0.82
B	6	1.30
A+B	6	0.97
Village	6	1.55

Very clearly, variety (s) alone would have misrepresented similarities and differences between ethnic areas of the site and between Structures A and B. It is obvious that utilitarian wares (olive jar, storage jar), which predominated in the village area, greatly affect the diversity of observed Spanish ceramics. The question arises concerning the effect of

Ichtuckneee Blue on White which dominates Spanish ceramics in Structure A because of a large number of sherds from a single plate. If $\bar{H}$ is calculated excluding this type, the following results are obtained.

Structure(s)	s	$\bar{H}$ (nats)
A	6	1.27
B	7	1.31
A+B	8	1.32
Village	7	0.82

Both Spanish structures and the Spanish and Indian sectors stand in the same relationship to each other as when Ichtucknee Blue on White was included in the computation. It appears that if all Spanish ceramics are considered, the Indian sector exhibits less diversity than the Spanish sector. Utilitarian wares seem to be the greatest factor affecting diversity. Differences in diversity values could also be due to length of occupation. If the village was occupied for a longer period of time than the Spanish structures (e.g. if the Spaniards abandoned the mission before the Indians did) but Spanish-Indian contact was maintained, then diversity might be expected to be higher in the village area. The time ranges of the various types do, however, overlap and the mean ceramic date (as determined for Spanish versus Indian areas using South's formula for sherd frequency) was not greatly different for the Spanish sector (1625.92) versus the village area (1623.48). The village did, however, contain the latest majolica type, San Luis Blue on White (until ca. 1690) in greater numbers (n=3) than the Spanish sector (n=1). The latter is not a very great difference. Since, in theory, all the majolica types were available within the same time span, access could be a major factor affecting diversity values. Actual occupation range of the priests at the site is unknown. If, however, the site was San Augustin de Urica then it may have been occupied up until the Timucuan revolt in 1656. If only majolica is considered in comparing diversity between areas, diversity is higher in the Indian sector of the village. Perhaps if olive jar could be divided into varieties with more restricted time spans than "early," "middle," and "late," the overall diversity would change according to the hypotheses. For "fancy" wares, at least, the Indian assemblage does exhibit greater diversity.

From the absolute and relative frequencies of majolica and olive jar sherds in the village, it is apparent that Indians did not have whole majolica dishes although they may have had whole storage containers. There is usually considerable difficulty in accepting the assumption that a single (small in the case of most of the majolica sherds in the village) sherd represents the past presence of an entire vessel. With regard to majolica, it appears that this assumption cannot be accepted. Santo Domingo Blue on White sherds from Structure D were matched with two different vessels found in Structure A and sherds found just south of Structure B. Other majolica sherds which could have come from the same vessels were similarly scattered over the village.

It cannot be ascertained if sherds were given to Indians or if they were merely collected from refuse by Indians. Worked majolica and olive jar sherds, rounded into discs, have been recovered from other mission period sites (Deagan 1972:39; McMurray 1973:33; Seaberg 1955:57) and it is possible that some of these ceramics were collected with the intent of working them. No such discs were recovered from Baptizing Spring, however. Conversely, sherds may have been picked up simply because they were pretty: perhaps children were the primary collectors of majolica.

If one assumes that archeological contexts represent actual occupation period conditions, then it appears that Indians did not actually have whole majolica dishes.

By and large, Indians accumulated more utilitarian ceramics. Assuming that sherds were collected, the diversity of Spanish ceramics within the Indian structures should reflect access to those sherds. The implications of this proposal are: (1) greater numbers of sherds from the same vessel and/or of the same type in one aboriginal structure versus another might mean that they were all collected at the same time; (2) higher diversity (an hypothesized correlate of higher status among Indians) might reflect access to, or collection of, sherds from Spanish areas at different times, assuming that all majolica vessels were not broken simultaneously.

The two Indian structures differed markedly in number and type of Spanish ceramics recovered. Structure C yielded one majolica sherd and 29 utilitarian sherds. Structure D yielded only 13 Spanish ceramics in all; three of these were utilitarian and the others represented five types of majolica. Including all Spanish ceramics from these structures in a comparison of diversity, $\overline{H}$ for Structure C is an extremely low 0.15 nats and Structure D produces a value of 1.59 nats. The very small number of sherds present, however, does not lend credence to this distinction.

It is to little purpose to emphasize the significance of these indices taken by themselves. Simple collection of sherds can be an act subject to many factors. For one reason or another, the inhabitants of Structure D obtained a more varied assortment of majolica than did the inhabitants of Structure C. The diversity suggests that a person or persons in the former household had a greater choice of sherds and/or more varied collection interests.

Aboriginal Ceramic Diversity

Ceramic diversity can be more aptly discussed with reference to native ceramics since they are far more numerous than European types. No evidence of craft specialization has been discovered although variants of cross motif complicated stamped ceramics could be identified in both Spanish and Indian structures. Variants from both Structures C and D were represented in Structure A. The use of this cross motif itself, however, may reflect Catholic influence and at this time appears to be peculiar to this site.

It was hypothesized that diversity of aboriginal ceramics would be lower in Spanish units if priests were consistently receiving goods from select groups and/or if priests expressed a preference for some designs over others. Exactly how artistically cognizant the Spaniards were is impossible to guess. In any event, such preference would be idiosyncratic and not a factor if more than one priest served at the mission. If anything, it would seem that priests would favor native vessels decorated with crosses. Overall, these types were the most abundant complicated stamped type in the Spanish area. The majority of unidentifiable curvilinear complicated stamped ceramics were probably "bullseye" patterns, however, and if computed that way this latter type would be most abundant in all areas.

Some native types were almost exclusive to the Spanish sector: linear with central bars CS (n=30 versus n=1 in the entire village), and most of the mission period incised wares (n=23 versus n=5 in the entire village). Distributional differences may have been due to special production of certain ceramic types for Spanish consumption or monopolization of trade. If there was no resident priest, only a visiting friar, and his goods were transported with him then there ought to be discernible differences in the raw material used to manufacture the ceramics. At this stage, at least for the linear with central bars CS sherds, this does not seem to be the case. Elaboration on the point of origin for many of the ceramic types will, however, have to rest on the analysis of ceramics and locally available clays.

The pattern exhibited at the McKeithen site, the Weeden Island center studied by Kohler (1978), was higher ceramic diversity in higher status areas of the midden. If access to and preference for a more diverse inventory was consistent with native ranked societies, one would hypothesize that ceramic diversity would be higher in high-status households at Baptizing Spring. The presence of non-local goods and ceramics, reflecting differential access, should also correlate with elite status areas. Aboriginal ceramic diversity was computed for each of the four structural areas. Table 14 gives absolute frequencies of identifiable types in those areas. Undecorated St. Johns ceramics were indicated as a separate class although other "types" within the undecorated category do exist but were not differentiated because the technical analysis of the ceramics has not been completed and significantly distinct groups have not been identified.

Maximum diversity for the entire site assemblage represented by these structures (51 categories) is 3.93 nats. The resulting statistics are presented in Table 15. Both Spanish structural assemblages exhibit lower diversity than either Indian assemblage. Evenness (e), computed on the basis of total site maximum diversity, is low for all four areas,

Table 14. Aboriginal Ceramic Categories Used in Calculation of Shannon-Weaver Diversity Index ($\overline{H}$) for Four Structural Areas.

Type Category	Structure A	Structure B	Structure C	Structure D
Weeden Island Incised	0	0	2	1
Thomas Simple Stamped	8	0	1	8
Carrabelle Punctated	6	0	1	1
Aucilla Incised	3	4	2	0
Ocmulgee Fields Incised	14	2	2	1
Pinellas Incised	0	0	1	0
shell-edge impressed	0	0	0	4
cord marked	1	0	5	49
Alachua Cob Marked	2	0	1	1
fabric impressed	0	1	1	2
kernel impressed	0	0	0	3
cross-incised	0	0	0	1
Lochloosa Punctated	0	0	0	16
fingernail gouged	0	0	1	1
triangular punctated	0	0	0	4
stab n' drag	3	0	0	3
round punctated	0	0	0	1
semi-circular punctated	0	0	1	0
Chattahoochee Brushed	7	0	0	6
scraped	12	4	47	89
lumpy	0	2	0	7
check stamped	21	6	23	9
check stamped with dot	4	13	11	4
St. Johns Check Stamped	78	2	7	13
Jefferson Ware CS				
Type A	2	2	2	1
Type B	45	7	59	85
Type C	1	2	0	0
Type D	1	0	0	0
loop cross CS	39	3	26	8
solid cross CS	40	3	14	11
concentric circle CS	2	2	2	7
herringbone with check CS	0	0	0	2
joined curved lands CS	1	1	1	1
arc,straight,bullseye CS	1	2	0	4
curvilinear 'A' CS	2	0	1	2
barred bullseye CS	0	0	0	1
interlocking circles CS	16	2	2	0
linear with central bars CS	30	0	1	0
rectilinear 'A' CS	0	0	0	1
rectilinear with raised dot	1	0	0	0
fret/volute CS	0	0	1	1
bullseye with check CS	0	0	0	1
bullseye with scroll CS	0	0	0	1
cogs CS	0	0	1	0
snowshoe CS	0	1	0	0

Table 14--continued

Type Category	Structure A	B	C	D
curvilinear 'B' CS	0	0	0	1
curvilinear 'C' CS	0	0	0	1
Mission Red Filmed	0	0	4	15
Jefferson Ware pinched rim	0	0	0	8
St. Johns Plain	33	2	7	13
undecorated	1454	268	738	1175
TOTAL	1827	329	960	1561

Table 15. Aboriginal Ceramic Diversity ($\bar{H}$) for Structures A, B, C, and D.

Structure	s	N	$\bar{H}$ (nats)	Total $\bar{H}_{max}$ (nats)	e (Total)	Structure $\bar{H}_{max}$ (nats)	Structure e
A	27	1827	1.03	3.93	0.26	3.30	0.31
B	20	329	0.97		0.25	3.00	0.32
C	29	960	1.08		0.27	3.53	0.32
D	41	1561	1.21		0.31	3.71	0.33

s = number of type categories
N = number of sherds
e = evenness

ranging from 0.25 to 0.31. Structure B contained the least diverse assemblage and Structure D contained the greatest proportion of all possible types. The low diversity of the Spanish assemblages is a factor of roughly 80% of the ceramics in the undecorated category versus 78% and 75% in Structures C and D, respectively. Of the two Indian structural areas, diversity in D is considerably greater than in C. Structure C, interestingly, closely approximates Structure A in diversity value (1.08 nats and 1.03 nats, respectively).

Similarity and Correlations

Indices calculated thus far have been fairly generalized. They characterize assemblages internally but do not provide a means of comparing actual constituents shared across assemblages. An easily calculated similarity index uses the ratio of number of types common to two (or more) areas to the total number of types represented in both areas:

$$S_i = \frac{2c}{a + b}, \quad \begin{aligned} c &= \text{n of types in common} \\ a &= \text{n of types in a} \\ b &= \text{n of types in b} \end{aligned}$$

Completely similar assemblages will have an S_i of 1.0 whereas completely dissimilar assemblages will yield an index of 0.0. This formula can be expanded to produce a similarity index for more than two samples by multiplying the number of types in common (c) by the number of samples and adding the number of types (in this case) for each additional sample to the denominator. Knowing the internal characterization of these four structural areas in terms of identifiable ceramics, how do they compare with each other as distinct or similar units? The following indices of similarity were computed from data in Table 14, excluding undecorated, undifferentiated categories.

Structure Pairs	a	b	c	S_i	Rank (Descending)
A - B	26	19	16	0.75	1
A - C	26	28	20	0.74	2
A - D	26	40	20	0.61	5
B - C	19	28	15	0.64	4
B - D	19	40	15	0.51	6
C - D	28	40	22	0.65	3

In terms of types common to any two structures, A and B were most similar and A and C were almost as similar. Structures B and C were fairly distinct. Structures B and D were least similar, sharing only about 50% of the total number of types represented between them. This simplistic index reflects total possible combinations without taking into account frequency representations of each type. Frequency distributions can be included by refining the index:

$$S_n = \frac{c(c_n)}{a(a_n) + b(b_n)}, \quad c_n = \text{n of sherds in types common to both groups}$$

$$a_n = \text{n of sherds in a}$$

$$b_n = \text{n of sherds in b}$$

Again, identical assemblages yield an index of 1.0 and completely dissimilar samples yield a value of 0.0.

Structure Pairs	a_n	b_n	c_n	S_n	Rank (Descending)
A - B	373	61	369	0.54	2
A - C	373	222	574	0.72	1
A - D	373	386	637	0.51	4
B - C	61	222	260	0.53	3
B - D	61	386	276	0.25	5
C - D	222	386	535	0.54	2

Including frequency as a parameter not only lowers the degree of similarity, it also alters the ranking of degree. In this corrected index, Structures A and C are most similar in terms of types and proportions of those types present in both assemblages. Structure pairs A-B and C-D tie with an index of 0.54: the Spanish structures are as similar to each other as the aboriginal assemblages are to each other. Structure C appears to reflect greater similarity to all the other structural areas than any of the other three areas share between them. The degree of similarity between Structures C and A may indicate more interaction between the two households. The probablity is greater, however, that the major point is the dissimilarity of Structure D to the other structures. Several ceramic types are much more prevalent in this structure than in any other (e.g. cord marked, Lochloosa Punctated, and Mission Red Filmed). For the structures as a group, the overall S_n is only 0.25, indicating a very low degree of similarity between structures and consequently a high degree of overall variation. There can be little question that the four areas do, in fact, represent distinct units.

Ceramic Distribution Between Structures

Hypotheses five through nine in Chapter Three proposed several general associations which would be expected if prestige goods were correctly identified and if aboriginal ranking and access to goods were maintained. Briefly, it was postulated that introduced European goods indicative of prestige would be non-randomly distributed in the village structures and that these goods would occur in conjunction with native manufactured prestige goods. Non-locally produced aboriginal ceramics also may reflect differential access and distribution between structures. Because ceramic and clay analyses are incomplete, the only definitely non-local aboriginal ceramics are the St. Johns chalky wares. At the McKeithen site, hypothetical elite ceramics showed a relatively high correlation with non-local ceramics (r^2=0.35, alpha=0.05), two of which were St. Johns types. This correlation, coupled with measures of non-local lithic correlations and diversity demarcated an "elite" occupational area within the village (Kohler 1978:197). Milanich (1972:38) noted a correlation between St. Johns types and Spanish ceramics in one area of the Richardson site village. Fifteen percent of the site total St. Johns ceramics were recovered from two 10' by 10' squares.

If restricted distribution of trade wares occurred at Baptizing Spring, and access was determined by social and economic status, then one would expect non-local and prestige goods to be associated. Using Spanish ceramics and St. Johns types as markers for high-status association, there ought to be a non-random distribution of the markers associated with other possible indicators of prestige.

Certain ceramic types were aggregated on the basis on known or hypothesized cultural associations. All St. Johns ceramics were subsumed under the variable STJOHNS; Alachua Cob Marked, Lochloosa Punctated, and cord marked ceramics became the variable ALACHUA (after the Alachua tradition, Milanich 1971). All majolica ceramics were labelled MAJOLICA and utilitarian Spanish ceramics were subsumed under OLIVEJAR, the most common type within that category.

A number of single or minor occurrence complicated stamped ceramics were aggregated under the variable name CSGA. Although the actual origins of these design elements is unknown, they bear many resemblances to complicated stamped design motifs found on late prehistoric complicated stamped ceramics from north and central Georgia (Loucks 1978b). CSGA included the following descriptive types defined in the last chapter: joined curved lands CS, interlocking circles CS, barred bullseye CS, curvilinear 'A' CS, curvilinear 'B' CS, rectilinear 'A' CS, fret/volute CS, bullseye with scroll CS, straight-curvilinear CS, cogs CS, and lineblock CS. The variable OTHERGA included Creek-affiliated ceramic types Ocmulgee Fields Incised and Chattahoochee Brushed.

Five ceramic types were maintained in their original classes because they were relatively numerous. Loop and solid cross motif complicated stamped types were kept separate in order to examine possible differences in distribution and associations. Jefferson Ware Complicated Stamped Type B (CSTYPB) and scraped types were also retained because of their moderate to high representation in all areas. Linear with central bars CS (implemented at UNIQLIN) was kept separate primarily to examine its association with other types in Structure A, the only area where it occurred except for one small sherd in Structure C.

The hypothesis concerning association of certain aboriginal ceramic groups or types and Spanish ceramics with structures was tested by analysing the variation within and between structures with regard to each ceramic variable. Ceramic counts were tabulated for each excavation unit within a structural area. These counts were weighted by dividing them by the area (square meters) excavated for each structure and then multiplying by 10.0. An actual density calculation (n of sherds per cubic meter) was not computed since it was not always possible to calculate the depths of units in Structure A and parts of Structure C. In any event, average depths of middens throughout the site were comparable. Weighting was carried out to standardize the ceramic counts (n of sherds per square meter) in order to negate the effect of unequal excavation areas: Structure A was 65 square meters, Structure C was 68 square meters, and Structure D was 58 square meters. Counts of "0" (absent) were included in the analysis. The weighted ceramic counts are presented in Table 16. Counts per variable were ranked in descending order for visual comparison but the ranking was not essential to the test of variation.

Structure B was not included in the analysis because of the very low ceramic counts over a large area. It was felt that computing "Spanish Area" as the sum of Structures A and B would introduce error into the calculation since most of the units in Structure B did not contain even one each of all the variables. Only majolica and Spanish olive jar were well represented in this structure with only 19 sherds of each over 147 square meters. There was also a lack of sufficient information to show that this larger Spanish structure was a Spanish living area. For these reasons, comparison of Spanish versus Indian assemblages was accomplished by comparing Structure A with Structure C plus Structure D (126 square meters).

One-way analysis of variance results in an F value which is the ratio of explained variation over unexplained variation. In this case, the F ratio indicates how much of the variation between structures can be accounted for by the variation within the structures. If structural means per variable differ considerably among themselves, a relatively large proportion of the total variation can be attributed to differences between the structures (after Blalock 1960:247). A high F value, therefore, at a stated level of significance indicates that the variable under examination can be used to discriminate between the two structures compared. The null hypothesis, then, is that differences between structural

Table 16. Weighted Ceramic Group/Type Counts for Structures A, C, D and Sum C, D.

OLIVEJAR										
A:	22	22	20	18	9	9	6	5		
C:	16	14	4	4	4	3	3	3	0	0
D:	5	0	0	0	0	0	0	0	0	0
C+D:	11	6	2	2	2	2	2	2	0	0
MAJOLICA										
A:	105	63	49	38	15	11	8	5		
C:	1	0	0	0	0	0	0	0		
D:	7	3	2	2	2	2	0	0	0	0
C+D:	4	2	1	1	1	1	0	0	0	0
STJOHNS										
A:	58	43	29	15	14	5	5	2		
C:	9	3	1	1	0	0	0	0	0	0
D:	12	10	9	7	5	5	3	2	0	0
C+D:	10	6	5	4	2	2	2	1	0	0
LOOPCRS										
A:	11	11	11	8	8	6	5	5		
C:	9	6	6	4	4	4	3	1	0	0
D:	5	3	2	2	2	0	0	0	0	0
C+D:	8	5	4	3	3	2	2	1	0	0
SOLIDCRS										
A:	15	14	9	8	6	5	3	2		
C:	10	4	3	1	1	0	0	0	0	0
D:	10	3	2	2	2	0	0	0	0	0
C+D:	10	4	2	2	2	0	0	0	0	0
ALACHUA										
A:	2	2	2	0	0	0	0	0		
C:	4	1	1	1	0	0	0	0	0	0
D:	21	21	16	14	14	10	9	9	2	0
C+D:	12	10	8	7	6	5	4	4	1	0
CSGA										
A:	9	6	5	5	3	2	2	0		
C:	3	1	1	1	0	0	0	0	0	0
D:	7	5	5	2	2	2	2	2	0	0
C+D:	5	3	3	2	1	1	1	1	0	0
OTHERGA										
A:	11	8	8	6	3	3	0	0		
C:	1	1	0	0	0	0	0	0	0	0
D:	9	3	2	0	0	0	0	0	0	0
C+D:	5	2	1	0	0	0	0	0	0	0

Table 16--continued

CSTYPB										
A:	20	14	11	11	8	5	2	0		
C:	21	18	13	10	7	7	6	3	1	0
D:	21	19	19	17	16	14	14	10	10	7
C+D:	21	18	16	13	11	10	10	6	6	3
SCRAPED										
A:	6	5	2	2	2	2	0	0		
C:	34	24	3	3	3	1	1	0	0	0
D:	33	33	22	21	10	10	9	9	7	0
C+D:	33	28	12	11	6	6	5	4	3	0
UNIQLIN										
A:	14	8	6	3	3	3	0	0		
C:	1	0	0	0	0	0	0	0	0	0
D:	0	0	0	0	0	0	0	0	0	0

means can be attributed to chance. A significance, or probability, level of 0.05 was selected. The null hypothesis would be rejected if the probability of obtaining a higher F value was greater than five times out of a hundred. ANOVA tables were generated using the One-way Analysis of Variance program for the HP-67 programable pocket calculator (Hewlett-Packard 1976:06-01 to 06-06).

All but two of the eleven ceramic types/groups were differentially associated with Spanish or Indian structural areas (Table 17). An F ratio for UNIQLIN was not calculated since it seemed very obvious that distribution of this type was largely restricted to the Spanish area. Highest and most significant F ratios were generated for OLIVEJAR (F= 18.16, p=.001, degrees of freedom=1,16), LOOPCRS ($F_{1,16}$=22.68), and ALACHUA ($F_{1,16}$=13.04). The next most significant variables (p=.01 or less but greater than .001) were MAJOLICA ($F_{1,16}$=10.71), SOLIDCRS ($F_{1,16}$=9.50), and OTHERGA ($F_{1,16}$=8.65). Between ethnic area variation for STJOHNS and CSGA was significant between p=.05 and p=.01 with F values of 7.93 and 4.82, respectively. The latter group, however, was just barely significant since F at p=.05 with 1,16 degrees of freedom is 4.49. The null hypothesis could not be rejected at the .05 probability level for CSTYPB ($F_{1,16}$=0.76) or for SCRAPED ($F_{1,16}$=2.79).

Overall, Spanish and Indian assemblages were quite distinct except with regard to Jefferson Ware Complicated Stamped Type B and scraped ceramics. As shown in Table 16, it is apparent that OLIVEJAR,MAJOLICA, LOOPCRS, SOLIDCRS, STJOHNS, CSGA, and OTHERGA are more numerous in Structure A (Spanish) than in the combined Structures C and D (Indian). The only "Indian"-distinct category is ALACHUA. If aboriginal structures are individually compared to Structure A, it is found that the null

Table 17. ANOVA Table for One-way Analysis of Variance between Spanish and Indian Structures (at 1 and 16 Degrees of Freedom): Ceramic Group/Type.

Ceramic Group/	Spanish			Indian			Total	Error	Treatment	Error	
Type	Mean	SD	Sum	Mean	SD	Sum	SS	SS	Mean Square	Mean Square	F*
OLIVEJAR	13.88	7.32	111	2.90	3.28	29	10071.11	471.78	535.34	29.49	18.16
MAJOLICA	36.75	34.78	294	1.00	1.25	10	14163.78	8483.50	5680.28	530.22	10.71
STJOHNS	21.38	20.26	171	3.20	3.12	32	4429.61	2961.48	1468.14	185.09	7.93
LOOPCRS	8.13	2.64	65	2.80	2.25	28	220.50	94.48	126.03	5.56	22.68
SOLIDCRS	7.75	4.77	62	2.00	3.13	20	394.44	247.50	146.94	15.47	9.50
ALACHUA	0.75	1.04	6	5.70	3.74	57	242.50	133.60	108.93	8.35	13.04
CSGA	4.00	2.83	32	1.70	1.57	17	101.61	78.10	23.51	4.88	4.82
OTHERGA	4.88	4.02	39	0.80	1.62	8	210.28	136.48	73.80	8.53	8.26
CSTYPB	8.88	6.56	71	11.40	5.70	114	621.61	593.28	28.34	37.08	0.76
SCRAPED	2.38	2.13	19	9.40	11.66	94	14575.61	1256.28	219.34	78.52	2.79

* at $p = .05$, $F_{1,16} = 4.49$

at $p = .01$, $F_{1,16} = 8.53$

at $p = .001$, $F_{1,16} = 16.12$

hypothesis cannot be rejected for OLIVEJAR, ALACHUA, CSTYPB, and SCRAPED between Structures A and C (Table 18). The distribution of these types/groups is not significantly different between these two structures. Structures A and D, on the other hand, are almost completely distinct except with regard to CSGA ($F_{1,16,.05}=1.18$). These types or groups, then, distinguish Structure C from Structure D relative to the Spanish structure. Structures A and C are most alike in their low representation of ALACHUA ceramics and SCRAPED ceramics and are similar with respect to the variation of OLIVEJAR and CSTYPB. Structure D is similar to Structure A only with respect to the distribution of CSGA.

The ceramic type that primarily distinguished between Structures C and D is ALACHUA ($F_{1,18,.001}=24.30$). At a probability level between .05 and .01, distribution of STJOHNS ($F_{1,18}=5.99$), LOOPCRS ($F_{1,18}=7.28$), and CSTYPB ($F_{1,18}=6.79$) are all distinctly different between the structures (Table 19). Reference to Table 16 illustrates that ALACHUA, STJOHNS, CSGA, and CSTYPB are more common in D than in C while only LOOPCRS is more common in Structure C.

The substantive interpretations of these analyses consist of many possibilities. Inhabitants of Structure D appear to have had greater access to Alachua tradition ceramics than did either the priests or the inhabitants of Structure C. This may reflect manufacturing of these types, primarily cord marked, by household D for their own specific consumption. It also may reflect outside ties with producers of Alachua type ceramics which were not shared by other inhabitants of the site (as it is now known). Only determination of non-local origin could test these interpretations.

Table 18. F Values of One-way Analysis of Variance between Structure Pair A-C and Pair A-D by Ceramic Type/Group (with 1 and 16 Degrees of Freedom).

Ceramic Type/ Group	Structures A-C F values*	Structures A-D F values
OLIVEJAR	3.34	**
MAJOLICA	**	10.21
STJOHNS	7.26	6.06
LOOPCRS	11.32	20.25
SOLIDCRS	9.72	9.96
ALACHUA	0.01	23.74
CSGA	12.76	1.18
OTHERGA	13.58	4.59
CSTYPB	0.01	4.93
SCRAPED	1.11	10.27

* at $p = .05$, $F_{1,16} = 4.49$

at $p = .01$, $F_{1,16} = 8.53$

at $p = .001$, $F_{1,16} = 16.12$

**Comparisons were not made between structure pairs for these groups because the counts in the Indian structures were exceedingly small, and those in Structure A were very (relatively) large.

Table 19. ANOVA Table for One-way Analysis of Variance between Structure C and Structure D (with 1 and 18 Degrees of Freedom): Ceramic Type/Group.

Ceramic Type/ Group	Structure C			Structure D			Total SS	Error SS	Treatment Mean Square	Error Mean Square	F*
	Mean	SD	Sum	Mean	SD	Sum					
OLIVEJAR	5.10	5.45	51	0.50	1.58	5	395.20	289.40	105.80	16.08	6.58
MAJOLICA	0.10	0.32	1	1.80	2.15	18	56.95	42.50	14.45	2.35	6.12
STJOHNS	1.40	2.84	14	5.30	4.16	53	304.55	228.50	76.05	12.69	5.99
LOOPCRS	3.70	2.87	37	1.40	1.71	14	126.95	100.50	26.45	5.58	4.74
SOLIDCRS	1.90	3.18	19	1.90	3.07	19	175.80	175.80	0	9.77	0
ALACHUA	0.70	1.25	7	11.60	7.07	116	1058.55	464.50	594.05	24.45	24.30
CSGA	0.60	0.97	6	2.70	2.26	27	76.55	54.50	22.05	3.03	7.28
OTHERGA	0.20	0.42	2	1.40	2.88	14	83.20	76.00	7.20	4.22	1.71
CSTYPB	7.82	7.11	86	14.70	4.57	147	941.81	693.74	248.07	36.51	6.79
SCRAPED	6.90	11.95	69	15.40	11.27	154	2788.55	2427.30	361.25	134.85	2.68

* at $p = .05$, $F_{1,18} = 4.41$

at $p = .01$, $F_{1,18} = 8.28$

at $p = .001$, $F_{1,18} = 15.38$

St. Johns ceramics, CSGA, and majolica ceramics -- hypothesized Spanish markers -- are significantly more numerous in Structure D than in Structure C. It is substantively significant that St. Johns wares, and possibly the complicated stamped ceramics with postulated Georgia design motifs, are trade items or represent an "imported" family (or simply an "imported" potter). These ceramics seem to have been acquired primarily by the Spaniards but distributed to Structure D inhabitants more than to Structure C inhabitants. Georgian Creek-affiliated ceramics, Ocmulgee Fields Incised and Chattahoochee Brushed, were accumulated more by the Spaniards than by the Indians but between the Indian structures distribution of this group was not accounted for by differential access. Loop cross complicated stamped ceramics seem to have been distributed more evenly between Structures A and C than between A and D. It is possible that inhabitants of Structure C were manufacturing and distributing this type to the priests and, in return, the Structure C household was receiving utilitarian Spanish ceramics.

These hypothetical interactions only examine part of the problem of production and distribution. Sherd counts will be affected by breakage rates and degree of fragmentation both during the occupation period and afterward (e.g. during plowing). Since the entire site was disturbed evenly, it may be assumed that the latter effects would be equivalent across the site. It should also be obvious from the previous statements that determination of production and distribution patterns can be better examined when resource utilization data are included. If, for instance, it can be shown that clays and/or techniques used in producing Alachua tradition ceramics differ significantly from those used in manufacturing other ceramics within Structure D, then it can be stated that this household did have access to, or preference for, these non-local ceramics and that this access/preference was not shared by the other households. Determination of origin for other ceramic groups may also indicate whether or not the Indians at this mission were from different areas of Spanish Florida (remembering that Spanish Florida encompassed a much larger region than the present state does) and continued manufacturing ceramics in their traditional manner using their traditional designs.

Based on ceramics whose origins are known -- or are reasonably well known -- it appears that Structure C and D households had differential access to utilitarian and "tableware" Spanish ceramics and to St. Johns ceramics. Structure D occupants acquired more majolica and St. Johns types, both of which were postulated to be prestige goods and were shown to be Spanish markers, than did occupants of Structure C. The latter accumulated more utilitarian Spanish ceramics than did occupants of D. The actual Indian view of the importance of the distinction between olive jar and majolica cannot be assessed. Uses may have made one category preferable over the other.

The difference between assemblages is, overall, significant and it is apparent that Spaniards accumulated more types that distinguished their inventory from that of the Indians. It is also apparent that types or groups shared between Spaniards and the two Indian households were not the same which strongly suggests differential productive and/or distributive interactions between Spaniards and Indian households.

The concentration of Colono-Indian wares in the smaller Spanish structure indicates that this was one class of ceramics produced primarily for and consumed primarily by the Spaniards. One might postulate that the presence of ring bases was necessary if Spaniards insisted on eating off tables. Production of these vessels may simply have been to copy European forms which would have been favored by the Spaniards. It is impossible to sort out the Spanish goods received by Indians in a manner which allows identification of specifically exchanged goods. One might hypothesize that ceramics were exchanged for ceramics but there would be no way to test this. One might also hypothesize that prestige goods accrued to persons who produced ceramics or other goods expressly for Spanish consumption.

Since Colono-Indian ceramics were not found in great numbers in the Indian habitation area, it is not possible to identify the manufacturers. The fragmentary basal ring foot sherd found in Structure C may have been a "waster." It's similarity to most of the footed basal sherds in Structure A may indicate that this household was a primary producer of Colono-Indian ceramics. On the other hand, a very distinctive paste Colono-Indian vessel (fragmentary but consisting of several sherds) was recovered from Structure D. This paste could not be matched with sherds found in the Spanish structure although the difference appears to be largely one of color which can be due simply to firing temperature and/or length of firing time. It is possible that it will be found that small, ring-footed bowls were made from one type of clay (Miller Plain) whereas plates, handled vessels, and possibly statuettes were made from another type of clay (Jefferson Ware). If this is the case, and it still needs to be tested, then Structure C producers were making the small, footed bowls and Structure D persons were producing the plates, jars, and other Jefferson Ware items. Conversely, some of these Colono-Indian items (Miller Plain in particular) may have been imported. Inhabitants of

Structure D, in any event, may have produced a few of these Colono-Indian vessels for their own use.

Distribution of Non-ceramic Prestige Goods

Several hypotheses were proposed which concerned non-random distribution of goods other than ceramics. Although such artifacts were few and, therefore, not open to tests of significance, the distribution is obvious. Hypothesis nine stated that religious items would be found in conjunction with non-sacred prestige items in high-status dwellings if maintenance of previous status depended on conversion. Only one religious item, a medallion from Structure C, was found during the excavations. No religious paraphernalia were recovered from either Spanish building which is unusual. If the mission was destroyed during the 1656 revolt, it is conceivable that such items might have been looted. It is also possible that the mission did not have many of these items to begin with and that what was present was either taken care of or removed when the mission was abandoned, leaving only those items which had been lost or were broken. The two glass beads recovered may have been rosary beads but the function cannot be demonstrated.

Instead of treating objects separately, the glass beads, religious medal, copper bead and copper rectangles can be classified as a set of ornaments. Hypotheses five and eight stated that associations between Spanish-supplied ornaments, bells, clothing, and aboriginal prestige goods -- feathers, hides, litter, pearls -- would occur in high-status Indian units. Most of the defined native prestige goods were perishable and, so, were not preserved. Two items may be representative of native prestige items, however. These were the whelk shell columella (possibly a pendant or other ornament) and shark tooth recovered from Structure D. Copper was also a prehistoric prestige item. Four copper rectangles were recovered from Structure D and its immediate environs. If these were sewn to clothing or were part of a necklace or other jewelry, then one would expect to find more of such items than one would expect to find of religious medallions which are usually worn separately. Quantity, therefore, cannot be considered an important attribute. One can return to the concept of variety and examine the number of different ornament types within an area. Only Structure D contained more than one kind of ornamental item.

All copper rectangles and the copper bead (not from one of the four "main" structural areas) had rough cut edges. These ornaments may have been supplied by Spaniards but it is more likely that the Spaniards supplied the copper which was then fashioned into ornaments by Indians. A small piece of scrap copper was found in Structure B.

Weapons and Subsistence

Distribution of Spanish-introduced tools or weapons is somewhat tentatively defined since the items are not positively identified. Two possible knife blades, a native-manufactured gunflint, and a small lead shot were recovered from Structure D. These items may have been used in warfare rather than in hunting but they could also, practically, function in both spheres. Major occupation of the site appears to have been during the early part of the 17th century continuing perhaps as late as the Timucuan rebellion in 1656. Three musket balls were recovered from Structure A, Structure B, and just west of B. The location of these balls is certainly proper if the mission was invaded or if the Indians revolted and the priests and/or Indians secured themselves in the two more substantial Spanish structures. The Spanish Structure B had been burned and at least part of Structure C in the village had been destroyed by fire. Artifact distribution indicative of skirmishes has never been identified for what are basically or wholly prehistoric sites. The number of arrow points within the village and structures, the lead shot, and the burnt structures may, however, indicate the manner by which this village met its end.

The fact that a gunflint and lead shot were found in one aboriginal structure and an irregular fragment of lead in another Indian structure is important. Bushnell (1978) and others have remarked that Indians, especially caciques, had access to firearms. In the early 1700s, Indians in Apalache were supposed to be outfitted with weapons in case of attack but weapons were supposedly scarce. The indication that firearms were present at this earlier, smaller mission could be interpreted as better supply of weapons during the early 17th century. There may, however, have been only one or two firearms available to the entire village and compared to the number of aboriginal tools and weapons, these European ones form a minor component. The presence of items associated with the use of firearms in the aboriginal sector of the village and the balls, which were possibly directed toward the Spanish sector of the village, lead one to speculate whether or not the firearms were supplied by Spaniards or if they were acquired "on the sly" by Indians and used against the Spaniards.

The majority of tools recovered from the mission village were lithic. Iron tools, which were probably valued items, may have been removed from the site when it was abandoned. The number and variety of lithic tools found in all areas of the site does imply, however, that native tools were not abandoned in favor of European counterparts. Whether this was due to scarcity of the latter or monopolization by Spaniards is a major question that cannot be answered for any mission site excavated to date on the basis of reported data.

The majority of food items were native and subsistence appeared to follow a basically prehistoric pattern. Pig and cow were represented in the faunal assemblage but as minor components. Spanish refuse did not yield more domesticates than did Indian structures in terms of minimum number of individuals. There was, however, a significant difference in the variety of species and elements present within the different areas. Species within the Spanish structures were predominantly deer (*Odocoileus virginianus*) and gopher tortoise (*Gopherus polyphemus*). The Indian refuse included these two species plus other small game animals, "pests," and fish.

Faunal elements recovered from the Spanish structures, particularly from Structure A since there was little bone in Structure B, were much less varied than those in the Indian midden. Of the 16 identifiable deer elements, half were tibia fragments. One femoral distal end, a radius fragment, and pedal elements were also present (Table 20). In Structures C and D, only one-third of the identifiable deer elements derived from the hindquarters versus roughly 90% in the Spanish structures. The variety of elements present in the Indian area was much greater: scapular fragments, manus and pes elements, forelimb elements, dentaries, teeth, and vertebrae. The less complete inventory of elements in the Spanish sector suggests that butchering was carried out elsewhere and that priests received the meatier (hindlimb) portions

Table 20. White-tailed Deer (Odocoileus virginianus) Element Distribution between Structures.

Element*	Structure A	Structure B	Structure C	Structure D	Total Number
ilium			1R**		1
femur, distal	1L				1
femur, proximal			1R		1
tibia, distal	3L, 2R, 1?	1L	1L, 1R, 2?		11
tibia, proximal	1L, 1R				2
fibula			1L		1
metatarsal			1L	1L, 1?	3
calcaneum	2L		1?	1?	4
scapula			1L		1
humerus, distal		1L		2L, 1R, 1?	5
radius	1L		1L, 1R		3
ulna, proximal			1L		1
metacarpal				1L, 1?	2
cubonavicular			2L	1L	3
scapholunar			1R		1
scaphoid			1R		1
cuneiform			1R		1
phalanx	1?		1?		2
vertebra			3		3
dentary			1L, 3R		4
antler frag.			3		3
teeth, molar frag.		13		6	19
MNI	3	1	3	2	9

* Distal or proximal end of element (shaft) is indicated whenever that information was recorded.
**Left side is abbreviated "L", right side "R", and "?" indicates side was not recorded or could not be determined.

almost to the exclusion of other portions. The lack of a complementary number of femurs may indicate that deer were butchered at the kill site at some distance from the village since the femur is more difficult to remove from the pelvis than, for instance, the humerus from the shoulder girdle. Meat may have been cut away from the femur and carried away still attached to the tibia.

Structure C yielded not only greater MNI of deer but also more elements than did Structure D. Identifiable elements in the latter area included lower hindlimb fragments, three humerii, a metacarpal, and single molars and tooth fragments. Portions of hindlimbs were least common. Conversely, hindlimb elements were fairly common in Structure C midden but no humerii were present. Differences between assemblages in these two areas may be due to incomplete excavation but the possibility exists that deer meat was shared between the two households (or between a greater number of households) or that the "missing" hindlimbs from Structure D and/or Structure C were those in the Spanish area midden.

The pig elements (Table 21) recovered from Structure D -- ribs, articulated vertebrae, and scapula -- would have represented poor cuts of meat and were probably the discarded carcass. Apparently, the limbs and head were removed but these elements could not be identified in any of the excavated units. The bones were in extremely poor condition and evidence of butchering could not be found.

All bones were examined for evidence of preparation techniques. With the exception of one complete humerus from Structure C, all long-bone shafts had been broken and several fragments exhibited twist fractures which result from intentional administration of controlled blows at particular regions along the shaft (Sadek-Kooros 1972:371). Such

Table 21. Faunal Species and Elements from Spanish Structures (White-tailed Deer excluded) and Village (less 1976 Trenches).

Location/ Species	Antler	Teeth	Dentary	Vertebra	Scapula	Humerus	Radius	Ulna	Metacarpal	Manus	Ilium	Pubis
VILLAGE												
Bos taurus												
Sus scrofa		1		12	1							
Odocoileus virginianus	3	12	4	3	1	8	3	2	2	7	1	
Artiodactyl		21		1								
med-lge mammal		1										
Procyon lotor						1						
Sciurus sp.						1						
Sigmodon hispidus			1									
Gopherus polyphemus					2						1	1
Chrysemys sp.												
Terrepene carolina												
Chelonia				1								
Alligator mississippiensis												
Passerine						1						
Mugil sp.				4								
Osteichthyes				1								
Squaliformes		1										
STRUCTURE A												
Bos taurus		1				1						
Sus scrofa		1										
Gopherus polyphemus				1	1							1
Colubridae				1								
STRUCTURE B												
Gopherus polyphemus												

* Description reported on species identification card by Heath (1977), Zooarcheological Laboratory, Florida State Museum.

Table 21--extended

Femur	Tibia	Fibula	Metarsal	Metapodial	Calcaneum	Astragalus	Phalanx	Plastron	UID Shell	Dermal Scute	Spine	Scale
							1					
2	5	1	3	1		3	1					
					1		1					
								6	127			
									5			
									2			
2 "limbs"*									115			
										6		
											6	2
								20	76			
								2	4+			

patterns have been found to reflect purposeful fracturing to produce specific shapes that can be used to manufacture tools (Sadek-Kooros 1972: 372). The majority of deer longbones, however, did not exhibit twist fractures. The fragmentary nature of the shafts taken in conjunction with the presence of mostly epiphyseal segments, suggests that bone was being shattered in order to extract the marrow.

Articular ends of mammal longbones did not show signs of having been burnt. Burning and calcination appear to have been random, probably the result of discarding bones in firepits or hearths. It is likely that meat was either boiled on the bone or removed from the bone prior to cooking. All humerii from Structure D showed butchering cuts, possibly made by an iron knife, on the anterior-medial side of the distal end of the shaft. These cuts were fairly deep and short and may indicate cutting through tendons at this point either to remove the meat from the bone or to expose the elbow joint. Longbone elements from other structures did not exhibit these same, or any other, butchering marks which may indicate either more skilled butchers or different butchering techniques.

The majority of the gopher tortoise and turtle bones recovered were unidentifiable shell fragments. Parts of the carapace were not always specified and weights or general terms (e.g. "numerous") were often substituted for counts so it was not possible to determine exactly how many of what parts were present. This author did not go back and systematically check all classifications. Portions of carapace and plastron were represented. Scapulae, ilia, pubii, and limbs were recovered from Structure A and D. The scapula from Structure D showed small knife cuts just below the distal epiphysis. Several very small shell fragments were calcined but this probably resulted from disposal in fires rather than use of the shells as cooking vessels.

All of the wild species represented at Baptizing Spring, including alligator and mullet, would have been found within a 3 km radius (to the Suwannee River) around the site. Although soil conditions are not favorable for gopher tortoise because of the clay substrate close to the surface and the degree of moisture retention, dry, loose, sandy soils are found within 1 km of the site. Animals such as raccoon, cotton rat, and deer would have been attracted to corn and "old" fields. Deer, squirrels, and raccoon would also have inhabited adjacent hammocks. The amount of pig represented in the faunal assemblage does not indicate that there were many animals consumed at the site although these animals may have been raised and taken to market in St. Augustine (or otherwise removed from the region through barter or sale). If pigs were even moderately numerous, they would have been serious competitors with deer for the fall acorn mast. Antler fragments were present but it was not apparent whether or not these had been attached (late summer-fall) or picked up after antlers were dropped in the winter. It is impossible to determine whether deer were killed particularly in the fall, when they may have been drawn to the corn fields or when Indians were also collecting acorns and tending their pigs. Molar wear on some of the deer teeth indicates that animals of 6 years or older were taken.

The impact of introducing range cattle and pigs has not been assessed for the mission period. Competition for food and increased parasite infestation (e.g. cattle ticks which severely afflict deer populations in areas where the two species range together) may have had an impact on deer populations in areas where these domesticates were numerous. All mission period faunal assemblages, however, show fairly heavy use of deer meat.

Several problems were previously identified that hamper creditable interpretation of the faunal material. If the sample can be viewed as representative, it appears that prehistoric patterns of resource utilization and food preparation had not been altered at Baptizing Spring. Even though all small mammals and "gathered" animals (such as tortoise and box turtle) comprised the majority of the assemblage in terms of MNI, the actual amount of meat taken from the larger mammals, especially deer, would probably have constituted a greater proportion of the protein intake. One might expect that, if population decline at the missions was a serious problem (and there seems to be every indication that it was) and that males were being drawn off to work on haciendas, ranches or in St. Augustine, more of the meat diet would be composed of those species easily caught by youngsters, oldsters, and women. If males returned to the mission village at specific times every year and if most of the deer was obtained while the hunters were home, then seasonal information might lend some clue. There are a number of interacting variables, however, and the seasonality data from Baptizing Spring were non-existant. In addition, it is not known if smoked, dried or pickled meat was imported or if bones would be present in the last type. As it stands at Baptizing Spring, there is not enough information to determine if the more easily obtained species actually were more important to the diet than were species which may have been hunted exclusively by adult males.

The actual time range which was covered by the midden deposit is unknown. Meat protein may have been scarce but, as is true at most archeological sites, the total contribution of meat to the diet cannot be assessed. Domestic meat "on the hoof," however, does not appear to have been an important protein source for either Spaniards or Indians.

Floral remains consisted only of items preserved because of carbonization. These included hickory nuts, peach pits, a possible legume, and corncobs. In all likelihood, the nuts and pits were not roasted but were incidentally charred. It is conceivable that Spaniards disposed of their floral remains in a manner different from Indians, hence there were no floral remains in the Spanish structures. Peach pits may have been saved for planting and hickory nuts may have been processed by Indians with the Spaniards actually coming in contact only with the by-products such as the meat, oil, and nut butter. It is an interesting possibilty that the actual fruit of the peach pit, the so-called "bitter almond," may have been eaten. It has long been, and still is, considered a medicinal item.

Peaches may have grown at the site or have been brought in from St. Augustine or other missions. According to modern agricultural digests (of the 1930s-1940s), peaches grew very well in Suwannee County although the actual locations where they grew well were not mentioned. If peaches were grown at the site, and these soils may not have been particularly good for their growth, the trees may have required a fair amount of tending during parts of the year. Varieties grown in Florida today (although the author does not know how they compared with 17th century varieties) suffer from numerous molds, smuts, and parasites. Actual contribution of peaches to the diet is unknown. They may have been an infrequent delicacy.

Carbonized corncobs, identified as Eastern Complex (Northern Flint) variety, comprised the bulk of the floral remains. As a group, the cobs are very similar to corn, measured by proxy on Alachua Cob Marked ceramics, from a late Alachua period village site (ca. A.D. 1400-A.D. 1600) near the Fox Pond mission site. Lower glume width and distance between adjacent lower glumes in the same row are less than those shown on the ceramics at Fox Pond but greater than those measured at the Woodward village site (ca. A.D. 700-A.D. 900) (Kohler, Appendix O). Recovered corncobs from the Zetrouer site (A.D. 1685-A.D. 1706) not only had higher mean row number but also larger mean cupule widths than cobs from Baptizing Spring. Increasing cob and kernel size indicated at Fox Pond and Zetrouer may have been due to introgression of maize brought in from Cuba or Yucutan (Kohler 1979). Corn at Baptizing Spring appears to represent a relatively pure aboriginal variety. This suggests either less tampering or interest in altering native food stocks at this mission than at other mission period sites (Zetrouer and possibly the village adjacent to Fox Pond). It could also indicate an early occupation date for Baptizing Spring. The fact that some of the cobs were small, probably immature, may have influenced the overall determination of mean glume widths and distance between adjacent glumes.

The concentration of corncobs exclusively, for all intents and purposes, in Structure C is unusual. Binford (1967:3) suggested, on the basis of ethnographic and ethnohistoric data, that pits filled with bark, wood, and/or corncobs were used in hide-smoking activities. He gives the names of various sites where such features have been found but fails to mention whether or not these features were located within structural limits. If one presumes this function for pits filled with cobs at Baptizing Spring, one must accept the fact that these activities took place within (or under) a fairly substantial structure which appears to have served as a living area as well. One must also ask why the inhabitants of Structure C appear to have monopolized hide-smoking activities, although this may be a reflection of sampling bias.

One interpretation is that these features represent smudge pits, stoked with corncobs which would smoulder and produce quantities of smoke to ward off biting insects. Milanich (1972:42, 45) proposed this interpretation for charcoal filled pits at the Richardson site. If this were their function, one might wonder why inhabitants of this structure were so sorely afflicted whereas Spaniards and inhabitants of Structure D were not.

It is more likely that an explanation of these features lies in some specialized usage. Maize was an extremely important crop in all the Spanish colonial territories and much of the prehistoric United States. Since prehistoric times, maize has been treated with utmost respect and ceremonialism by Indians and Latin American peasants who grow it as a staple crop. The ceremony of first fruits and the Green Corn ceremonies are well-known examples of ritual treatment of maize in the Southeast.

Maize of various colors prepared in several ways was important in curing ceremonies in 16th century Peru (Markham 1873:24). The Spaniards in Peru reportedly adopted the use of maize flour instead of wheat flour in concocting herbals and used chicha (a fermented or unfermented corn beverage) as a cure for diseases of the kidneys, pains in the side, stones, stoppage of urine, and colon and bladder pains (Garcilaso de la Vega 1962:499, 123). Modern herbals and patent diuretics prescribe or use cornsilk for similar curatives. An early 20th century herbal of indigenous medications used in Venezuela describes the same uses, plus others, and same preparations of maize used by Indians over 300 years earlier (Pompa 1929:118-119).

None of the ethnohistoric accounts concerning Florida mention the use of maize for medicinal purposes although this may not have been a topic of major import. Le Moyne (in Bennett 1968:42) did mention that the sick were treated by being made to inhale tobacco smoke or were placed on a bench, prone, with their faces over a fire unto which "seeds" were thrown. It is known that preparing new fires or making separate fires was a common part of curing ceremonies practiced by Florida Indians (Milanich and Sturtevant 1972:23, 30). If corncobs were burnt either in curing, purification, religious or sorcery rituals, then the concentration of pits filled with cobs in a single structure could indicate either "underground" continuation of native rituals, a household plagued by illness, or the residence of a sorcerer/curer where Spanish-approved activities were performed. The different size of corncobs found in different types of proveniences could be a reflection of burning green (immature) corn and more mature (larger) cobs. The difference in cob size may represent cob burning throughout a harvest year, or over several years.

The above speculations are meant to serve only as alternate interpretations for the presence of cob-filled features. There is no reason to believe that the question will ever be answered but it should be realized that smudge pits and hide-smoking pits may not be the only interpretations of these pit functions.

Artifact and Structure Associations

Spanish structures were differentiated from Indian structures on the basis of architectural features, ceramic types represented within, lower diversity of Spanish ceramics and aboriginal ceramics, less variety in the kinds of animal sources utilized, and apparent predominance of certain portions of deer meat. Floral remains were not found within the Spanish structures. Non-local ceramics such as olive jar, majolica, and St. Johns ceramics were more common in Structure A than in the Indian structures and monopolization of certain ceramic types could have resulted from restricted access or directed production of some goods for the priests.

The larger Spanish structure was located on a rise adjacent to the spring. The other three identified structures were all lower. Testing and excavations were too incomplete to allow reconstruction of the entire village settlement pattern. The 1976 trenches just south of Structure B did, however, show a very low density of artifacts and it is possible that a plaza was located in this more or less central location. The Spanish structures appear to have been located near one end of the main village area and Indian structures were situated to the southeast. The presence of clay-lined basins within and beneath Structure B -- features which may be aboriginal in origin -- could indicate that the Spanish structure was erected over <u>or</u> adapted from a specialized aboriginal structure. On the other hand, this arrangement may indicate that the structure was occupied by Indians at some time after it ceased to be associated with Spanish activities. At least one document referred to the Indian practice of building churches and dwellings in the hope that their efforts would be awarded with the appearance of a resident priest. If such structures were built by Indians prior to habitation by a Spaniard, would the Indians (most likely the cacique) have occupied them?

Aboriginal ceramic assemblages of the two Indian structures were significantly different with respect to proportions of loop cross complicated stamped, St. Johns ceramics, complicated stamped ceramics with possible affiliations with or origins in Georgia, and Alachua tradition ceramic types. Structure D appears to have contained more possible non-local ceramic types than did Structure C. This may reflect either trade relations outside the village that were restricted to this household or possible non-Utina inhabitants living in this household.

Association of prestige items with the aboriginal structures does exist and, although not testable for statistical significance, this association is probably substantively significant. Structure D yielded remains of floral and faunal domesticates, Spanish-origin "prestige" items (glass bead, copper ornaments), and possible aboriginal prestige items (whelk shell and shark tooth ornaments?). This structure also yielded two possible iron knife blades, a lead shot, and a gunflint. Although absolute numbers and proportions of different types of artifacts differ between structures, the two aboriginal assemblages both consist of the same kinds of items. There is a full range of lithic artifacts, ceramics, and presence of faunal and floral remains in each. It has been suggested that specialized activities were associated with Structure C which was distinct in the large number of charred corncobs contained within features. The faunal assemblage in Structure C also contained more deer bone and more types of deer elements than did Structure D. If Structure C inhabitants were specializing in some activity such as butchering deer and hide-smoking, then the lithic assemblages might be expected to differ between the two structures.

Table 22 compares raw and relative frequencies of lithic variables within worked and utilized classes between Structures C and D. Only those items which could be assigned to use wear categories were used, so variables such as unidentifiable biface, unidentified uniface, and so forth were excluded. Among worked types, the proportions of small and medium-large points are roughly equivalent between the two areas. The major difference is in the percentage of knives (bifacial, unifacial, and edge-retouched variants); 12.80% of the tabulated worked lithic artifacts in Structure C were knives versus only 6.62% in Structure D. Among the utilized categories, however, Structure D has a greater percentage of knives (11.14%) than does Structure C (7.20%). The proportion of both worked and utilized scrapers is roughly equivalent between the two structures.

In order to ascertain if lithic assemblages were significantly different between the two Indian structures, chi-square was calculated using the raw frequencies between the two structures for worked and utilized categories. The null hypothesis in both cases would be that assemblages were not equivalent in their constituent make-up. Rejection at an alpha of .05 was selected. With 16 degrees of freedom, chi-square for the worked assemblages was calculated to be 16.84. In order to reject the null hypothesis, chi-square would have to be greater than 26.296, therefore the two worked assemblages were not significantly different. With 13 degrees of freedom for the utilized lithic variables, a chi-square of 22.362 was needed to reject the null hypothesis. Again, the computed value of 17.22 fell below the necessary rejection value. It does not appear, therefore, that worked and utilized lithic assemblages were significantly different between the two structural areas. Differences in

Table 22. Worked and Utilized Lithic Artifacts from Structures C and D. (Aggregated categories for artifacts with definable use wear).

Variable	Structure C	Structure D
WORKED		
small points (includes fragments)	42(33.60%)	47(34.56%)
small point preforms	0	3(2.21%)
med-lge points (includes fragments)	19(15.20%)	18(13.24%)
med-lge point preforms	2(1.60%)	7(5.15%)
drills	5(4.00%)	6(4.41%)
awls	0	2(1.47%)
gravers	2(1.60%)	3(2.21%)
scrapers	32(25.60%)	28(20.59%)
heavy scrapers	0	2(1.47%)
knives	16(12.80%)	9(6.62%)
choppers/hammerstones	1(0.80%)	3(2.21%)
gunflint	0	1(0.74%)
adze	1(0.80%)	3(2.21%)
perforator/scraper	1(0.80%)	0
scraper/knife	1(0.80%)	2(1.47%)
scraper/graver	1(0.80%)	1(0.74%)
scraper/spokeshave	2(1.60%)	1(0.74%)
TOTAL WORKED	125(100.00%)	136(100.08%)
UTILIZED		
scrapers	177(70.80%)	230(65.71%)
knives	18(7.20%)	39(11.14%)
spokeshaves	28(11.20%)	44(12.57%)
gravers	11(4.40%)	20(5.71%)
perforators	0	1(0.29%)
chopper/peckingstone	3(1.20%)	1(0.29%)
quartzite grindingstone	1(0.40%)	0
coral core cf. gouge	1(0.40%)	0
scraper/graver	2(0.80%)	1(0.29%)
scraper/knife	3(1.20%)	3(0.86%)
scraper/spokeshave	3(1.20%)	8(2.29%)
graver/knife	3(1.20%)	0
scraper/perforator	0	1(0.29%)
graver/knife/spokeshave	0	2(0.57%)
TOTAL UTILIZED	250(100.00%)	350(100.30%)

proportions of worked and utilized variables between the two structures could have been over-ridden by compensation within one of the two categories. As in the case of the knives, although there were more worked knives in Structure C, there were more utilized (unmodified) knives in Structure D. On the basis of use wear, then, the two assemblages are comparable. Walker (1978:713), however, has demonstrated that, for obsidian tools, whether or not a tool is primary (unmodified) or bifacially worked (in his example) affects the efficiency of performing certain tasks. He found that for most butchering tasks, flake tools with unworked edges were more effective than similar bifacially worked tools. On the other hand, bifacially flaked tools were more effective in skinning activities. Of the knives and scrapers at Baptizing Spring, however, very few were bifacially treated and most of the worked tools were flaked only along one edge. Could unifacially worked tools be a compromise between the efficiency of bifacially worked and unmodified tools? Walker (1978:713) also found that the animal being butchered or skinned had an impact on the most efficient tool type which could be used and the elements being separated also affected tool efficiency. In general, bifacial tools were more efficient in separating the scapula from the ribs and humerus from the scapula whereas flake tools were more efficient in disarticulating other joints and cutting abdominal muscles (Walker 1978:712). These latter experiments were performed on sea lion, however, and effectiveness in butchering deer were considerably different (Walker 1978:713).

Those tools which were classified as scrapers would be the most likely ones used in skinning and cleaning hides and in both structures the majority (86% in Structure C and 89% in Structure D) of scrapers were not worked. There does not seem to be any clear basis for claiming that specialized animal processing activities were being carried out in Structure C. The amount and variety of deer bones and the kinds of tools present in that area may be a reflection of greater butchering activity which could reflect household personnel make-up (more and/or better skilled hunters and butcherers). The presence of butchering scars on humerii from Structure D has already been noted as being peculiar to that area. The possibilty should be kept open, however, that Structure C inhabitants were either more involved in or better at procuring and processing deer. The wide variety of ceramics present, the religious medallion, and the grindingstone, however, do not support the possibilty that this was a specialized activity area rather than a living area. There were enough of the other types of lithic variables present to suggest that other activities were also being carried out. For the sake of discussion, and since no hard basis exists on which unquestionable distinction can be made, Structures C and D have been viewed as independent habitations and will be viewed thus for the remainder of the paper. It is hoped that future investigations at the Baptizing Spring site will be able to answer this and many other questions raised herein.

On the basis of higher ceramic diversity, more types of Spanish and Indian non-local and ornamental items, and presence of introduced food items, Structure D can be tentatively identified as a structure inhabited by individuals of higher rank than those in Structure C. The former seem to have accumulated more kinds of European goods as well as native goods. There is no reason to assume that Indians could not have acquired prestige or non-local goods without going through the priest. They were not restricted to the mission since, with official leave, they were sent to

St. Augustine or other places to fulfill labor requirements. If prestige items retained their importance, and there is every reason to presume they did, then public opinion might act against acquisition of such goods by persons who did not "deserve" them. Documents dealing with visitations by military personnel in the 1670s indicated that native roles were still important to, and monitored by, villagers as well as Spaniards. Structure D also yielded the only items which might be interpreted as gambling or gaming artifacts. If the gopher tortoise pieces were used in gambling (they could simply have been toys), then it would suggest that gambling was not done away with by the priests at Baptizing Spring and that the inhabitants of this Structure were also "achieving" prestige. The hypothesis that native ranking and status reckoning were retained and supported by both Spaniards and Indians cannot be rejected.

Sites Adjacent to Baptizing Spring

The six sites located in the vicinity of Baptizing Spring were briefly described in Chapter Four. The Pump Spring site, 8 Su 84, appears to have been occupied primarily during the Deptford period and, therefore, does not figure in this discussion to any great extent. The possible relationship of these sites to the mission site was not known during the survey and they were treated as separate village occupations. Boundaries were definable on the basis of surface observation of artifacts but, having seen the local collectors in action, the discontinuity between the sites is now questioned and will not be demonstrable without subsurface testing. It was hypothesized that the sites might have been sites occupied prior to Spanish arrival. It was later considered that these sites might actually have been occupied concurrently with the mission and were outlying concentrations of households.

Identifiable ceramics are tabulated in Table 23. Site Su 85, located east of Baptizing Spring and south of Walker Spring, had the greatest variety of ceramic types spanning periods from Deptford (minor) through the mission period. This was the also the site which had the greatest proportion of Alachua tradition ceramic types. These punctated types have been found to occur fairly early, during the Weeden Island I period, in northern Columbia County, however (Siglar-Lavelle, personal communication, 1979). Perhaps fortunately, although the overall picture is becoming less understood as research in the Suwannee-Columbia County area continues, the frequency of Alachua Cob Marked ceramics is very close to the Lochloosa Punctated frequency (n=19 and n=23, respectively). The majority of ceramics found at Su 85 are late. The most common type, scraped (n=131), occurs in the mission period contexts of Baptizing Spring and is also late (at least protohistoric) in northern Columbia County (Siglar-Lavelle, personal communication, 1979).

Sites Su 88 and Su 89, which were totally surface-collected, were adjacent to Su 86 and might have been closely related to it. Their ceramic assemblages differed primarily in having a relatively large percentage of complicated stamped ceramics, many of which were similar to or the same as types at Baptizing Spring. Su 87 may not have been anything more than a temporary campsite or single unit occupied for a short period. No subsurface tests were made in that area so it is unknown how deep the deposit is.

Table 23. Idenitifiable Aboriginal Ceramics Collected from the Surface of the Sites Adjacent to Baptizing Spring.

Description	Su 84	Su 85	Su 86	Su 87	Su 88	Su 89
fiber-tempered plain	3					
Deptford Simple Stamped	10	24	2			
Napier CS		4				
Thomas Simple Stamped					2	
Carrabelle Punctated	1		2			
Weeden Island Incised				1		
Weeden Island Plain			3			
Swift Creek CS			1			
shell-edge impressed		10	1			
St. Johns Plain			3			
St. Johns Check Stamped	1	4	2			
Lochloosa Punctated		23				
Alachua Cob Marked	2	19	1			5
kernel impressed		1				
cord marked	1	6	1			
fabric impressed	3	6	1			
fingernail gouged		4				1
linear punctated		1				
irregular punctated	1	21	1			1
"regular" punctated in rows		1	1			
Chattahoochee Brushed		13				
scraped	1	131	37	2		45*
scraped with other impressions		10	1			
linear check stamped				1		1
check stamped	4	8	4	1	1	5
check stamped with dot		6				4
San Marcos Line Block		3			1	
line block CS		2				
Jefferson Ware						
Type B CS		25	6		23	9
pinched rim		3				
loop cross CS		5	1			6
concentric circles CS		3			1	1
bullseye with straight lines (2 motifs)		2				
barred bullseye CS					4	
joined curved lands CS					8	
scrolls CS					1	
straight/curvilinear CS (4 motifs)		3		1		
arc,straight,bullseye CS		1	1		3	
fret/volute CS			1		2	
nested squares/rectangles CS		4	6		9	4

Table 23--continued

Description	Su 84	Su 85	Su 86	Su 87	Su 88	Su 89
joined squares with central dots CS					1	
joined parallel lines CS		1				
diamond or triangle enclosed in circle CS			1			
nested triangles, dots, volutes, checks, CS					1	
red filmed	1					
undecorated	70	356	248	50	115	76
TOTAL	98	704	326	56	172	162

* Forty of these scraped sherds were part of a single vessel and most of them could be fitted together yielding about one-fifth of a large, straight-sided pot. Apparently, this vessel portion had been broken up during plowing/bedding by Owens-Illinois, Inc. since the sherds were found more or less in a heap.

The relative proportions of ceramics at the five larger sites indicate occupation primarily during the late prehistoric/mission period except at Pump Spring. Olive jar and a single majolica sherd (from Su 86) were recovered from two of the sites. Occupation prior to the mission period may have been sporadic but there is a definite problem involved in the fact that we do not know the origins of the Utina Indians. Current analysis of ceramics from these sites is in its final stages and it is hoped that ceramics from these sites can be shown to be either local or non-local, of the same paste types as ceramics at Baptizing Spring, and with the same or different manufacturing attributes.

It is interesting that loop cross complicated stamped was the only variety of cross-motif recovered from these sites. Since collection was either complete or random sample, it appears that the solid cross variant is not present or present in very small numbers. The relative abundance of Alachua ceramic types at Su 85 is also potentially important and may indicate some relationship between inhabitants of Structure D at the mission and persons at Su 85. There is simply not enough data at this time to allow statements of relationships between these sites and the mission.

Examination of ceramic attributes and clay resources will be used to test the hypothesis that the "sites" were contemporaneous and that ceramics were being exchanged between groups. If exchange was taking place, it would be expected that technological attributes, design attributes, and paste characteristics would cluster across the various sites. If ceramic attributes tend to be clustered within each "site" and not shared with the mission, then the sites may have been contemporaneous but economically independent. If Spaniards were forcing

Indians to settle in the vicinity of missions, it might be expected that non-local groups would have significantly different artifact assemblages if they were drawn from dissimilar populations. The preponderance of complicated stamped ceramics at Su 88 in particular and Su 89 in general, suggests that there may have been a distinction between those living in these areas and persons living in the other site areas. Whether or not the difference in ceramic assemblages is attributable to time or ethnic background is not answerable at this time. Ideally, excavation in these other sites would be carried out to examine the depth of the midden and number of possible households involved. It seems extremely likely that these sites were actually part of the mission but were separate from the core area either for functional or social reasons.

Comparison of Mission Period Sites

How does the Baptizing Spring site compare with the other mission sites in Florida? There are only two reported sites which include extensive Spanish architectural information that can be compared with Baptizing Spring. The Scott Miller site and the Pine Tuft site, both in Apalache, had "convents" (smaller Spanish structures) similar in size to the one at Baptizing Spring but the Apalache buildings did not show evidence of having the large, central hearth. The larger Spanish structures at the Apalache sites were much more leaborate than the one at Baptizing Spring. Defensive compound walls around the supposed churches in Apalache probably reflect the unassuaged hostility between the Apalache and Apalachicola which became intensified under British and Spanish instigation.

Comparisons between artifact assemblages is hindered by the fact that definition of structural affinities was not always possible and the fact that excavations were often concentrated in known or suspected Spanish sectors of the villages. The Fig Springs material was recovered entirely from the spring itself; Scott Miller and San Joseph de Ocuya material came only from Spanish contexts or doubtful Spanish contexts in the case of the borrow pit excavation at Scott Miller and the semi-subterranean structure at San Joseph. For these reasons, the amount of Spanish materials represented at the sites does not necessarily reflect true proportional representation over the entire village. It is expected, and has been shown at Baptizing Spring, that Spanish ceramics are much more common in Spanish building areas than in aboriginal contexts.

The comparisons in Table 24 must be considered with caution because of the above factors. Except at the Zetrouer site (Seaberg 1955), Spanish ceramics were composed primarily of utilitarian types. Surprisingly, the two Utina missions -- Fig Springs and Baptizing Spring -- exhibited relatively less utilitarian ceramics than any of the other sites. Utilitarian wares comprised over 50% of the ceramics at San Juan del Puerto and San Joseph de Ocuya and 80% of the Spanish ceramics at Scott Miller. The Zetrouer site is a special case since it is probable that it was a secular establishment (the Alachua cattle ranch) rather than a mission. The number of aboriginal, and possibly Spanish, ceramics will be lower at Fig Springs than at the other sites because of the relatively large number of whole or partial vessels retrieved from the spring. That the Richardson site has the very least percentage of Spanish ceramics (1.19%) is not unusual since this site was presumably

Table 24. Distribution of Spanish (or European) Ceramics versus Aboriginal Ceramics at Three Mission Period Sites Where Village Sectors were Identifiable. (Also, Eight Mission Period Sites Compared by Percentage Spanish Ceramics and Percent of Those which were Utilitarian).

Site	Spanish Structures Larger	Spanish Structures Smaller	Borrow/ Refuse Pit	Village
Percent Spanish of Total Ceramics/Given Sector				
Scott Miller	16.78	63.36	11.99	
Baptizing Spring	10.82	12.08		2.87
Richardson (no Spanish structures)	7.26*		0.77*	
Percent Utilitarian of Spanish Ceramics				
Scott Miller	93.60	98.51	71.52	
Baptizing Spring	46.34	25.77		77.98
Richardson	94.44		95.65	

Percent Spanish of Total Ceramics/Site (% Utilitarian of Spanish)

Site	% Spanish	(% Utilitarian)
San Juan del Puerto	3.69	(57.62)
Zetrouer	26.78**	(27.75)
Richardson	1.19	(95.12)
Fox Pond	8.58	(80.00)
Fig Springs	24.60	(40.40)
Baptizing Spring	6.67	(41.71)
Scott Miller	32.90	(94.60)
San Joseph de Ocuya	8.06	(68.52)

* Although no evidence of Spanish structural remains was encountered, a probable Spanish living area was identified (Group C). The village counts are taken from an area in the village where aboriginal structural evidence was found (Group B). See Milanich (1972).

**This figure includes 22 sherds of Chinese porcelain recovered from Spanish contexts. See Seaberg (1955).

an early visita, dated by majolica seriation at around 1615 (Goggin 1968:73) and possibly in existence as late as 1630 (Milanich 1972:57).

For the three sites where possible Indian and Spanish areas could be dichotomized (Scott Miller, Baptizing Spring, Richardson), Spanish ceramics constituted a fairly small percentage of the overall ceramics within known or hypothesized Spanish areas (Table 24). In the small building area at Scott Miller, however, Spanish ceramics made up 63.36% of the total ceramics compared to 12.08% Spanish ceramics in Structure A at Baptizing Spring. The latter site had relatively more majolica than did Scott Miller or the Richardson site (possibly biased by fragmentation although Smith stated that Scott Miller was also severely plowed). In the village area, however, utilitarian ceramics dominated at the Utina mission.

Types of majolica present at each of the sites will be influenced not only by the time span of occupation but also by preference and availability. Majolica types in Table 25 are listed in approximate order of decreasing age (Columbia Plain in the 16th and 17th centuries down to Aranama Polychrome of the early 18th century) as taken from Goggin (1968). The nine sites arrange themselves nicely within this scheme. It appears that San Juan del Puerto and Fox Pond were more or less continuously occupied throughout the mission period. The Richardson site appears to have been occupied (or in contact with Spaniards) for the shortest period during the early period of mission activity among the Potano. Both Utina sites appear to have had major occupation during the first half of the 17th century with some Spanish interaction up until circa 1685. The two Apalache sites were occupied through the last part of the range with the majority of Spanish interaction during the late

Type	San Juan del Puerto	Fox Pond*	Richardson*	Zetrouer	Fig Springs	Baptizing Spring	Scott Miller*	Pine Tuft*	San Joseph de Ocuya*
16th CENTURY									
Columbia Plain,	1	6	5		58	23			
green-glazed						1			
La Vega B/W**	4								
Isabela Polychrome	1		1		3				
Santon Domingo B/W	1	7			12	49			
EARLY 17th CENTURY									
Ichtucknee B/B	1	1	12		43	7			
Ichtucknee B/W	7	22			43	145			
Fig Springs Polychrome	18	54			66	3			1
San Luis B/W	13	40		43		4	21	7	19
Tallahassee B/W		3			17		9	9	
Mt. Royal Polychrome	3	1					1		1
Aucilla Polychrome	13						10		11
LATE 17th CENTURY									
San Luis Polychrome	19			92			55	57	7
Abo Polychrome	4			2			42	7	2
Puaray Polychrome		1							
Puebla Polychrome	12	3		239			54	401	27
Castillo Polychrome	7			6					
EARLY 18th CENTURY									
San Agustin B/W	12								
Aranama Polychrome	1								
TOTAL	117	138	18	382	242	232	192	481	68
Diversity ($\bar{H}$), nats	2.40	1.58	0.79	0.97	1.70	1.11	1.61	0.62	1.48

* Supplemented counts with data from Goggin (1968) added to data from later excavations or listed only in Goggin.

**Blue on White majolica abbreviated "B/W"; Blue on Blue is abbreviated "B/B".

17th century. The only site which indicates early 18th century majolica is San Juan del Puerto. This is not unexpected since this coastal site is proximate to St. Augustine and mission Indians moved near the capitol after interior missions had been destroyed in 1702-1704. It should be noted that, although the listing in Table 25 provides easy visual summary, many of the types were not restricted to the time slot they appear in. Columbia Plain, for instance, was being manufactured up into the first half of the 17th century.

If time span is more or less controlled by comparing sites which are equivalent in the types of majolica represented, then diversity of assemblages can be contrasted without interference from the time/length of occupation factor. The measure of diversity, then, may be used as an indicator of access (which will depend on wealth and importance of a mission or priests at the mission as well as distance from trade routes) and personal preferences. Considering that goods had to be imported into Florida, plus the fact that cost was usually highly inflated and selection poor, "preference" may have been determined more by availability than by actual desire for certain items.

It would be anticipated that San Juan del Puerto would have the highest diversity not only because of occupation length but also because of its accessability to St. Augustine. Although Fox Pond, tentatively identified as San Francisco de Potano, was also an important mission it was not established until circa 1606. It was also almost 70 miles (100 km) from St. Augustine. Diversity values for these two sites were 2.40 nats and 1.58 nats, accordingly.

Fig Springs and Baptizing Spring, while having similar total counts, differ greatly in their diversities, 1.70 nats and 1.11 nats, respectively. The distribution of ceramic types at Fig Springs is more uniform suggesting that Spanish contact was more continuous during its occupation. If Baptizing Spring was the mission San Augustín de Urica it may have been abandoned by the middle of the 1600s at the time when Santa Catalina de Afuerica (Ajoica), probably the Fig Springs site, first appears on mission lists. Judging from majolica types present at the latter site, however, Santa Catalina was in existence before 1655. It is probable that Santa Catalina would have more interaction with St. Augustine since it was closer to that city and was one of the three main missions in the Utina area which lasted through most of the mission period. It was also situated near the cattle ranch of Ajoica and would have probably been more important and larger.

It has been suggested that Baptizing Spring may have been a visita rather than a permanent mission. Compared with the Richardson site, however, which would have been occupied during the early 17th century also, there seems to have been much more interaction with the Spaniards if material culture can be taken as an indicator of this. Simply in terms of the Spanish ceramics present at both sites, the Richardson site and the Baptizing Spring site are not comparable.

The three Apalache missions -- Scott Miller, Pine Tuft, and San Joseph de Ocuya -- were fairly close together, negating differences in diversity caused by distance to trading routes. Material from Scott Miller and Pine Tuft derives largely from Spanish mission contexts whereas the material from San Joseph may derive from Indian structures. Despite Jones' (1973) contention that the semi-subterranean structure was occupied by Spaniards, it seems highly unlikely that priests would live in such a dwelling as a matter of choice unless it was used as a refuge during times of war. In fact, it may not have been a residence at all. The dramatic differences in diversity values for Scott Miller (1.61 nats) and San Joseph de Ocuya (1.48 nats) versus Pine Tuft (0.62 nats) may be atrributable to number of sherds and/or ability of the priests to secure Spanish vessels. Other factors which cannot be accounted for are differential breakage rates and numbers of different priests who lived at a single mission during the period of occupation. The very large number of Puebla Polychrome sherds at Pine Tuft may reflect preference for that type, continuous access to that type, or buying in bulk.

The concept of diversity is an extremely interesting one and can be a useful index if there are more controls on the data and if all the influencing factors can be accounted for.

Aboriginal Ceramics

The comparison of aboriginal ceramics between sites is perhaps more affected by excavation areas than Spanish ceramics were. It was apparent at Baptizing Spring that variety, number, and types of aboriginal ceramics found in the Spanish area differed significantly from these variables in the village. The discussion that follows will be very general for that reason. Large degrees of similarity or dissimilarity, however, may be valid.

Assemblages of aboriginal ceramics aggregated by design mode are presented in Table 26. The majority of decorated ceramics at most of the sites are complicated stamped. The exceptions are the Richardson site (0.18% complicated stamped), Fox Pond (40.63% complicated stamped), and San Joseph de Ocuya (31.73% complicated stamped). Cob marked ceramics make up over 80% of the decorated ceramics at Richardson and comprise a substantial percentage of the assemblages at Fox Pond and

Table 26. Aboriginal Ceramics from Eight Florida Mission Period Sites: Aggregated by Design (% of Total Decorated).

Site	CS*	Incised	Cob Marked	Cord Marked	Fabric Impressed	Check Stamped	Check $\bar{c}$ Dot	Pinched Rim	Punc-tated	Red Filmed	Brushed & Scraped
San Juan del Puerto	79.28	0.46	5.10	1.07		5.66			0.02	8.40	
Zetrouer	62.57		27.03	0.10		9.31				0.10	0.89
Richardson	0.18	0.18	84.06	2.14		7.02			6.31	0.06	0.06
Fox Pond	40.63	0.83	21.39	2.82		27.03		?	3.65	2.99	
Fig Springs	60.44	1.83	4.95	0.27		19.60		?	1.34		19.78
Baptizing Spring	76.53	2.08	0.18	2.01	0.14	8.21	1.41	0.39	2.11	0.53	6.41
Scott Miller	68.99	9.79	0.14			4.41		12.00		4.69	
San Joseph de Ocuya	31.73	27.35				14.88		20.35		5.03	0.66

* Complicated Stamped is abbreviated "CS".
? Pinched rims were present but were not counted separately. See Symes and Stephens (1965) and Deagan (1972).

Zetrouer. This is expected since these sites are located in the region associated with the Alachua tradition, immediate ancestors of the historic Potano. In the Potano sites which experienced greater Spanish influence, the proportion of complicated stamped ceramics is greater: 62.57% at Zetrouer and 40.63% at Fox Pond.

Incised ceramics are poorly represented at all sites except Scott Miller where this mode constitutes 27.35% of the decorated ceramics. Almost 10% of the ceramics at San Joseph are incised but the difference between the two Apalache sites is substantial and may be due to sampling error related to Spanish versus Indian midden excavations. Contrasted with the Apalache sites, incised ceramics make up extremely small proportions of the decorated ceramics at the other mission sites, ranging from 2.08% at Baptizing Spring to 0.18% at Richardson.

Alachua-associated ceramic types are poorly represented at non-Potano sites and Chattahoochee Brushed and scraped ceramics (Creek affiliated?) are only substantially represented at the Utina sites. Fig Springs has almost three times as much of this group as Baptizing Spring.

Examining identifiable types divided into known or hypothetical cultural associations (Table 27), the Utina and Apalache sites and Fox Pond are predominantly Leon-Jefferson in their decorated ceramic assemblages. Fig Springs appears to have experienced the influence of more groups than any other site. The Potano sites and Fig Springs have fairly large percentages of St. Johns ceramics present whereas San Juan del Puerto and Baptizing Spring have only minor amounts. The Apalache sites contain no St. Johns types. San Juan del Puerto was primarily a Guale mission in a formerly Timucuan region, probably during its later occupation (McMurray 1973:70, 79), so the abundance of San Marcos types at this site is not

Table 27. Cultures Represented by Identifiable Aboriginal Ceramics at the Eight Florida Mission Period Sites (%).

Site	St. Johns	Weeden Island	Alachua	San Marcos	"Creek"	Leon-Jefferson	Fort Walton	Total %
Baptizing Spring (ca. 1600-1650)	6.44	1.32	2.45		6.86	82.93		100.00
Fig Springs (ca. 1600-1685; Deagan 1972)	24.59		5.96	1.32	10.43	57.04	0.66	100.00
Richardson (ca. 1600-1650; Milanich 1972)	14.02	0.11	85.16			0.72		100.01
Fox Pond (ca. 1606-1700; Symes & Stephens 1965)	27.03	2.82	25.70			44.44		99.99
Zetrouer (ca. 1685-1706; Seaberg 1955)	8.46		22.08	68.86	0.73	0.73		100.01
San Juan del Puerto (ca.1587-17021 McMurray 1973)	5.24	0.06	5.48	86.86		2.37		100.01
Scott Miller (ca. 1635-1702; Smith 1951)			0.14			99.86		100.00
San Joseph de Ocuya (ca. 1635-1702; Jones 1973)		0.31			0.93	95.04	3.72	100.00

surprising. San Marcos ceramics are also the majority group at Zetrouer and this may indicate a major portion of the population was Guale or that much of the aboriginal ceramics were imported to the site, possibly along with Guale laborers. Again, ceramic analysis could be used to test whether or not ceramics assumed to originate in different regions could, in fact, be locally produced.

The general picture is one of influence along a spatial continuum. At extreme ends -- Apalache in the west and Eastern Timucua/Guale in the east -- aboriginal assemblages are fairly "pure." In the center there is a great deal of mixing at sites under Spanish influence. The Richardson site, although centrally located with regard to the mission chain, is fairly "pure" in that most of the identifiable ceramics are Alachua tradition types. It is also an early site and, if a visita, did not receive a great deal of continuous Spanish attention. It is possible that at a later time, mission sites have more diverse artifact assemblages because of population shifts. Baptizing Spring, however, is relatively early and has a moderately diverse ceramic assemblage. If assemblage composition is related to demographic changes, the predominance of Leon-Jefferson ceramics at the Apalache sites suggests that the westernmost missions did not undergo demographic change to the extent that eastern and central missions did.

Mission period incised ceramics such as Aucilla and Ocmulgee Fields Incised are only important components of the aboriginal ceramic assemblage at the Apalache sites (Loucks 1978b). They are proportionately more important in the probable aboriginal structure at San Joseph de Ocuya than they are in the Spanish structures at Scott Miller.

In northern Columbia County, Siglar-Lavelle (personal communication, 1979) has found continuous development of ceramic traditions from Deptford up through the protohistoric period. Ceramic types recovered from mound sites range from fiber-tempered, through the irregular punctated types of Weeden Island I (always a minority type) and other Weeden Island ceramics, up to the scraped and cob marked types. Cord marked ceramics are a minority type which increases through time. Although late complicated stamped ceramics were not common in Siglar-Lavelle's sample, they did occur at at least one site (personal communication, 1979).

Traditionally conceived of Weeden Island ceramic types -- Keith Incised, Thomas Simple Stamped, Carrabelle Punctated, Weeden Island Incised, Weeden Island Plain -- are minority types at Baptizing Spring, the adjacent sites, and Fig Springs. If the fabric impressed, cord marked, and irregular punctated ceramics are associated with early Weeden Island, then there does not appear to have been major occupation of the Baptizing Spring area prior to the mission period (possibly late prehistoric period), although occupation may have been sporadic on a continuous basis. This may suggest that settlements in southern Suwannee County were small and scattered prior to Spanish arrival. For this reason, the investigation of the sites adjacent to Baptizing Spring is important since it could shed some light on changes in settlement distribution prior to mission activities. The temporal span of Weeden Island occupation is also under investigation. Although it has been assumed that the Utina were the descendants of Weeden Island peoples, this has not been demonstrated beyond a shadow of doubt. If Leon-Jefferson type and other complicated stamped types were associated with the Utina, then there still may be a considerable gap between the end of Weeden

Island and the beginning of "Utina." Another possible explanation is that the Utina had their roots in central Georgia and immigrated to Florida prior to Spanish arrival, bringing with them the complicated stamping tradition.

Non-ceramic Spanish Artifacts

Seaberg (1955) apparently encountered a number of questionable Seminole/mission period contextual problems in her analysis of European, non-ceramic artifacts from the Zetrouer site. Some items were obviously Spanish but others may have been from later British or Seminole activities, therefore the Zetrouer site will not be included in this discussion.

Glass beads, iron nails, and spikes were the most common Spanish artifacts which occurred at all mission sites (Table 28). San Juan del Puerto contained a variety of artifacts: coins, a coin weight, buttons, religious and secular ornaments, cultivating tools, weapons, and weapon-associated items such as musket balls and European gunflints (McMurray 1973:25, 34, 35, 38). The variety of weaponry present at Scott Miller suggests that serious warfare was expected. The presence of an anvil and chisel at this site may indicate that weapons were being reworked, maintained, and/or manufactured at this site. It is extremely unfortunate that efforts to excavate Indian structures in the village have not been made. Were Indians manufacturing these goods and using them only under Spanish supervision or were they able to own and maintain their own stocks? Did some Indians specialize in weapon and tool repair? The latter possibility seems likely and if it were true, how might this occupational status be reflected in social status and household refuse?

Table 28. Non-ceramic Spanish Artifacts Compared between Spanish Mission Period Sites in Florida.

Description	Baptizing Spring	Fig Springs	San Juan del Puerto	Richardson	Fox Pond	Scott Miller	San Joseph de Ocuya
Containers							
goblet			x				
medicine vial		x					
Hardware							
nails, spikes	x	x	x	x	x	x	x
hinges						x	
locks, bolts						x	
keys			x				
Clothing							
buttons			x				
buckles			x		x		
iron thimble		x					
Ornament							
glass beads	x	x	x	x	x	x	x
copper bead	x						
lead bead			x				
copper rectangles	x		x				
religious medal	x		x				
crucifix/corpus		x	x			x	
brass finger ring			x				
rosary frag.			x				
metal scrap:							
brass			x				x
copper	x	x					
whelk shell pendant & dipper	x	x		x			
Tools & Weapons							
knives	x						
ramrod tip					x		
pistol/musket parts		x	x			x	
gunflints:							
native	x					x	x
European			x				
musketball, shot	x	x	x		x	x	
lance head						x	
sword/dagger frag.					x	x	

Table 28--continued

Description	Baptizing Spring	Fig Springs	San Juan del Puerto	Richardson	Fox Pond	Scott Miller	San Joseph de Ocuya
chisel					x	x	
anvil						x	
spur rowel						x	
hoes		x	x			x	
axe						x	
<u>Miscellaneous</u>							
coins			x				
coin weight			x				
tobacco pipes			x				
book clasp			x				
olive jar/ majolica gaming discs		x	x				x
bone counters? gaming pcs.	x						

Artifacts at Baptizing Spring and Richardson are almost solely ornamental items, although the variety at the former site is much greater than that at the latter site. These items are present, and sometimes common, at the other mission sites but there are also technological items represented. All around, Baptizing Spring appears to have been a fairly "poor cousin" to the rest of the missions.

Native gunflints were present at three of the sites and musketballs or lead shot were found at five sites. The ramrod tip and sword and dagger parts recovered from Fox Pond, presumably from the village sector, indicate that Indians had access to Spanish weapons or may have been manufacturing them. It is possible, however, that these weapons occur as the result of attack upon Indians. The glass goblet fragment, tobacco pipes, coins, and coin weight from San Juan del Puerto suggest a level of living above that of the other missions.

At least three of the sites yielded traditional, native prestige or ornamental goods: whelk shell ornaments, fragments of whelk shell dippers, and rolled copper or lead (a Spanish-supplied substitute) beads. These goods were also found in the burial pits excavated by Jones at several other missions (see Chapter Four). Olive jar or majolica discs were present at three sites, bone gambling pieces (?) only at Baptizing Spring. If these artifacts were actually used in gambling, then their presence appears to support the documentary implications that gambling was never really controlled at the missions.

The artifacts from Scott Miller, San Juan del Puerto, and probably Fig Springs, derived largely from Spanish contexts. The simple fact that these goods were present says little about their availability to Indians. It is also difficult to discuss impact on native lifestyles when it is not known how common these goods were. One axe among fifty Indians would be almost as useless as no axe at all. If we know, however, that an axe was found in an Indian household in association with other Spanish goods, and that other Indian households did not have axes and had lesser numbers of European goods, then hypotheses concerning distribution and impact can be tested. It is this type of reasoning that directed research at Baptizing Spring. Unfortunately, perhaps, that mission did not appear to share the same access to goods that other missions enjoyed.

Considering presumed Indian contexts at Baptizing Spring, Richardson, Fox Pond, and San Joseph de Ocuya, it seems apparent that Indians did not own Spanish items other than medallions, ornaments, and possibly nails and spikes, and that some Indians had access to weapons. Tools and weapons may have been "on loan" from Spaniards or used only under Spanish supervision. Employing documentary evidence, however, it does seem probable that access to or ownership of tools and firearms was restricted. More research of Indian assemblages is needed in order to examine the possibilty that Indians did learn skills which set them apart from other Indians and that these skills may have been of a particular nature (e.g. arms repair). Judging from the inventories of the seven sites, it appears that Spaniards monopolized European goods, allowing only a few to enter into the Indian community. There is, as yet, no evidence that subsistence-related tools were provided for Indians' personal usage. Only in the contexts of Baptizing Spring does it appear that priests themselves did not have access to many Spanish goods.

Food Remains

Plant and animal remains from the sites were generally equivalent to remains recovered from Baptizing Spring although some species were added or deleted from the list. Domesticates were present at all sites except Richardson and Fox Pond. Data reported for the latter site, however, were not particularly extensive. The only domestic animals represented at San Joseph de Ocuya were cow and pig (one tooth each) as preservation was very poor (Jones 1973:45).

The faunal assemblage at San Juan del Puerto reflects good preservation as well as high variety. Oyster shell midden had been abundant at one time but had been borrowed to make tabby for the nearby Kingsley Plantation (Dr. Charles H. Fairbanks, personal communication, 1979). Smaller, apparently individual household middens were located away from the main midden (Spanish) and did contain Spanish artifacts. These middens were not excavated, however (McMurray 1973:39). Almost 50% of the protein diet consumed by priests at San Juan was composed of domestic sources: chicken, cow, pig, sheep, and dog (Cumbaa 1975:106). Priests apparently concentrated on domesticates but supplemented their diet with a wide variety of wild foods. The same is true of Fig Springs, if the spring was a dump area primarily utilized by Spaniards, although the contribution of domesticates to the diet has not been calculated.

Allowing for differential preservation and differing environments available for exploitation, the food remains across the mission sites are fairly comparable (Table 29). Introduction of livestock and some domestic flora, such as peaches, might have created new demands on Indian workers but tasks may have been allotted to certain individuals resulting in the formation of specialized herders, hunters, farmers, or gardeners.

Table 29. Floral and Faunal Remains Preserved at the Different Mission Sites Reported in Florida.

Description	Baptizing Spring	Fig Springs	Fox Pond	Richardson	San Juan del Puerto	Scott Miller	San Joseph de Ocuya	San Damian de Escambi *
Prunus persica (peach)	x	x			x	x		
Carya sp. (hickory)	x	x		x			x	
Cucurbitaceae (gourd frag.)		x						
legume	x							
Zea mays								
corncobs	x	x				x		
kernels				x				
Palmaceae								
(palm drupe)				x				
Bos taurus (cow)	x	x			x	x	x	x
Canis familiaris (dog)		x			x			x
Equus caballus (horse)								x
Ovis aries (sheep)					x			
Odocoileus virginianus (white-tail deer)	x	x	x	x	x	x		x
Ursus americanus (black bear)					x			x
Lynx rufus (bobcat)								x
Procyon lotor (raccoon)	x			x	x			x
Didelphis virginiana (opossum)		x			x			x
Lutra canadensis (otter)		x			x			

Sylvilagus sp. (rabbit)				x	x
Sciurus sp(p). (squirrel)	x				x**
Sigmodon hispidus (cotton rat)	x			x	
Cetaceae (whale family)		x		x	
Gopherus polyphemus (gopher tortoise)	x	x	x		
Chrysemys sp. (pond turtle)	x	x			x
Kinosternon sp. (mud turtle)		x			x
Dierochelys reticularia (chicken turtle)					x
Terrapene carolina (box turtle)	x		x		x
Trionyx ferox (soft shell turtle)			x		x
Rana/Bufo sp. (frog/toad)					x
Alligator mississippiensis (alligator)	x	x	x		x
Colubridae	x				
Viperidae				x	
Gallus gallus (chicken)				x	
Meleagris gallopavo (turkey)				x	x
Accipitridae (hawks)					x
Aves (birds)	x		x		

Table 29--continued

Description	Baptizing Spring	Fig Springs	Fox Pond	Richardson	San Juan del Puerto	Scott Miller	San Joseph de Ocuya	San Damian de Escambi
<u>Mugil</u> <u>sp</u>. (mullet)	x				x			
Osteichthyes** (boney fish)								
fresh water				x	x			x
salt water					x			
Squaliformes (shark)	x							

* The faunal material from this site (8 Le 120) was voluntarily analysed by Dr. Elizabeth Reitz of the Zooarcheological Laboratory of the Florida State Museum. The material and species identification cards were discovered during a periodic "housecleaning" session and it was found that no data were available as to the nature of the site, the excavator, etc. Site forms and notes were located in the Archeological Laboratory, Department of Anthropology, University of Florida. Although there has been no time for a full analysis, the information is included herein in order to make it available, more or less, and to provide additional comparative data. A report on the site, excavated in the early 1970s, has not been published.

**Since data was not comparable between sites, some fauna were merely presented as "lumped" classes. At 8 Le 120, both grey squirrel (<u>Sciurus carolinensis</u>) and fox squirrel (<u>S. niger</u>) were represented. Bony fish which were identified included gar (<u>Lepisosteus sp</u>.), bowfin (<u>Amia calva</u>), freshwater catfish (<u>Ictalurus sp</u>.), and large mouth bass (<u>Micropterus salmoides</u>). For more complete faunal data on San Juan del Puerto see Cumbaa (1975); for the Richardson site, see Milanich (1972).

Free ranging cattle and scavenging pigs and chickens would not have required a great deal of tending and what was necessary could have been accomplished by children and older individuals. Some Indians managed to turn livestock raising into a major occupation, such as the cattle ranchers near Ajoica and an Apalache who supplied the governor with 50 chickens on demand (Boyd 1951:41). Yet, how much of a return did the Indians get from their new agricultural and herding activities? How much of the produce was sold or utilized by Indians or confiscated by or produced for Spaniards? One must be able to approach these questions in order to understand impact beyond the fact that sedentism appears to have been enhanced and some profit involved to make an Indian start a cattle ranch or raise a lot of chickens. Were there rewards for these activities in the beginning which later diminished? Was there physical punishment or taxation which prompted Indians to participate in these activities? The question becomes one of motivation and choice. Thus far, it is not clear that the motivation may have been economic or social profit. Indians did utilize domestic foods at Baptizing Spring but they were not major components in their diets. Neither were they important in the Spaniard's diet. Perhaps the capability of supplying Spaniards with food items they desired meant that prestige and material rewards accrued to an Indian. On the other hand, it is possible that Indians had little choice if they wanted to remain at the mission and live in relative harmony with the priests and soldiers.

There is more information in the documents that motivation was negatively provided than there is indication that rewards were great. The archeological data provide little verification one way or the other at this point. Archeological evidence does indicate that priests seem to have enjoyed considerable material wealth, especially at the large, better-provisioned missions. It is in these missions that the need for studying Indian household assemblages is greatest in order to identify disparity in distribution of wealth not only among Indians but between Spaniards and Indians. Baptizing Spring was apparently a very provincial mission that was either ransacked at the time of its destruction/abandonment, in the ensuing years, or which simply never enjoyed the material benefits found at the Apalache and Eastern Timucuan/Guale missions.

CHAPTER SEVEN
CONCLUSIONS: SPANISH-INDIAN INTERACTION

Interest in the Spanish mission system of Florida has never died since the Spaniards first established the missions in the late 1500s. Naturalists, geographers, and historians have expressed curiosity over the ruins, the "old fields," and the documents for the past 200 years or more. Archeological interest can be traced to the 1940s when Dr. Hale Smith carried out the first research oriented excavation of a Spanish mission in the former "province" of Apalache. Since that time, archeological interest has waxed and waned according to funding and the pressures of other responsibilities. During the late 1960s and early 1970s, it appeared that archeological investigation of the Florida missions was under way on a full scale at last when the State of Florida, through the Division of Archives, History and Records Management, began to test and excavate a number of mission sites in northwestern and northern Florida. Unfortunately, even the State is subject to funding problems. Archeologists had not been idle in eastern Florida during this period and several mission and mission period sites had been investigated in the late 1940s through the 1970s.

As archeology became more "scientific" in its paradigms, mission archeology also began to take a similar turn in Florida as archeologists began to talk about acculturation processes and change in native Floridian subsistence and social patterns. This dissertation is actually the result of cumulative changes in emphases in archeological theory up to this date and the author has had the benefit of time and these changes and past research in mission archeology to build upon. In the true vein of current anthropological theory (and living up to its expectations), it was felt that even though acculturation had been approached in mission archeology, the final product lacked the holistic metal for which anthropologists proclaim they are searching. Indians and Spaniards who lived and worked at the missions were still ephemeral; changes in material culture could be diagnosed but the meaning of these changes, their magnitude, and their impact remained veiled.

The basic goal of the archeological investigation of the Baptizing Spring site in Suwannee County, Florida, was to give substance to some of the questions concerning acculturation processes which had been broached by past researchers. From the point of view of the author, this substance was to be behavioral (personal) as well as material. Artifacts, the hard and preserved remains of past cultures, had intangible meaning which was just as real as their functional and practical meaning to those who once used or owned them. One has only to look at one's own possessions to be able to see what would be assumed from their physical characteristics versus what would not be learned about their emotional or symbolic meaning.

Economic anthropology is concerned not only with material objects and tangible (i.e. quantifiable) outcomes, but also with the social significance of human interactions. Since the material objects are present in archeological sites, it is only a step further to investigate the interactions and actions which might have produced and distributed them. If one is to investigate acculturation then the interactions and intangible significance of the production, distribution, and consumption of physical objects cannot be overlooked.

The objectives of this project were two-fold: (1) build a model of Spanish-Indian interactions using historical data, and (2) test certain hypotheses relating to these interactions using archeological information. The analysis of historical data, which was largely carried out prior to field research, was undertaken from an anthropologic-economic point of view. The outcome suggested that the so-called "Golden Age" of the Florida missions was a significant misrepresentation of the facts; a conclusion which is not unique to this author. It was shown that, very probably, Indian values and demands were little affected by Spanish goals of directed change. Many Indians did become good converts but the primary motivation for adapting to Spanish behavioral expectations appears to have been economic and political. When goods stopped moving in both directions, and "exchange" became decidedly one-way, the native Floridians rebelled not only against the Spaniards but also against their caciques.

Spaniards and Indians assumed two primary sets of roles: missionary-convert and patron-client. One cannot, however, separate these behavioral roles since missionaries were patrons, providing goods and services, and favored clients were probably good converts. Economic, political, and religious benefits seem to have been awarded in conjunction.

Baptizing Spring

The Baptizing Spring site in Suwannee County, Florida, was tentatively identified as the Utina mission of San Augustín de Urica. This mission was occupied at least as late as 1655 and probably was abandoned as a result of the Timucuan uprising in 1656 since it is never mentioned after that time. Although the date of its founding is in question, the

Spanish ceramics recovered from the site suggest that the greatest period of activity was early in the 17th century, probably around the early-to-mid 1620s. A religious medallion which probably dates post-1640 was recovered from one of the two aboriginal structures, indicating that the village was still occupied around this date. Although Spanish friars, especially Father López from the mission on Cumberland Island, Georgia, made visitations to the interior as early as the late 1580s, it is not known whether or not these forays greatly affected Indian culture change nor if Spanish artifacts were introduced in large numbers. One can assume that the establishment of the interior missions in 1606-1610 had much greater impact on the Indians living in the north-central and northern parts of Florida. The possible identification of the Baptizing Spring site as San Augustín de Urica suggests that the village was indeed a mission rather than a visita. There is virtually no accepted way by which the two can be distinguished archeologically simply because the majority of _mission_ sites excavated have been labelled with a documented appellation. Comparison of the material assemblage of Baptizing Spring with that of the Potano village Richardson site, which has been tentatively identified as the visita of Apalo, indicates that the former claims a greater number and variety of Spanish artifacts than does the latter even though the Potano _mission_ site of Fox Pond has a greater variety of Spanish artifacts than does Baptizing Spring. For these reasons, the site under investigation has been designated a mission, a village with a resident priest, rather than a visita.

The main mission village of Baptizing Spring, which included Indian and Spanish structures, was small and, apparently, less well-off economically than the more important and productive missions in Apalache, the Potano area, and near St. Augustine. It was, however, an area which appeared to have experienced a significant amount of tribal mixing. Whereas the West Florida, East Florida, and central North Florida mission villages seem to contain fairly homogeneous ceramic complexes, the Utina assemblages reveal a high degree of variety even though certain ceramic types predominate.

The Baptizing Spring mission site is situated in an area proximal to riverine, floodplain, hardwood hammock, and pine-turkey oak habitats. The variety of wild resources which could be exploited was considerable. Soil fertility of the surrounding area is low without modern alteration but the clay substrate in the vicinity of Baptizing Spring could have enhanced natural fertility and made sedentism a little more practicable. Intensive agricultural pursuits and high productivity, however, were probably beyond the capabilities of the soil. Perhaps for this reason, pre-contact human activity in this area was minimal. Although our knowledge of pre-contact settlement patterns in this region is practically nil, present data suggest that large-scale villages and ceremonial centers were not established here. Outside the immediate area of Baptizing Spring, the only other evidence of prehistoric activity suggests impermanent settlements of small groups of hunters and gatherers (Loucks 1978a). There is as yet no evidence that prehistoric population density was ever very great in southwestern Suwannee County.

Acculturation and Economics at Baptizing Spring

The hypotheses which were to be tested were aimed at discovering whether or not native political and economic roles and values were maintained during the mission period. The site was approached with the idea that settlement patterning would indicate retention of prehistoric (as identified through ethnohistoric and prehistoric archeological data) location of important residences and buildings on rises near a central plaza. If these elite households/buildings could be identified, then it was anticipated that the associated material culture would also exhibit differentiation on the basis of status. If aboriginal reckoning of high-status was maintained and if the pre-contact elite maintained their positions by virtue of Spanish reinforcement, then it was hypothesized that prestige and non-local goods of both Indian and European origin would be non-randomly distributed within the village in association with high-status dwellings. It was also hypothesized that Spaniards living at missions would have enjoyed more of the material wealth of both Spanish and Indian realms than Indians would have.

Although four probable aboriginal living areas were encountered during the two seasons of work at Baptizing Spring, only two of these were extensively excavated. Two Spanish buildings, possibly church and convent, were also excavated. The small amount of site coverage precludes definite conclusions regarding village settlement pattern. The larger of the two Spanish buildings (the possible church) was situated in the highest region of the core village and might have bordered a central plaza. The other Spanish building was behind (to the north of) this larger structure at the base of the rise. The latter also appears to have been located at the northern boundary of the main village area. The two intensively investigated aboriginal structures were approximately the same distance from the "church." If the four probable Indian structures are considered, it appears that they were arranged around the central plaza. These living areas were all about 20-25 m apart and arranged in a linear fashion. The relationships between these structural areas, however, is subject to sampling bias and cannot be accepted with any degree of certainty; there is too much of the village left to investigate before the actual house pattern can be determined.

Information recovered from Baptizing Spring indicates that the Spaniards affected very little change in the material culture of the native inhabitants. If anything, priests were required to adapt to the new environment to a greater degree than the Indians were. The Spanish element appears to have enjoyed certain restricted access to European, non-local, and locally manufactured goods. Indians made vessels for priestly consumption and rendered certain food portions and resources to the priests. On a material level, the Spaniard was a consumer and "produced" very little by way of providing a means of acquiring and/or distributing externally derived wealth and goods. More goods flowed to the priest from the Indians than vice versa.

Among the Indians, status positions appear to have been maintained and validated through acquisition of Spanish goods and non-local aboriginal goods. It is possible that some of these goods (e.g. the Alachua tradition ceramic types), if indeed they were non-local, were not always channelled through the priest. The status-related goods, however, did show significant restriction of occurrence between the two Indian households studied. The fact that aboriginal and European prestige items clustered suggests that certain rights to these goods were in effect and that these rights were upheld by both Spaniards and Indians.

There is no evidence at Baptizing Spring that Spanish-introduced agricultural tools or domesticates produced significant impacts on subsistence activities. Archeological data from other mission sites implies that this was not true in all areas but access to tools and retention of yields have not been examined. It is known that at missions in Apalache and eastern Florida, iron tools were present in Spanish areas of the sites. This does not mean, however, that they were plentiful (or numerically adequate) or widely distributed among Indians. Historical documents indicate that immense quantities of iron were forged to produce tools for Indian consumption. Where these tools actually ended up is unknown; they do not appear to have remained in archeological contexts at the missions.

The overall subsistence pattern at Baptizing Spring does not appear to be significantly different from known prehistoric patterns in Florida. Certain Indian households consumed introduced domesticates such as pig, cow, and peaches, and the faunal domesticates were also represented in the Spanish sector. It was cautioned, however, that the organic sample was extremely small (especially important in the discussion of faunal assemblages) at Baptizing Spring and that any conclusions must be treated with deliberation. The major difference between Spanish and Indian food consumption was the lower variety of animal species utilized by Spaniards and the apparent monopolization of the meatier portions by the priests. Disparities in the sections of animals, largely deer, represented in the various structural areas suggests that products of the hunt were being distributed according to a specific pattern.

Since only carbonized floral material was preserved in the site, the actual contribution to the diet, and the contribution of cultigens to the diet, cannot be ascertained. The aboriginal status of recovered corncobs agrees with the general pattern of little European impact (through introduction of varieties from Mesoamerica or Cuba). The overwhelming prevalence of burnt corncobs within one aboriginal structure implies that there were special activities associated with that household. Possible interpretations included monopolization of hide-smoking activities or performance of curing or other ritual ceremonies. The possibility that members of this household were disproportionately plagued by insects, thus necessitating considerable burning of smudges, seems untenable. If the cobs were burnt in curing ceremonies, however, the inhabitants may have been literally plagued by an entirely different entity such as smallpox. It would be extremely interesting if mission cemeteries could be excavated and skeletons examined for pathological evidence in conjunction with excavation of mission Indian households. The Western Timucua were ravaged by a series of epidemics during the early and mid 17th century but no archeological evidence has been produced which can be linked to these events. The significant degree of cob size variation between different proveniences within the structure suggests that the corncobs were collected and burnt during different stages of the growing season, green corn being smaller in size than more mature ears. This may be culturally significant in that pre-contact ceremonies (which continued into late historic times in parts of the Southeast) were specifically associated with green or "first" corn.

The numerical abundance and variety of lithic tools and debitage suggest that European subsistence tools and weapons did not replace aboriginal counterparts. Even though an aboriginally manufactured gunflint and lead shot were recovered from an Indian structure, the tool and weapon assemblage was predominantly aboriginal. The occurrence of a lead musketball which was undistorted and the gunflint implies that some Indians had access to, and possible ownership of, European weapons.

Again, the lack of extensive excavation over the entire village precludes conclusive statements regarding access and distribution of European tools and/or weapons. The possibility that restricted access was a factor cannot, however, be dismissed. The fact that these items were recovered from a structure which also contained domestic food remains and Spanish and native prestige goods substantiates the hypothesis that Spanish goods were differentially distributed according to status. Even in the event that such goods could be acquired by Indians without provision by the priest, it is probable that culturally recognized rights of acquisition restricted ownership and/or use to specific individuals.

Differences between household ceramic assemblages were statistically significant. Proportions of probable local and non-local ceramic types differed, suggesting that production of certain types (i.e. use of certain design motifs) was differentiated between households. Whether or not this reflects cultural prescription or simple preference cannot be ascertained. Jefferson Complicated Stamped Type B ("bullseye" motif) ceramics were found in all areas of the site and may reflect a "marker" type for the Utina as a whole. It is not the most commonly occurring Jefferson Complicated Stamped type in Apalache or Eastern Timucua.

It is hoped that analysis of local clay resources and ceramics will provide information on resource utilization patterns and possible differences in manufacturing techniques between Baptizing Spring and the adjacent sites as well as between village areas within Baptizing Spring. It is also anticipated that these analyses will reveal whether or not the ceramic types of questionable affiliation (e.g. scraped and "Georgia design motif" types) and apparent non-local affiliation (e.g. Chattahoochee Brushed, Ocmulgee Fields Incised) could have been locally produced. If these groups were of probable local origin, then their occurrence would imply immigration (possibly forced by Spaniards) of other tribal affiliates into the Baptizing Spring area, rather than importation of ceramic vessels. As it now stands, the author tends to favor the former interpretation on the basis of qualitative examination of the ceramics. The problem is open to investigation, however, and either interpretation will be instructive regarding production and distribution of ceramic goods.

The unfortunate concentration of previous research on Spanish occupational areas, or on village sectors whose affiliation could not be determined, has failed to provide data which could be used to examine the interactions between Spaniards and mission Indians in Florida. At Baptizing Spring, where there was potential for eliciting this information, it appears that the historic conditions of relative poverty were at odds with the realization of this potential. It may be tentatively concluded that the items Indians received from Spaniards were primarily prestige goods. These goods, although they had little impact on actual lifestyle, were socially important in that they served to reinforce traditional native roles and politico-economic position within village society. As was pointed out in Chapter Two, it is not the goods themselves that are significant but the right to acquire and own these items that is important. Spanish recognition and validation of Indian roles within the new colonial system would have created strong ties between Spaniards and high-status Indians. These symbolic goods would have been important as long as effective economic control, and the force to back up this control, was maintained over Indians.

Historical documents suggest that control was largely a matter of power rather than authority during the mission period and, as noted by Emerson (in Hall 1972:205), power resides in the control of valued items. The postulated close relationship between Spaniards and high-status Indians, and their mutual interest in maintaining power, would have set them apart from the rest of the Indian community. Caciques may have become, in the view of other Indians, more a part of the Spanish organization than they remained part of the Indian social system. In effect, high-status Indians and subordinate Indians were no longer part of the same "moral community" (Salisbury 1976:42). The former position of the cacique, which was based on authority and power, was later substantiated by Spanish power and, therefore, the chiefly authority was destroyed.

As the Spanish/high-status Indian ability to wield power through control of valued items and provision of necessities waned, probably largely due to cut-backs in supplies from Spain and New Spain, their ability to control the large proportion of the native population also deteriorated. The British, however, could and did offer material benefits and it is probable that distribution of these goods was not as restricted. The ungovernable Indian migration and emigration, which occurred throughout the mission period and accelerated during the latter half of the period, testify to the existence of a moribund colonial system long before the advent of external destructive agents.

APPENDIX A
EXCAVATION DATA AND DETAILED FEATURE DESCRIPTIONS

Since windrows prevented sighting on units across the site, two transit and two wye level stations were established to maintain vertical control (see Figure 7). It must be noted that differences in datum plane elevations do not necessarily reflect surface contours, rather they reflect wye level and transit tripod heights as set up at different stations.

Transit Station #1 (TS #1) was set up over 447N 548E with the datum plane 1.58 m above the ground surface at that point. The corresponding bench mark (BM #1) was located 3.40 m above the ground surface on a sweetgum at 48.1 m (down-slope), 2.75° W of N from TS #1, on the southern edge of Baptizing Spring. The 1976 BM was 72.45 m, 16.5° W of N from TS #1 and 2.58 m above ground surface. It was represented by an aluminum disc nailed to a sugarberry tree located on the southeastern slope of the spring sink. This earlier bench mark was too low and too overgrown to be used extensively for village excavations. Sizeable problems were encountered tying our elevations in with those from 1976. Sheet erosion over the past two years had markedly altered previously recorded elevations. It was determined, however, that the 1976 bench mark was 1.13 m lower than BM #1.

TS #2 was used during excavations of squares and trenches immediately south (with respect to windrow boundaries) of Structures A and B. It was located at 428N 512E. BM #2 (1.63 m above immediate ground level) was located on a dead live oak trunk, 27 m, 108.6° W of N from this station. The datum plane was 0.23 m above the TS #1 datum.

Westernmost trenches #5 and #7 were controlled from TS #3 located over stake 479N 470E. BM #3 was established on a live oak at 29 m, 95.25° W of N from TS #3. This datum plane was 0.10 m above that at TS #2 (i.e. 0.33 m above TS #1).

The fourth and final transit station, TS #4, was used only for Trench #6. It was located at 433N 593.5E and the associated BM #4 was on a black cherry tree (Prunus serotina) on the edge of a windrow, 9.75 m, 152.7° W of N from TS #4. This datum plane was 0.25 m lower than that for TS #1.

All of the 1978 wooden stakes were removed at the end of the field season. Iron pipe stakes, left by the 1976 investigators, still remain to the best of this author's knowledge.

Location and area encompassed by the seven trenches excavated during 1978 are described below. These trenches are located and labelled in Figure 7.

Trench #1	(E-W)	397N-398N;	497E-524E	27 square meters
Trench #2	(E-W)	422N-423N;	518E-521E 506E-515E	12 square meters
Trench #3	(N-S)	494N-503N;	495E-496E	9 square meters
Trench #4	(N-S)	485N-488N;	493E-494E	3 square meters
Trench #5	(N-S)	461N-167N;	459E-460E	6 square meters
Trench #6	(N-S)	422N-431N;	593E-594E	9 square meters
Trench #7	(E-W)	513N-514N;	467E-470E	3 square meters

Cultural Feature Data

This section summarizes details of the cultural features which are described in general terms in Chapter Five. All depths below datum (mBD) have been adjusted to TS #1; there were some problems in deciding if all the 1976 mBD readings had been converted to a single plane and this has been assumed in the following presentation.

Structure B

The large, circular, yellow clay-lined feature which intersected with the southwestern wall trench (Figure 8) was designated Feature 1. The red clay fill was first measured at 2.03 mBD and continued to 2.40 mBD. The feature was 1.44 m in diameter.

The clay-lined features outside Structure B were deepest of all features in this block (relative to the datum plane) and top elevations ranged from 1.95 to 2.25 mBD.

Features 7 (northwestern) and 10 (more or less central) within the structure were filled with red clay. Feature 7 first appeared at 1.89 mBD and extended to 2.03 mBD. The first appearance of Feature 10 is problematical since elevations differ between the field notes (2.08 mBD) and the feature form (1.91 mBD). The latter is probably correct.

Structure A

Feature 12 was the central hearth feature illustrated in Figure 9. The central ashy sand areas first appeared at 3.51 mBD and were 11 cm thick in the center. Artifacts recovered from Feature 12 included: a single Ichtucknee Blue on White sherd, olive jar sherds, two Carrabelle Punctated sherds, two Thomas Simple Stamped sherds, linear with central bars complicated stamped (CS) sherds, curvilinear CS and cross-motif CS sherds, and undecorated ceramics. Lithic artifacts included a large, possible chopper, and unidentified worked biface, a utilized flake graver, and debitage. Some charred gopher tortoise bone and a single, non-poisonous snake (Colubridae) vertebra were also recovered.

The leached area below Feature 12 contained four Thomas Simple Stamped sherds, two Chattahoochee Brushed sherds, two curvilinear CS sherds, undecorated ceramics, and one each of Carrabelle Punctated, scraped, and eroded majolica. Two utilized chert scrapers, a graver, and debitage were also recovered.

Feature 11 was the clay-lined pit located just east of Structure A. Exterior measurements were 1.28 m by 0.87 m. It first appeared at 3.80 mBD (?) and the 4 cm thick clay layer bottomed at 3.94 mBD. It contained undecorated sherds, one each of Jefferson Ware Complicated Stamped Type B, concentric circle CS, and scraped. A fragment of a unifacially retouched scraper, debitage, gopher tortoise bones, and fragments of unidentifiable large mammal were also recovered.

Structure D

Postholes immediately west and north of Feature 19 (the pig carcass) and west of Feature 17 (the large storage pit) were deepest, first appearing between 2.72 mBD and 2.81 mBD. The two postholes south of Feature 19 and the two northernmost postholes were among the highest (top at 2.37 mBD to 2.56 mBD).

Feature 16, a small rectangular feature, was located just outside the postulate structural limits, northwesterly of Feature 17. It was a shallow, basin-like pit containing charred wood, very fragmentary corncobs, a small scrap of iron, one curvilinear CS sherd, a utilized chert scraper, and eight debitage fragments. This feature measured 32 cm by 25 cm by 11 cm (2.62-2.73 mBD) and had rounded corners, gently sloping sides, and a flat bottom.

Feature 17, the large storage pit (Figure 10) was rectanguloid, although the southwest corner bulged outward, with rounded corners and rounded base. It measured 114 cm by 75 cm and was 47 cm deep in the middle (2.75-3.22 mBD). The eastern end was only 21 cm deep and formed a "shelf" in profile. Pit fill was dark grey sand flecked with charcoal and contained small "balls" of clay. The fill was much damper than the surrounding matrix and bone within the pit was relatively well-preserved. Artifacts included 18 complicated stamped sherds (curvilinear, joined curved lands, fret/volute, loop cross), undecorated, eroded, and unidentifiable CS sherds, and a single scraped sherd. Also in this feature were several worked and utilized chert tools, two Pinellas Points, chert debitage and bone.

Two very small "concentrations" of corncobs surrounded by grey sand and charcoal flecks were located at 2.60 and 2.54 mBD, between the northwest conical pit and the northernmost posthole (illustrated but unlabelled in Figure 10). The conical pits occurred between 2.54 and 2.77 mBD and 2.73 and 3.07 mBD.

The small hearth area was not completely excavated but measurements were estimated at 46 cm by 30 cm by 27 cm (max.). The overlying grey-brown stain first appeared at 2.50 mBD and surrounded the central charcoal area to a depth of 2.77 mBD. Concentrated charred wood extended from 2.55 mBD to 2.69 mBD.Artifacts in the fill included one Jefferson Ware Complicated Stamped Type B sherd, four curvilinear CS sherds, one undecorated sherd, five eroded sherds, three utilized chert scrapers, one utilized knife, and chert debitage.

The small, bilobed "trash pit" measured 43 cm by 21 cm by 11 cm and contained gopher tortoise, raccoon, fish, unidentifiable mammal, and miscellaneous bone fragments. Only three sherds were recovered. The north end was only 4 cm deep (2.64-2.68 mBD) and the southern end was 14 cm deep. Possibly this was a posthole from which the post had been removed and the hole then filled with refuse.

Structure C

Features 5 and 6 were overlapping, circular, straight-sided pits with mottled fill and large chunks of charred wood. Feature 5 (the western pit) was approximately 58 cm in diameter and Feature 6 was 55 cm in diameter. A single depth was recorded for each: 2.53 mBD and 2.49 mBD, respectively. Presumably these were basal depths. Numerous artifacts included in these features were corncobs, remains of two white-tail deer and other faunal material, olive jar, Mission Red Filmed, Jefferson Ware Complicated Stamped Type B, Leon Check Stamped with and without raised central dot, loop and solid cross CS, line block CS, and scraped. Lithics were primarily debitage but one Pinellas Point, worked and utilized scrapers, a knife, and a spokeshave were recovered. Feature 5 and the immediately surrounding area contained a quantity of limestone.

Feature 13, the rectanguloid smudge pit just south of the hearth area, measured 43 cm by 41 cm by 22 cm. The upper 7 cm (2.02-2.09 mBD) of this feature was defined as a brown stain which bottomed on burnt orange and brown sand containing wood charcoal and corncobs. The lower section was roughly 13 cm deep with a base between 2.22 and 2.24 mBD. It contained one Jefferson Ware Complicated Stamped Type B sherd, and two chert debitage fragments.

Features 14A and 14B were the two circular fire pits in the central hearth area. Feature 14A bottomed as 2.31 mBD and 14B at 2.29-2.34 mBD. Besides large chunks of wood charcoal, 14B contained a single, small undecorated sherd, six very small chert flakes, and three possible fish scales.

Feature 15 was the rectangular, slightly waisted smudge pit just opposite (west) the central hearth area. It was 48 cm by 29 cm by 20 cm (2.12-2.32 mBD). In its upper level it consisted of grey-brown sand flecked with charcoal and several cob fragments concentrated in the southern half. With decreasing depth, the sides sloped toward the center of the feature which was packed with charred corncobs. Artifacts consisted of one Jefferson Ware Complicated Stamped Type B sherd, one undecorated sherd, a utilized chert scraper and six waste flakes.

A probable storage pit, Feature 18 measured 80 cm by 60 cm and was 64 cm deep (2.19-2.73 mBD). The base of the main feature was flat and the side sloped inward very gradually. Along the southern edge, a shelf similar to the one in Feature 17 was located at 2.53 mBD. The feature was almost barren of artifacts, containing only one undecorated sherd, a joined curved land CS sherd, an unidentifiable CS sherd, worked spokeshave and scraper, a utilized scraper, eleven waste lithic artifacts, and two carbonized corncobs.

Squares Adjacent to Trench #2

Feature 20, the clay-lined pit (Figures 12 and 13) was 145 cm by 130 cm by 28 cm. The grey-brown stain flecked with charcoal was first noted at 1.43 mBD. This soil, pit fill, was mixed with orange clay in the southern end of the feature. The fill was underlain by a thin lens (1.52-1.56 mBD) of grey-brown sand flecked with orange clay. Beneath this was the compacted, brownish orange clay lining which contained charcoal flecks and lumps of brown and yellow silicified (?) or hardened clay. The lining was thicker and humped on the south end (ca. 18 cm thick) and tapered to the north end. There were very few artifacts in this feature: a possible Jefferson Ware Complicated Stamped Type B sherd, one arc-straight-bullseye CS sherd, a curvilinear CS sherd, a scraped sherd. four undecorated sherds, 14 debitage lithic artifacts, and fragments of artiodactyl (possibly deer) tooth.

Trench #1

Cultural features were encountered in the central portion of Trench #1 from 512E to 515E. Feature 21, an ovoid to rectangular trash pit, was 70 cm long and 28 cm deep. It extended from 1.42 mBD to 1.72 mBD. Fill was dark grey-brown sand which contained well-preserved faunal material (mullet vertebra, gopher tortoise shell fragments, small bird right humerus, hispid cotton rat dentary, squirrel right humerus, artiodactyl phalanx, and a marine bivalve -- Common Rangia -- shell). Other artifacts included four Jefferson Complicated Stamped Type B sherds, three loop cross Cs sherds, one solid cross CS sherd, three curvilinear CS sherds, a large point tip, utilized spokeshave, graver/scraper, and four debitage lithic artifacts.

The conical pit immediately adjacent to Feature 21 was mapped at 1.49 mBD and extended to 1.97 mBD. Fill was light grey sand flecked with charcoal. It contained one utilized chert scraper and a small fragment of bone. The other conical pit had dark grey and light grey mottled fill containing chunks of charred wood. It was oval in shape at the top (1.53 mBD) and had a rounded base on top of grey-tan clay and limestone at 2.07 mBD.

The irregular, rectangular feature measured 43 cm by 28 cm at 1.64 mBD and had a round base at 1.89 mBD. Fill was light grey and tan mottled sand flecked with charcoal. The base rested on grey clay.

The semicircular, partially excavated feature in the southeast corner appeared at 1.47 mBD and had sloping sides and rounded base at 1.76 mBD. It contained one curvilinear CS sherd.

APPENDIX B
COMPLETE RAW DATA FOR LITHIC ARTIFACTS

Lithic variable names and descriptions are entered on the leftmost side of the page and are followed by raw frequencies for Structure A, Structure B, and the village, in that order. The first group of three frequencies pertain to lithic artifacts which underwent thermal alteration and the second group of three frequencies pertain to non-thermally altered artifacts.

Worked Lithic Artifacts	A	B	Village	A	B	Village
Ichtucknee Point	0	0	1	0	1	7
Pinellas Point	1	0	32	1	0	46
Tampa Point	0	0	1	0	0	5
Thonotossassa Point	0	0	0	0	0	1
Archaic Stemmed Point	0	1	3	0	0	4
Bolen Plain Point	0	0	0	2	0	3
Hardaway Point	0	0	1	0	0	0
Hamilton Point	0	0	1	0	0	0
Morrow Mountain Point	0	0	0	0	0	1
Sumter Point	0	0	0	1	0	0
Oleno Point	0	0	0	0	0	1
Duval Point	0	0	0	1	2	2
Gadsden Point	0	0	1	0	0	0
small point fragment	0	0	10	2	0	26
med-lge point fragment	0	0	13	2	2	27
small point preform	0	0	1	0	0	3
med-lge point preform	1	0	3	1	4	13
straight side & base point	0	0	2	0	0	7
straight side & concave base point	0	0	0	0	0	1
crude, eared point	0	0	0	0	0	1
point ear fragment	0	0	1	0	0	0
reworked small point scraper	0	0	0	0	0	3
thick assymetrical point	0	0	1	0	0	0
expanded base drill	0	0	2	0	0	4
drill fragment	0	0	2	0	0	7
assymetric drill	0	0	0	0	0	2
spike drill	0	0	0	0	0	3
unifacial flake awl	0	0	0	0	0	3
reworked point awl/perforator	0	0	1	0	0	0
unifacial graver	0	0	2	0	0	0

Worked Lithic Artifacts	A	B	Village	A	B	Village
bifacial graver	0	0	0	1	0	1
bifacial scraper	1	1	9	0	2	8
unifacial scraper	0	0	9	0	1	4
adze	0	0	0	1	0	5
thumbnail scraper	0	0	0	0	0	3
core scraper	0	0	1	0	0	0
"heavy" scraper	0	0	0	0	0	1
beveled endscraper	0	0	0	0	0	4
edge-retouched scraper	0	0	12	3	2	27
preform, scraper	0	0	0	0	1	0
coral bifacial scraper	0	0	0	1	0	0
bifacial knife	0	1	4	2	1	8
edge-retouched knife	0	0	9	1	0	12
preform, knife	0	0	0	1	0	3
chopper- hammer-pecking tool	0	1	3	2	2	3
square biface	0	0	6	0	0	0
gunflint	0	0	0	0	0	1
star spokeshave/scraper	0	0	0	0	0	1
bifacial scraper/spokeshave	0	0	1	0	0	5
unifacial scraper/perforator	0	0	1	0	0	0
bifacial scraper/knife	0	0	0	0	0	3
UID uniface	0	1	6	0	0	9
UID biface	0	1	17	3	3	22
unifacial, blade-like flake	0	0	0	0	0	1
UID fragment	0	0	0	1	0	5
adze-like hammer	0	0	1	0	0	0
bifacial scraper/graver	0	0	0	0	0	2
lge oval scraper/chopper	0	0	0	0	1	0
handaxe	0	0	0	0	0	1
blocky, preform spokeshave	0	0	0	1	0	0
Utilized Lithic Artifacts						
flake scraper	11	3	196	15	35	364
flake knife	0	1	31	2	1	33
flake graver	1	0	16	2	4	26
flake spokeshave	0	3	35	3	2	64
flake scraper (coral)	0	0	2	0	0	0
flake scraper/spokeshave	0	2	4	1	5	8
flake graver/scraper	0	0	5	0	1	4
flake scraper/knife	0	0	2	0	2	6
flake perforator	0	0	1	0	0	3
flake graver/knife	0	0	0	0	0	1
flake graver/knife (coral)	0	0	3	0	0	0
flake graver/spokeshave	0	0	0	0	0	1
flake perforator/scraper	0	0	0	0	0	1
flake graver/knife/spokeshave	0	0	0	0	0	3
blade scraper	0	0	8	2	1	3
blade knife	0	0	2	0	0	7
blade graver	0	0	1	0	0	0
blade spokeshave	0	0	0	0	0	1

Utilized Lithic Artifacts	A	B	Village	A	B	Village
blade-like flake scraper	2	0	3	3	1	15
blade-like flake knife	0	0	1	0	0	5
blade-like flake graver	0	0	2	0	0	2
blade-like flake spokeshave	0	0	5	0	2	3
blade-like flake scraper/ spokeshave	1	0	1	0	0	0
blade-like flake scraper/knife	0	0	0	0	0	1
blocky flake scraper	1	0	18	6	6	35
blocky flake knife	0	0	7	0	0	6
blocky flake graver	1	0	2	3	2	6
blocky flake spokeshave	0	0	3	1	0	7
blocky flake scraper/graver	0	0	1	0	0	0
blocky flake scraper/spokeshave	0	0	0	0	0	2
blocky flake spokeshave/knife	0	0	0	0	0	1
blocky flake chopper/pecker	0	0	0	0	1	0
blocky flake, battered	0	0	1	0	0	0
blocky fragment scraper	1	0	10	0	3	17
blocky fragment graver	0	0	1	2	0	3
blocky fragment graver (coral)	0	0	1	0	0	0
blocky fragment spokeshave	0	0	3	0	0	4
blocky fragment scraper/knife	0	0	0	0	0	3
blocky fragment graver/knife	0	0	1	0	0	0
blocky fragment chopper/pecker	0	0	0	0	0	6
core gouger ("heavy" graver)	0	0	0	0	0	1
core gouger (coral)	0	0	0	0	0	1
Debitage						
flake	78	30	2063	421	242	5069
flake (coral)	5	3	79	0	3	37
blade	3	2	20	5	11	42
blade (coral)	0	1	4	0	0	0
blade-like flake	3	3	25	21	17	97
blade-like flake (coral)	1	0	1	0	0	0
thinning flake	3	6	351	9	6	489
thinning flake (coral)	0	1	8	0	0	1
blocky flake	6	6	213	60	42	471
blocky flake (coral)	0	0	10	1	0	4
blocky fragment	10	7	190	47	19	531
blocky fragment (coral)	0	1	2	1	0	12
very small flakes	5	2	1204	24	25	2223
very small flakes (coral)	0	0	12	0	0	10
expended core, spall	0	0	4	1	3	14
expended core, spall (coral)	0	0	0	0	0	1
cortical fragment*				1	1	36

* The cortical fragments were not designated heat-treated or non-heat-treated although all are probably the latter.

APPENDIX C
ANALYSIS OF CORNCOBS FROM THE BAPTIZING SPRING SITE, FLORIDA

by Timothy A. Kohler, Washington State University

Due to necessity and practicality, a judgmental sampling technique was used to select the most complete cobs from each provenience for measurement. The number of cobs measured was standardized at five cobs per provenience in small proveniences (or as many cobs as could be measured, if there were less than five) and at 10 cobs in larger proveniences. On each cob selected in the sample, the following measurements were made with vernier calipers: (1) cob diameter, taken at the widest point on the cobs where the whole diameter remained (includes contribution of the lower glumes to the total diameter); (2) number of rows; (3) lower glume width at the widest point (estimates both kernel width and cupule width); (4) distance between lower glumes in the same row (estimates kernel thickness); (5) shank diameter, measurable on only one specimen; and (6) cob length, measurable on only six specimens none of which were complete. One measurement for each of these items was made for each cob when possible. The total sample was 121 cobs: due to the structure of some of the analytical programs, however, one of the cases was "thrown out", yielding an N of 120.

Descriptive Statistics

Over the whole sample, lower glume width varied between 0.3 cm and 0.65 cm with a mean of 0.48 cm (SD=0.07 cm). Kernel thickness, as estimated from lower glumes, varied between 0.25 cm and 0.46 cm with a mean of 0.35 cm (SD=0.04 cm).

The single measurement of shank diameter was 1.3 cm. Cob diameter varied between 0.9 and 2.1 cm with a mean of 1.4 cm and a standard deviation of 0.2 cm. Cob length varied between 4.2 and 5.0 cm with a mean of 4.7 cm and a standard deviation of 0.3 cm.

Finally, 1% of the cobs was 6-rowed (n=1), 82% (n=99) were 8-rowed, 3% (n=4) were 9-rowed, 13% (n=16) were 10-rowed, and 1% (n=1) were 12-rowed. The 9-rowed cobs were probably malformed 10-rowed ears.

Seventeen cobs were complete enough to note cob shape. Nine were subjectively placed in the "straight" category (53%) and eight were assigned to a "tapered" category (47%). No cigar-shaped ears or ears with greatly expanded butts were noted.

Correlations

There was no correlation between width of the lower glume and estimated kernel thickness in the sample as a whole (r^2=.09). Variation in row number did not account for variations in kernel thickness or width of the lower glumes. Cobs with different row numbers did, however, have significantly different diameters, as might be expected. The mean for the 6-rowed ear was 1.5 cm; for the 8-rowed ears, 1.4 cm; for the 9-rowed ears, 1.5 cm; for the 10-rowed cobs, 1.49 cm; and for the 12-rowed cob, 1.9 cm. Subprogram ANOVA in the Statistical Analysis System (SAS), yielded an F-value of 2.09 at an alpha level of significance at 0.09

Neither kernel thickness nor lower glume width were significantly different in different provenience lots. Total cob diameter, however, was significantly different for cobs from different proveniences (Table 1). To investigate this further, all lots were roughly categorized according to type of provenience: (F) features, (Z) zones, (S) probable

TABLE 1. Analysis for Variable Cob Diameter Classified by Provenience. (Midranks were used for ties.)

Provenience Number	n	Mean Diameter (cm)
147	6	1.25
148	4	1.47
137	5	1.40
140	5	1.42
191	5	1.50
123	5	1.46
65	5	1.54
116	5	1.22
102	5	1.36
117	5	1.42
67	5	1.28
48	5	1.26
63	1	1.00
40	5	1.42
93	5	1.62
46	1	1.30
107	5	1.46
80	10	1.46
165	5	1.44
299	5	1.38
144	2	1.50
51	2	1.30
188	2	1.35
179	1	1.40
311	1	1.00
187	1	1.00
151	5	1.60
88	10	1.60

Variation Among MS	Variation Within MS	F Value	alpha
0.076	0.040	1.91	0.0123

smudge pits, and (U) unidentified proveniences. The descriptive statistics resulting from this division are presented in Table 2. The SAS subprogram for analysis of variance of cob diameter classified by type of provenience yielded the following results (midranks were used for ties):

Level	n	Mean (cm)	Variation Among MS	Variation Within MS
U	40	1.49	0.135	0.046
S	36	1.39		
F	23	1.44	F Value	alpha
Z	21	1.33		
			2.92	0.0364

The results of the analysis of variance indicated that the division of proveniences based on cob diameter was significant. Unfortunately, the interpretation is somewhat limited by the fact that the largest cobs were those from the Unidentified proveniences. The next largest cobs were those in features, some of which were the basin-shaped smudge pits (Jill Loucks, personal communication), the next sized cobs were from circular smudge pits, and the smallest cobs were those scattered in zones.

Comparisons

The corn from Baptizing Spring is very close, on both width of lower glumes and distance between adjacent lower glumes in the same row, to that measured from A-273 through proxy of Alachua Cob Marked ceramics (Kohler 1979). At A-273, the mean lower glume width impression was 0.47 cm and at Baptizing Spring it is 0.48 cm. At A-273, the vertical distance between glume impressions was 0.35 cm and the average vertical distance between lower glumes in the same row in the Baptizing Spring

TABLE 2. Descriptive Statistics of Corncobs Sorted by Provenience.

Variable*	n	Mean	SD	Minimum Value	Maximum Value	Standard Error of Mean	Variance	C.V.
FEATURES								
rows	23	8.35	0.78	8	10	0.16	0.60	9.29
lower glume width	23	0.48	0.08	0.30	0.63	0.02	0.01	17.63
kernel thickness	23	0.34	0.03	0.27	0.39	0.01	0.001	10.42
shank diameter	0							
cob diameter	23	1.44	0.22	1.00	1.90	0.05	0.05	15.47
cob length	0							
SMUDGE PITS								
rows	36	8.44	0.84	8	10	0.14	0.71	9.99
lower glume width	36	0.47	0.06	0.35	0.59	0.01	0.004	13.63
kernel thickness	36	0.35	0.04	0.25	0.45	0.01	0.002	12.91
shank diameter	0							
cob diameter	36	1.39	0.20	1.00	1.90	0.03	0.04	14.07
cob length	3	4.70	0.30	4.40	5.00	0.17	0.09	6.38
ZONES								
rows	21	8.10	0.30	8	9	0.07	0.09	3.72
lower glume width	21	0.47	0.06	0.39	0.60	0.01	0.003	11.89
kernel thickness	21	0.34	0.03	0.29	0.43	0.07	0.001	9.02

cob								
diameter	21	1.33	0.18	1.00	1.80	0.39	0.03	13.28
cob length	1	4.20	----	4.20	4.20	----	4.20	------
UNIDENTIFIED								
rows	40	8.30	0.94	6	12	0.15	0.88	11.32
lower glume								
width	40	0.49	0.08	0.34	0.65	0.01	0.01	16.22
kernel								
thickness	40	0.36	0.05	0.27	0.46	0.01	0.002	13.396
shank								
diameter	1	1.30	----	1.30	1.30	----	1.30	------
cob								
diameter	40	1.49	0.24	0.90	2.10	0.04	0.06	16.34
cob length	2	4.80	0.00	4.80	4.80	0.00	0.00	0.00

* All variables except "rows" (number of rows) are measured in cm.

sample was also 0.35 cm. The A-273 site is a late Alachua period site in the vicinity of Gainesville (Milanich 1971:7-9). Its proximity to the mission site at Fox Pond and the continuity of the material culture with that at Fox Pond lend credence to the hypothesis that this is the immediately pre-Spanish settlement of the Potano Indians who later moved to the Fox Pond site during missionizing efforts. The Baptizing Spring corn is smaller in both the above dimensions than the corn from Fox Pond, but larger than that of the Hickory Pond phase Woodward village (see Milanich 1971:9-15) as measured by proxy (Kohler 1979).

Nickerson (1953) presents a variety of metric and qualitative data for both archeological and modern corn races with particular attention to cob morphology. None of the races he presents in his Table I (Nickerson 1953:88) agree in all characteristics with that present at Baptizing Spring. When five characters are considered (% cobs 8-rowed, shank diameter, % straight cobs, kernel thickness, and lower glume width), the Baptizing Spring corn is closer to Iroquois Sacred Flour Corn than to any other race, but has a much smaller shank diameter and lower glume width.

Cutler and Blake have measured several samples of corn from north Florida and their unpublished results were contained in a personal communication to Dr. Jerald T. Milanich (1976), of the Florida State Museum in Gainesville. Some of the cobs measured by Cutler and Blake were included in the sample analyzed by this author. Those analyses indicated that, from a total of 194 cobs, 88% were 8-rowed, 10% were 10-rowed, and 2% were 12-rowed. Cutler and Blake (personal letter, 1976) calculated mean row number as 8.3 and mean cupule width at 0.76 cm.

Unfortunately, no kernels were recovered from the Baptizing Spring site. On most of the characters which could be observed, the corn corresponds with the definition for Maiz de Ocho ("eight rowed corn") as summarized by Mangelsdorf (1974):

> . . . the eight-rowed condition of Maiz de Ocho is only one of its characteristics. Others are straight kernel rows; paired rows sometimes separated from each other . . . ; ear shape almost cylindrical; a slender rachis sometimes slightly to strongly flexible; kernels about as wide as long, relatively thick, apically rounded (Mangelsdorf 1974:114).

Discussion

The large sample of corncobs from Baptizing Spring is of added interest because of its probable identity with the corn grown in the late prehistoric period in north-central Florida as determined by its similarity on width of lower glumes and kernel thickness with cobs from A-273. Unfortunately, corn from north-central Florida in prehistoric times is known only through proxy record of cob marked ceramics. If the identification of the Baptizing Spring organic remains with the prehistoric specimens is justifiable, it appears that the late prehistoric corn of north-central Florida also belongs to the complex which has been variously termed "Eastern Complex" (Carter and Anderson 1945), "Northern Flints" (Brown and Anderson 1947), or "Maiz de Ocho" (Galinat and Gunnerson 1963).

Corn from a Fort Walton period mound site in Houston County, Alabama (Neuman 1961) was identified as belonging to this complex by Cutler, while a sample containing both a cob and kernels from a Fort Walton site in the Jim Woodruff Reservoir area of Florida proved to be 10-rowed with undented kernels which were substantially thicker and wider than those from Baptizing Spring must have been. This Fort Walton corn was classified as probable Caribbean Flint by Magelsdorf (Bullen 1958:347). Caribbean Flint is a member of the Eastern Complex "lineage".

The similarities of the Eastern Complex with the primitive Mexican Nal-Tel-Chapalote Complex have been noted by Sturtevant (1960:13). Galinat and Gunnerson (1963) derive Maiz de Ocho from teosinte-contaminated Chapalote in combination with an ancestor of the currently rare Harinoso de Ocho of western coastal Mexico.

If the increasing kernel width and thickness seen in the Potano Fox Pond site is indeed due to introgression with maize imported by the Spaniards from Cuba or Yucutan (Kohler 1979), then the metric similarity of the estimators of kernel size at Baptizing Spring to those of the late prehistoric period in north-central Florida suggest that Baptizing Spring underwent considerably less Spanish influence than the villages associated with other missions.

Conclusions

The 8-rowed condition of the maize from Baptizing Spring, its tendency towards strong row pairing, the straight or slightly tapered ear shape, the straight rows, and the slender cob all identify the corn from this site as Eastern Complex. The present evidence, in combination with that from north-central Florida, indirectly suggests that Eastern Complex maize was present in that area at least during the late prehistoric period.

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Bnd. Bundle (followed by number and sometimes page) which references ST AGI documents.

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BIOGRAPHICAL SKETCH

Lana Jill Loucks (she prefers L. Jill) entered the beautiful world of Ottawa, Ontario, Canada, on 5 July 1953 at the extremely reasonable hour of 10 AM. She grew up as most well brought up children do. Her parents, Bob and Connie Loucks, provided her with two brothers -- one older and one younger -- whom, after about 15 years, she grew to love very much. Her older brother, David, and his wife have three very nice children who see their crazy aunt twice a year on holidays. Her younger brother, Rob, is a genius with cars and a most delightful person.

In 1964, the nuclear Loucks family moved to Florida where Jill attended Northeast High School in Ft. Lauderdale. Duly naturalized (a singularly peculiar and insulting way of putting it), she appeared at the University of Florida in 1970, replete with aspirations of becoming a rural medical practitioner. It was to her ultimate benefit that medical schools did not share her opinions as to her determination and adequacies along that line. She most heartily thumbs her nose at those who said, or thought, that she would "get married and have kids." Jill has not gotten married although she does confess to supporting a cat (called "Kitty" but lovingly addressed as "Fuzz Face"), a rather old, borrowed bicycle, and a faithful, arthritic car.

In her senior year, Jill found that anthropology offered a stimulating and reasonable philosophy of life and human beings and she became happily engrossed in learning. Her love of puzzles and the past drew her into archeology where she found she could build on and enlarge her interests in botany, zoology, knowledge (but not love) of chemistry, and mathematics.

Jill entered graduate school at Florida State University in Tallahassee in the spring of 1974 and attended her first archeological field school that summer. Finding that Florida State was not what she had in mind, Jill returned to the University of Florida where she obtained her master's degree in anthropology in 1976. Three years later she is on the verge of completing her doctorate.

During the past two years she has supplemented her income, and made her fame, by typing reasonably good final copy, keypunching, wrestling with the computer, and exercising her artistic talents. It is not widely known or appreciated, but Jill has the honor of having one of her charcoal illustrations hanging in the Palatka fire chief's living room. Jill has also had the pleasure of helping a friend build a post-and-beam house and watching her tomatoes come to fruition one year. Most of her plants, she has noted sadly, die.

Her graduate student years were hard ones and not especially eventful in terms of social intrigue. She worked diligently and tenaciously. Luckily, there was usually a contract job to be done and friends and family who would never allow her or Kitty to go hungry. It has been a period of mental and emotional growth that has been delightful to view from a respectable distance.

Jill is now faced with a future which has unforseen potential. Her cat and her friends comfort her and she knows that someday she will see the light of day and will have time to clean her apartment. She is basically a shy and sensitive creature who writes biographical sketches tongue-in-cheek. As long as there are murder mysteries (the old-fashioned, literate variety) to read, folks to enjoy, forests, old houses, and archeological sites, it seems that her life will continue. As long as humans, including Jill, do not take everything they say or believe too seriously, it is possible that all life will continue. Thomas Wolfe, an eloquent poet in prose, wrote the following lines which may be taken apropos of anthropology and archeology: "time begins and ends the life of every man, and each man has his own, a different time."

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Charles H. Fairbanks

Charles H. Fairbanks, Chairman
Distinguished Service Professor, Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Jerald T. Milanich

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Associate Curator, Social Sciences
Florida State Museum

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Graduate Faculty of the Department of Anthropology in the College of Liberal Arts and Sciences and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

June 1979

Dean, Graduate School