AN ANALYSIS OF SPANISH PENSACOLA
AS A BEHAVIORAL LANDSCAPE

by

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ABSTRACT

AN ANALYSIS OF SPANISH PENSACOLA
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Nicolas Rubén Laracuente

This thesis explores the utility of landscape theory as applied to a complex historic region. Following a brief summary of the development of landscape theory, María Nieves Zedeño’s three-dimensional approach is applied to First Spanish Period Pensacola (1559-1763). Afterward, the relationship between dimensional aspects of landscape shall be investigated and contextualized within the broader framework of a socio-ecological system. The paper concludes with a discussion of the utility of a landscape approach, how it clarifies causal factors of system collapse, and approaches to increase the theoretical resolution of similar endeavors.
CHAPTER I

ASSESSING SPACE, PLACE AND LANDSCAPE

This thesis examines Spanish Colonial Pensacola from a landscape framework. Such a perspective requires an understanding of Spanish settlers' active decisions as they are related to place creation and a concern with how humans affect and are affected by the environment. Methodologically this study concentrates on the formal, relational, and historical aspects of Spanish sites using historical, archaeological, and geomorphological data sets. The chronological focus of this thesis is the First Spanish period (1559-1763) encompassing the First Spanish Pensacola settlement/fortification attempts beginning with the Tristán de Luna expedition and terminating with the transfer of Presidio San Miguel to Britain. Examining Pensacola’s archaeological sites from this perspective allows for a more holistic assessment of the First Spanish Colonial landscape that articulates human decision-making within an explicitly environmental context.

The geographic limit of this study is the area around Pensacola Bay. Three archaeological sites are included within the study area. Presidio Santa María de Galve and Presidio San Miguel de Panzacola are located on the mainland adjacent to Pensacola Bay. Presidio Isla de Santa Rosa is located on Santa Rosa Island, a barrier island that partially encloses Pensacola Bay. Relations with British, French, Dutch and
Native American cultures outside this geographical constraint are assessed in light of how these groups affected Spanish Pensacola's settlements through trade or warfare.

These geographic and temporal limits narrow the scope of research to one geographic area (Pensacola Bay) predominantly occupied by one cultural group (Spanish colonists) interacting with various cultural entities (Native Americans and other Europeans) for two hundred and four years. By limiting the study area, this research is better able to assess the utility of behavioral landscape theory as it is applied to complex historical sites.

The first task of this study is to build a vocabulary with clearly defined terminology. A structured lexicon allows for maximum control of complex theories assessed by this thesis and facilitates an understanding of its conclusions. In the following section, a lexicon is outlined within the conceptual framework of this thesis. These concepts include the nature of socio-ecological systems along with ideas derived from landscape archaeology.

**Building a Landscape Lexicon: Socio-Ecological Systems**

Scientists associated with the National Science Foundation’s Long-Term Ecological Research (LTER) Network make convincing arguments for the integration of anthropology into cooperative research projects with other scientific disciplines (see Redman et al. 2004; Van der Leeuw and Redman 2002). Typically studies of environment and human interaction are separated into two distinct systems: natural and human. Although it has long been recognized that these systems are interconnected, research is confined to separate disciplines often neglecting relationships that can be
illuminated with cross-disciplinary research (Redman et al. 2004:161-162). Charles Redman espouses the necessity of cross-disciplinary research that emphasizes an “integrative framework equipped with comprehensive models, reinforcing methods, and complementary data” (2004:162). Combining human and natural systems into one entity is the first step toward this goal.

Redman urges use of a single term, social-ecological system (SES), in order to address all facets of human-nature interaction (Redman et al. 2004:162). In his 2004 article, Redman defines a social-ecological system is by four characteristics:

1. “A coherent system of biophysical and social factors that regularly interact in a resilient, sustained manner” (e.g., Pensacola presidios, people they interact with, and environmental resources they exploit);

2. “A system that is defined at several spatial” (e.g., Presidio, Pensacola Bay, Spanish Empire), “temporal” (e.g., First Spanish Period), “and organizational scales” (e.g., fort, village, temporary camps), “which may be hierarchically linked” (e.g., convicts, civilians, military officers, Spanish officials);

3. “A set of critical resources” (e.g., natural, socioeconomic, and cultural) “whose flow and use is regulated by a combination of ecological and social systems” (e.g., lumber, defensible bay between French, British and Spanish lands);

4. “A perpetually dynamic, complex system with continuous adaptation” (e.g., four sets of occupations of the bay, differing motivations for settling, varying levels of support from Spanish government, peace time or war time);
Socio-ecological systems encompass human-environment interaction, power relations, resource exploitation, and its constant change. Analyzing social-ecological systems from an anthropological perspective requires complex and flexible theoretical frameworks. Landscape theory is capable of evaluating these complexities.

**Development of Landscape Theory**

Space is a concept at the center of landscape theory. In the book *Spatial Technology and Archaeology: The Archaeological Applications of GIS*, David Wheatley and Mark Gillings (2002) trace the development of how archaeologists treat spatial issues in their research. They argue that before 1980 archaeologists perceived space as a uniform surface for action without other characteristics (Wheatley and Gillings 2002:8). Archaeology and geography worked in tandem, using mathematical equations and geographic relationships to illustrate interaction between people and space. Space was easily separated from structures of power, society, and time. Scholars believed that the ease of isolating space from external forces allowed for an objective analysis of human patterns (Tilley 1994:9). This idea was an oversimplification of space. Space is more than a neutral container.

In the 1980's, theoretical perception of space shifted from a scientific and abstract concept to a humanized or meaning-laden concept (Tilley 1994:8). The new view of space regarded it as a medium for human action (Tilley 1994:10; Wheatley and Gillings 2002:8). As such, space and actors entered a symbiotic relationship and could not be isolated from each other. This relationship resulted in types of space, each of which was dependent on an action that formed it.
Christopher Tilley states, a humanized space “involves specific linkages between the physical space of the non-humanly created world, somatic states of the body, the mental space of cognition and representation and the space of movement, encounter and interaction between persons and between persons and the human and non-human environment” (Tilley 1994:10). The symbiotic relationship between space and actors creates a subjective dimension to space. This dimension makes a comprehensive understanding of space impossible if it is isolated from the “symbolically constructed life worlds of social actors” (Tilley 1994:11).

Examining life world construction yields another level of complexity to cultural landscapes. Lester Rowntree and Margaret Conkey remark that this construction is “characterized by the transformation of aspects of nature into cultural products that, in turn, have the potential for elaboration and modification” (1980:459). Landscape transformation occurs through a societal process of environmental symbolism. The end result is a cultural landscape that realizes a pattern of power (Rowntree and Conkey 1980:459). Symbols are used in landscape construction because they have the “power to compress complicated meanings into a specific object or behavior; it serves as a vehicle for conception” (Rowntree and Conkey 1980:460). Symbols in Colonial Pensacola are manifested in names assigned to the features of the natural landscape. Terms such as Barrancas de San Tomé or Isla de Santa Rosa refer to specific landscape features possessing characteristics important to the actors within the Pensacola socio-ecological system. Symbols also have “the power to suggest a whole . . . it calls to mind a succession of phenomena that are related analogically and metaphorically” (Tuan 1974:23). Spanish names in Pensacola reflect the link of the area to the Spanish Empire.
The application of symbols to the landscape is only one way in which space is transformed. Relationships to previously constructed spaces influence creation, transformation, and reproduction of space (Tilley 1994:11). Space depends on who experiences it, the manner in which they interact with it, and their memory of previous interactions. Actors are complex on an individual and a group level. They cannot be treated as entities that will have consistent reactions to the same stimuli. Actors are capable of learning quickly and use symbols to communicate through a vast network of other individuals and groups (Casey 2001:717; Redman et al. 2004:163). Assessing landscape symbols in groups, or their cultural landscapes, reveals a symbolic legacy containing temporal information pertaining to subsistence, territory and historic position (Rowntree and Conkey 1980:461). Analyzing these complex landscapes calls for the development of new concepts and lexicon. Fortunately, phenomenology provides some tools to deal with these issues; however, they also have limitations.

The phenomenological approach involves the understanding and description of space as experienced by an actor. Christopher Tilley writes, “[phenomenology] is about the relationship between Being and Being-in-the-world. Being-in-the-world resides in a process of objectification in which people objectify the world [space] by setting themselves apart from it" (Tilley 1994:12). Actors are responsible for creating a gap between themselves and space. Actors utilize their senses and actions to bridge this gap. The conceptual gap between actors and space necessitates a concept of place. If the bridge between actors and space is an action, then place is the end of the bridge the actor is trying to reach. Space would not exist if it were not for the relationship between actors and place. Tilley argues that this relationship has resulted in several types of space. He
postulates that these types range from somatic (in relation to the body) to architectural (bound space created by humans) to cognitive (in relation to the mind) (Tilley 1994:15-17). Space is not a simple container that can be separated from power, society, and time. Conceptually, space would not exist without human influence.

Actors create various types of bridges with different types of actions. These bridges serve the purpose of facilitating interaction through different categories of space in order to reach different varieties of places. Colonial Pensacola serves as a theoretical laboratory in which the human influence on space is manifested through examples from somatic, architectural, and cognitive space.

Pensacola Bay was a place within the Spanish Empire. As a place it existed in different categories of space simultaneously. Actors who never set foot in Pensacola, such as the Spanish Crown, experienced Pensacola through cognitive space (Tilley 1994:16-17). Their experience of this space was through letters, maps, and reports from people with a physical relationship to that place. Actors who lived in Pensacola experienced the same place through somatic space. They experienced Pensacola at a more detailed scale than the Spanish Crown, which allowed them to separate Pensacola Bay into several places that contained different meanings for local actors than it did for the Spanish Crown. Structures constructed by the actors in Pensacola denoted meaning to several places through architectural space. Churches, barracks, and cisterns were all architectural constructs whose function existed within architecture space.

Places are locations where actors experience and interact with space with a degree of intentionality. This contact creates a distinct meaning for the actor making it more than just an arbitrary point or location. Characteristics of place are influenced by human
experiences, activities, and emotional attachments (Tilley 1994:15). Place provides a context for actors in relation to their identity and action (Tilley 1994:18). Space provides the context for places. Places are only limited by human consciousness. The result is a variety of spaces containing places that range from physical to spiritual. Places occur on a variety of spatial scales ranging from personal (e.g., an actor’s home) to global (e.g., Earth). Places can overlap depending upon the scale that they are studied (Tilley 1994:17-18). They can even be defined by their exclusion of human contact (e.g., sacred space).

Tilley notes that the key approach in the phenomenological school of research is, "the manner in which place constitute [sic] space as centres of human meaning, their singularity being manifested and expressed in the day-to-day experiences and consciousness of people [actors] within particular life worlds [landscapes]" (Tilley 1994:14-15 emphasis in original). Landscapes are collections of places that share a common denominator, whether they inhabit the same physical space or share significance to a specific group of people. Transformation of a natural environment into a human landscape begins with social importance being assigned to a natural feature when it is labeled with a name. Names assigned to places mark a beginning to the relationship that humans have with the place. Since they can range in size from a point to an empire, place names help compartmentalize space (Tilley 1994:17).

Tilley argues that places have sedimented meanings that limit the types of spaces they occur within (Tilley 1994:15). Parameters of each type of space dictate the variety of places that can occur within them. As Tilley demonstrates, Western perception of space centers on the value of space and the control of valuable areas (Tilley 1994:20-21).
The concept of value implies an additional type of space not described by Tilley, controlled space.

Controlled space is implicit in the process of life world construction. Rowntree and Conkey realize that symbols “not only store information, but also restrict its flow, symbols have the potential to establish and reinforce the boundaries of human life, particularly those between social units” (1980:461). Some areas of space are controlled more stringently because there is value associated with them. Landscape symbols, and their meanings, shift as cultural values change. In some cases exerting controlled space is necessary in order to prevent a landscape from collapse. Michel Foucault provides such an example in a 17th century city beset by the plague. The first step taken by magistrates to combat the plague was to partition the city from the rest of the world (Foucault 1977:195). Prohibitions were placed on leaving homes and stray animals were killed in order to gain control of space. These actions effectively severed paths connecting places that made up the city landscape. Once the quarantine was over they were able to reconstruct the city’s pathways to reconnect it to the landscape. Without controlled space, the landscape was at risk of collapse through every connection between infected and non-infected places.

Utilizing controlled space not only maintains a landscape, it is key to the expansion of a landscape as well. Establishing a settlement at Pensacola Bay allowed the Spanish to stem the French expansion in the area by controlling space in West Florida. Construction of a presidio on the bay was a symbolic reminder of a cultural boundary. Outsiders encountering this symbol beheld the power of the Spanish empire (Rowntree and Conkey 1980:462).
While Tilley’s idea of sedimented meaning within place landscape provides a foundation for discussing controlled space, it has problems. Adam Smith observes that use of sedimented meaning within a landscape obscures spatial relationships created by actors. Tilley writes, “places, by their very nature, contain sedimented meanings which resist such boxing and bracketing of their natures and significance” (Tilley 1994:15). His statement implies that places are capable of resisting containment, which is exactly why actors use symbols. Ignoring the ability of an actor to bracket space within actor-defined limits anthropomorphizes landscape giving it a false consciousness. Sedimented meaning causes meaning to emerge from landscape itself, rather than from an understanding of symbols created by actors (Smith 2003:65). Places should be conceptualized as fluid entities formed and transformed by actors depending on the way they interact and view their environment. Smith posits a theoretical method involving actors as the primary tool for comprehension of cultural landscapes.

Smith argues that actors interact with space in three different ways: experience, perception, and imagination (Smith 2003:10). Spatial experience encompasses how actors move through space. Land use, transportation, resource exploitation and land modification are examples of ways actors experience space. Spatial perception describes how actors perceive the space around them. Smith describes dangerous docks or inviting parks as examples of perceived space (Smith 2003:73). The third method of interaction is spatial imagination manifested by the representation of space in maps or pictorial landscapes (Smith 2003:74). A combination of these three interactive methods result in creation of place by humans. Places are not dictated by the qualities of a space, but rather the way that actors experience, perceive, and interact with space.
While Smith and Tilley make valid points, their approach is difficult to operationalize in archaeological methodology. María Nieves Zedeño's work with behavioral landscapes addresses the same concerns as Smith and Tilley, but with methodological clarity. She realizes that places do not have sedimented meaning. They are a form of material culture created through human action transforming the environment (Zedeño 2000:106). Zedeño stresses the temporal component of place. Landmarks are a type of place that develops a life history from several experiences associated with a particular place. Interaction between landmarks and people forms a landscape (Zedeño 2000:107).

As a product of human behavior, landscapes have three definable dimensions. Formal dimensions are physical characteristics of a landmark. Relational dimensions are interactive links that connect landmarks to form the landscape. Historical dimensions are the links within the landscape that result from use and occupation of a landmark (Zedeño 2000:107). Although landscapes are analogous to material culture, they form over a much longer time span. Zedeño writes, "landscapes are created through transformational processes, their specific or contextual characteristics only come forward through the reconstruction of sequences of activities and interactions that led to the integration of multiple human and natural elements" (Zedeño 2000:108). Landscapes are analyzed using three main behavioral archaeology concepts: performance characteristics, life histories, and formation processes.

Behavioral landscapes are built on a premise that places are selected and used because they have interaction-specific capabilities that make places uniquely suited for certain activities. Interaction-specific capabilities, or performance characteristics, are
desirable properties of a place (e.g., topography that enhances the view from a place). Zedeño remarks, "certain performance characteristics may have more weight than others in the place selection process, thus driving the users to make compromises to obtain trade-offs" (Zedeño 2000:108). Life histories are defined as "the cycle of formation, use and transformation of a landmark" (Zedeño 2000:109). Constructing a life history requires finding evidence of transformation resulting from human interaction. Life histories are often complex since most interactions can change performance characteristics of a landmark (Zedeño 2000:109). Formation processes encompass both natural processes and human behavior that affect these landmarks (Zedeño 2000:110).

Performance characteristics allow the places within the Spanish Pensacola landscape to be assessed at various points in their life histories. The Spanish Pensacola landscape was made up of several places: Pensacola Bay, Presidio Santa María de Galve, Punta de Sigüenza, Presidio Isla de Santa Rosa, and Presidio San Miguel de Panzacola. These places became landmarks in the Spanish landscape as they developed a life history from settlement.

Smith’s methods of spatial interaction increase the theoretical resolution of scrutiny. Examining the Spanish spatial experience allows an understanding of the web of interaction within the Spanish Pensacola landscape. Spanish spatial perception describes the performance characteristics that interested the Spanish. Documents produced from the Spanish spatial imagination describe performance characteristics in letters and depict modes of transportation through maps. Accumulating data from three spatial approaches clarifies the Spanish Pensacola as defined and controlled by the landscape’s actors.
Research Questions

Incorporating concepts from environmental symbolism, phenomenology, and behavioral archaeology results in a theoretical framework applicable to the First Spanish Period Pensacola Socio-Ecological System. Narrowing the scope of this research to Colonial Pensacola from 1559-1763 isolates three archaeological sites and their archaeological assemblages. The successive use of these sites creates a life history in which the formal, relational, and historical dimensions can be examined at distinct stages within Pensacola Bay’s life history. The symbols manifested by a site’s layout and names are created by Spanish culture. These settlements are located on the periphery of the Spanish empire and are subject to the greatest stress for change (see Rowntree and Conkey 1980:464). Tight control over the archaeological data supplemented by a wealth of historical documentation enables this research to address several questions.

1. What are the formal aspects of the First Spanish Pensacola Landscape?
2. What are the relational aspects of the First Spanish Pensacola Landscape?
3. What are the historical aspects of the First Spanish Pensacola Landscape?
4. How are aspects of the dimensions of the First Spanish Pensacola Landscape contextualized within the First Spanish Socio-Ecological System?
5. Is the First Spanish Socio-Ecological System a scenario that depicts elements of system collapse?
6. What are the limitations of a landscape approach?

Answering these primary questions requires addressing focused queries about the environment and the culture of Colonial Pensacola. Several questions stem from the fact that Spanish Pensacola was part of a larger network in the Spanish Empire. Recreating
Spanish Pensacola's landscape requires understanding interactive links that existed between it and the larger Spanish Empire. Availability of resources, interaction with other cultural groups and past events affected the decisions made by the Spanish as they transformed Pensacola Bay into a Spanish landscape. These aspects of Spanish Pensacola must be analyzed both qualitatively and quantitatively in order to critically apply the landscape approach.

Applying landscape theory to the historic period requires archaeological data to be supplemented by historic documents. Qualitative factors are visible at a finer resolution. Historical accounts reveal events occurring elsewhere in the Spanish landscape that affected the study area. Similar kinds of events occurred in prehistoric sites, but may not be as accessible to researchers.

By understanding human-environment relationships exhibited by coastal cultures it is possible to understand the long-term affect that people have on the environment. A diachronic perspective can illustrate problems that coastal communities may encounter with barrier island dynamics and other challenges presented by coastal occupation. Understanding motivational factors for change within the Pensacola colonial settlements provides scenarios that are analogous to other colonial attempts in general.

**Research Summary**

The remainder of this thesis explores aspects of the Pensacola Spanish Colonial landscape. Chapter Two describes methods for processing qualitative and quantitative data into an objective view of First Spanish Pensacola’s landscape. It includes discussions of limitations of qualitative data as well as various methods to access
landscape dimensions through archaeological data. Chapter Three provides characteristics of First Spanish Pensacola’s historical dimension. It traces the Spanish interest in Pensacola from the Tristan de Luna expedition in 1559 to the end of the First Spanish Period. Chapter Four utilizes historic, archaeological, and environmental data to illustrate the characteristics of Zedeño's dimensions found within First Spanish Pensacola. It provides data in tabular format with a discussion of immediate implications. Chapter Five addresses the research questions listed above providing an integrated examination of the First Spanish Landscape.
CHAPTER II
OPERATIONALIZING LANDSCAPE DIMENSIONS

Background research for the present analysis incorporated primary documents, historical syntheses, environmental surveys, and archaeological reports. Data relevant to the temporal, spatial, and theoretical parameters of this project were placed within one of Zedeño’s three dimensions. Research limits, described in chapter one, set boundaries of time and space. Within these limits, three presidios (Santa María de Galve, Isla de Santa Rosa, and San Miguel de Panzacola) were chosen for analysis. Common themes for the three presidios were chosen for their utility within a landscape framework. Combining historical, archaeological, and environmental information was necessary to obtain objective results in an analysis of First Spanish Pensacola’s socio-ecological system. In an attempt to find a statistical method of evaluating landscape dimensions that was easily replicable, ceramic ratios were calculated on the artifact assemblages from the presidio excavations in an effort to assess Zedeño’s landscape dimensions. This approach was sufficient to examine formal, relational, and historic dimensions of the First Spanish Pensacola Socio-Ecological System.

The University of West Florida excavations at the three presidios (1998-2006) proved invaluable to this project. First and foremost, these projects created a vast repository of historical, archaeological, and environmental data on which this research is based. Primary Spanish documents have been curated in the John C. Pace Special
Collections. Translations of many of these documents have been produced in previous projects. Colonial maps of Pensacola Bay were collected and digitized by The University of West Florida Archaeology Institute. They have also been integrated into several geographic information systems developed to identify the layout of each presidio and its change over time. Artifact assemblages associated with each excavation were recovered with detailed provenience and were documented in artifact databases.

Artifact assemblages were examined at a site wide scale in order to maintain the theoretical resolution examined by this thesis. First Spanish Period deposits, from Presidio Santa María de Galve and Presidio Isla de Santa Rosa, were considered in their entirety. As discussed later in this chapter, Presidio San Miguel de Panzacola was immensely more complex. Archaeological data were taken from two main components of the site: the village remnants under present day Old Christ Church and the deposits from a wealthy merchant house in Plaza Ferdinand. These areas provided a sample of the village assemblage comparable with the village from Presidio Santa Maria de Galve.

Each archaeological site within this study was viewed through the framework of Zedeño’s three landscape dimensions. Previous excavations provided an idea of activities taking place at each site. They also corroborated dates for the sites described in the historical documents. Each document associated with a site provided insight into the Spanish thought processes. Although these documents were often biased, they provided access to qualitative characteristics that would have been inaccessible without the historical data. Environmental data provided insight into the resources available to the colonists and the conditions they lived in.
Focused conclusions were reached by contextualizing these data within a landscape archaeology framework. Common themes were present in each of the presidios. These themes were separated into Zedeño’s three dimensions. Ensuring that each theme was accessible by different types of data was the first step toward objectifying the First Spanish Period socio-ecological system.

**Formal Dimension**

Formal dimensions were defined as physical characteristics of the landscape. First Spanish Pensacola’s formal dimension was assessed in two ways. The first way was an assessment of each presidio’s location in relation to resource locations and other physical aspects of the landscape. Data analyzed for this method included geophysical characteristics, hurricanes, cannon range, exploitable resources, and distance to fresh water. Geophysical characteristics described the natural aspects within the socio-ecological system. Relevant variables included soil types, erosion, and coastal processes within the Pensacola landscape (Houser et al. 2007; Houser et al. 2008).

The second method to assess the formal dimension was the examination of subsistence and raw material use at each presidio. Exploitable resources and site plans were analyzed in this method. Exploitable resources included all of the resources either harvested or produced within the Pensacola landscape. Site plans were examined to determine how they changed within the life of each presidio. Combined with exploitable resource data, an idea of the quantity of natural resources required by each of these presidios was reached.
Data sources used in the analysis of the formal dimension included historical documents, excavation data, maps, and geological reports (Table 1). Variables in the formal dimensions were accessible from at least two data sources to ensuring the data used was verified by another source. The necessity of this process to maintaining the integrity of this research was discussed later in this chapter.

Table 1: Formal Dimension Variables and Data Sources

<table>
<thead>
<tr>
<th>Variables</th>
<th>Historical Documents</th>
<th>Excavation Data</th>
<th>Maps</th>
<th>Geological Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geophysical Characteristics</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cannon Range</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Distance</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Exploitable Resources</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Plan</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This research considered not only physical characteristics revealed by collected data, but also transformational processes that created it. Formal aspects of the landscape were characterized by elements of human and natural systems. Understanding the integration between these two systems was essential to comprehending the socio-ecological system.
Relational Dimension

Relational aspects of landscape were defined as interactive links, or pathways, that connect landmarks within the landscape. Methods of interaction and cultures available for interaction fell within this dimension. The relational dimension was approached in two ways. The first approach examined the pathways used for interaction with the Spanish colonists. Pathways were used to transport people, information, and supplies. Supplies were shipped to the colonists from established Spanish settlements in shipments called *situados*. An understanding of the function of the *situado* involved assessment of the cultures that actually interacted with the Spanish colonists. This method examined the three main cultural groups that interact with First Spanish Pensacola: Native Americans, French, and British. Data analyzed for this method included the type of pathways that existed between these groups, the degree of interaction for each pathway, and the purpose of each pathway. Distance from the mouth of the bay was another relevant landscape element. Measurements from the mouth of Pensacola Bay were made from its approximate position during the colonial time period (Wilson 2000:24).

Despite the subjective nature of the interactive pathways, a quantitative value was placed on certain pathways through use of ceramic ratios applied to artifact assemblages from each presidio. Archaeological assemblages from each site were separated by functional groups developed by Stanley South in *Method and Theory in Historical Archaeology* (South 2002:92-102). Forty-two classes of artifacts were grouped into general categories that included activities, architecture, arms, clothing, furniture, kitchen, personal, and tobacco. Problems with these groupings stemmed from the fact that the
artifacts were used in a variety of contexts and no amount of adjustment to the classification system would encompass all data possibilities. To bypass this problem, this research examined ceramic ratios involving entire artifact assemblages, excluding features, recovered from First Spanish contexts. All of the ceramic sherds, regardless of their functional classification, were compared to the entire artifact assemblage from each site. South demonstrated that such ratios could be correlated with the function of a site (South 2002:172). A similar comparison was made between the three presidios to see if their functions changed over time.

South's ceramic ratio was calculated by subtracting the total ceramics from the total number of artifacts to obtain the total artifacts less ceramics. The ceramic total was divided by the artifact total (excluding ceramics) to obtain the ceramic ratio (Table 2). This research adjusted the ceramic ratio to calculate the imported ceramic ratio and Native American ceramic ratio of each site. The imported ceramic ratio was calculated by subtracting the imported ceramic total from the ceramic total to get the ceramics total that excluded imported ceramics. The imported ceramic total was then divided by the ceramic total (excluding imported ceramics) to obtain the imported ceramic ratio (see Table 2). The Native American ceramic ratio was calculated by subtracting the Native American ceramic total from the ceramic total to obtain the ceramic total that excluded Native American ceramics. The Native American ceramic total was divided by the total ceramics (excluding Native American ceramics) to obtain the Native American ceramic ratio.
Table 2: Ceramic Ratio Formulas

<table>
<thead>
<tr>
<th>Formula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{\text{Total Ceramics}}{\text{Total Artifacts Less Ceramics}} )</td>
<td>Ceramic Ratio</td>
</tr>
<tr>
<td>( \frac{\text{Total Imported Ceramics}}{\text{Total Ceramics Less Imported Ceramics}} )</td>
<td>Imported Ceramic Ratio</td>
</tr>
<tr>
<td>( \frac{\text{Total Native American Ceramics}}{\text{Total Ceramics Less Native American Ceramics}} )</td>
<td>Native American Ceramic Ratio</td>
</tr>
</tbody>
</table>

South applied his ceramic ratio calculations to assemblages from eleven sites (see Table 3). His results demonstrated a significant difference in ratios from domestic sites versus those from military-frontier sites (South 2002:172). Despite the fact that South applied these calculations to exclusively British sites, similar results were achieved when utilizing this method for First Spanish Pensacola. Regardless of the correlation between ratios calculated on Spanish or British assemblages, a comparison among the three presidios revealed differences in ceramic ratios, imported ceramic ratios, and Native American ceramic ratios among the three First Spanish Presidios.

To realize the utility of these ratios, each presidio was analyzed in terms of its major architectural components. Each of the presidios had a fort with an associated village outside of the fort walls. Where possible, assemblages associated with these distinct areas were analyzed separately. First Spanish archaeological deposits from Presidio Santa María de Galve were correlated with the position of the fort walls. Ratios from the fort and village were calculated from the artifact totals published in Presidio Santa María de Galve: A Struggle for Survival in Colonial Spanish Pensacola (Bense 2003). Presidio Isla de Santa Rosa’s archaeological deposits were more ephemeral than the other two presidios. These deposits were not referenced in terms of their position in
relation to the fort wall. Instead, ratios for Presidio Isla de Santa Rosa were conducted over the entire assemblage with no separation. Ratios were calculated from the artifact totals published in the report of the Presidio Isla de Santa Rosa excavations (Harris and Eschbach 2006).

Table 3: Stanley South’s Ceramic Ratio Results (adapted from South 2002:172, Table 24)

<table>
<thead>
<tr>
<th>Site</th>
<th>Ceramics</th>
<th>Adjusted Total Less Ceramics</th>
<th>Ceramic Ratio</th>
<th>Site Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunswick S25</td>
<td>16288</td>
<td>20477</td>
<td>0.79</td>
<td>Domestic Site</td>
</tr>
<tr>
<td>Brunswick S10</td>
<td>4618</td>
<td>8500</td>
<td>0.54</td>
<td>Domestic Site</td>
</tr>
<tr>
<td>Brunswick S7</td>
<td>2521</td>
<td>5662</td>
<td>0.44</td>
<td>Domestic Site</td>
</tr>
<tr>
<td>Cambridge 96</td>
<td>8751</td>
<td>11129</td>
<td>0.79</td>
<td>Domestic Site</td>
</tr>
<tr>
<td>Ft. Moultrie A</td>
<td>1217</td>
<td>4885</td>
<td>0.25</td>
<td>Military-Frontier Site</td>
</tr>
<tr>
<td>Ft. Moultrie B</td>
<td>269</td>
<td>1476</td>
<td>0.18</td>
<td>Military-Frontier Site</td>
</tr>
<tr>
<td>Ft. Ligonier</td>
<td>3170</td>
<td>18608</td>
<td>0.17</td>
<td>Military-Frontier Site</td>
</tr>
<tr>
<td>Ft. Prince George</td>
<td>764</td>
<td>6624</td>
<td>0.11</td>
<td>Military-Frontier Site</td>
</tr>
<tr>
<td>Spalding’s Store</td>
<td>2796</td>
<td>13974</td>
<td>0.20</td>
<td>Military-Frontier Site</td>
</tr>
</tbody>
</table>

Presidio San Miguel de Panzacola’s deposits were intact, but undisturbed First Spanish contexts were difficult to isolate. Ideally only First Spanish deposits would be taken into account from the Presidio San Miguel de Panzacola archaeological data, but the First Spanish occupation of the site was brief and followed immediately by British occupation and a subsequent second Spanish occupation. As a result, there were few
pristine First Spanish deposits available for this analysis. In an attempt to maintain the analytical scale employed at the other presidios, the entire artifact assemblage from shared living surfaces with both British and First Spanish deposits were considered in the artifact analysis. Such deposits have been documented in excavations at Plaza Ferdinand and Old Christ Church providing two contexts outside of the fort walls of Presidio San Miguel. Ratios for these deposits were calculated from data presented in two master theses (Whitaker 2005:141-145; Williams 2004:91-94).

Data sources used in the analysis of the relational dimension included historical documents, excavation data, and maps (Table 4). With the exception of ceramic ratios, variables in the relational dimension were accessible from at least two data sources. Although excavation data was the only data source used in the ceramic ratio calculations, the results were contextualized within all three landscape dimensions to fully comprehend their implications.

Table 4: Relational Dimension Variables and Data Sources

<table>
<thead>
<tr>
<th>Variables</th>
<th>Historical Documents</th>
<th>Excavation Data</th>
<th>Maps</th>
<th>Geological Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of Native Americans</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Presence of French</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of British</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Table 4 continues)
Table 4 continued

<table>
<thead>
<tr>
<th>Pathways</th>
<th>X</th>
<th>X</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Situado</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Ceramic Ratios</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Historical Dimension

Historical dimensions of landscape were examined through the diachronic study of the relational and formal dimensions. Changes in the formal dimension were linked to causative elements within the historical dimension. Relational pathways between landmarks were strengthened, or weakened, by the history of the interactions between these landmarks. Aspects of the historical dimension that were involved in this analysis were those that changed through Pensacola’s history. Landmark occupation time suggested how long Spanish actors had to make an impact on the landscape. The longer a landmark was inhabited the more ramifications its life history had on the landscape. Monetary expenditure and change in the function of the presidios were linked to the relative importance of the presidio.

Out of the three dimensions the historical dimension was the most subjective. Comparing historical data with the other dimensions and excavation data focused the analysis of the historical dimension (Table 5). Despite this effort, there was still an element of subjectivity involved with interpreting the historical dimension.
Table 5: Historical Dimension Variables and Data Sources

<table>
<thead>
<tr>
<th>Variables</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Historical Documents</td>
</tr>
<tr>
<td>Landmark Occupation Time</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Excavation Data</td>
</tr>
<tr>
<td>Monetary Expenditure on Settlements</td>
<td>X</td>
</tr>
<tr>
<td>Change in Function of the Presidios</td>
<td>X</td>
</tr>
<tr>
<td>Relationships with other Europeans</td>
<td>X</td>
</tr>
<tr>
<td>Life History of Previous Presidios</td>
<td>X</td>
</tr>
</tbody>
</table>

Traversing Pitfalls in First Spanish Pensacola Socio-Ecological System Data

As a socio-ecological system, Pensacola has remained a dynamic environment with fluctuating interaction between human and natural components of the system. Environmental data were collected from various geological reports on Pensacola Bay. Consisting of tidal, climate, and soil information, these data were misleadingly straightforward. They were based on modern perceptions of these areas, a view that was dramatically different from the historic characteristics of the landscape. Development of the Gulf Coast has considerably altered the environmental characteristics of Pensacola.
Bay through construction of highways, beach nourishment, and increased human traffic. This analysis used historic sources as a supplement to the modern environmental data to provide a more comprehensive picture of past conditions.

Historical documentation was gathered from both primary and secondary documents. Historic shorelines and depth of the bay were accessible through maps. Often environmental aspects, such as climate, were derived from historic accounts. However, historical accounts depicting strong storms or hurricanes were unreliable in differentiating between the two. Historic accounts often neglected to differentiate between a strong storm and a hurricane when noting the destruction of a colonial settlement. Despite this lack of detail, such information was used to determine the timing of consecutive storms, for strong storms had a cumulative effect on the First Spanish Pensacola socio-ecological system.

Assessing dune height was problematic to ascertain from the historical documents. Since hurricanes tended to erode dunes, the timing of historic hurricanes indicated the relative state of the dunes. There were seven storms within the period studied by this research. The cumulative effect of these storms resulted in relatively small dunes on Santa Rosa Island and an increase in severity of the hurricanes toward the end of the First Spanish Period. Without developed dunes elements of strong storms, such as storm surge, became more destructive and lessened the island’s damage threshold (Chris Houser, personal communication 2008).

Descriptions of the exploitable resources and local populations were included in historical documents. These data presented problems associated with relying on data written by authors with personal agendas. Documents composed for submission to the
Spanish crown were designed to illustrate faithful service or amazing accomplishments of the author. This bias was evident in a passage from Jayme Franck in 1699 to the Spanish Crown in which Franck critiques a scientific survey conducted of Pensacola Bay a few years earlier. In it Franck stated, “...certain aspects of this bay proved to be quite different from what his Majesty supposed,” (Jayme Franck to Viceroy February 19, 1699 in Renacker 2001:34). While Franck was referring to marginal soil that prevented productive agriculture, his own accounts were biased by his discontentment on the periphery of the Spanish Empire. Where possible, bias in historical records was clarified by comparing historical accounts with archaeological records.

Presidios within the Spanish landscape supplied First Spanish Pensacola via situados. Qualitative aspects came into play when most of the documents only described that the situados arrived at Pensacola on an irregular basis with varying amounts of supplies in them. Other qualitative aspects of the relational dimension included the presence of illicit trade between the Spanish and other Europeans. Although these data could not be quantified, they remained crucial to the First Spanish Pensacola landscape as a means of acquiring supplies for survival.

**Summary of Research Agenda**

Artifact ratios, excavation data, and geomorphological data are combined to facilitate the understanding of the First Spanish Pensacola Socio-Economic System. Operationalized by Zedeño’s landscape dimensions, this thesis describes the data found in three landscape dimensions. Chapter three provides a preliminary sketch of First Spanish Pensacola manifested in historical documents and previous archaeology. This
sketch provides a knowledge foundation on First Spanish Pensacola to facilitate
discussion of formal and relational dimensions that are described in a subsequent chapter.
CHAPTER III
FIRST SPANISH PENSACOLA’S HISTORICAL DIMENSION

Despite the limited geographic and temporal research focus, analyzing the First Spanish occupation through a landscape framework remained complex. Several volumes described previous work (Bense 1999a, 2003) and ongoing research (Benchley 2007) focused on Spanish Pensacola. The richness of Pensacola Bay history was impossible to capture within the scope of this research. Instead, this chapter described examples from historical and archaeological data that embodied the elements the historical dimension discussed in chapter two. This chapter examined the historical dimension as it relates to the formal and relational dimensions of First Spanish Pensacola’s landscape.

The First Spanish Period of Pensacola (1559-1763) encompassed four episodes of the Spanish struggle to maintain their foothold in Florida. Beginning with the expedition of Don Tristan de Luna and terminating with the British acquisition of Presidio San Miguel, First Spanish Pensacola was a turbulent period in the area’s history involving interactions that span both the Old and New Worlds. Past interactions between landmarks in the First Spanish Pensacola socio-ecological system formed its historical dimension. As such, aspects of the formal and relational dimensions permeated this dimension and warrant discussion.

This analysis focused on the final three settlement episodes of the First Spanish Period of Pensacola. Don Tristan de Luna’s expedition, the first episode of Spanish
settlement, had no archaeological data associated with its land-based element. For that reason it was not included in the discussion of the formal and relational aspects of First Spanish Pensacola. However, the Luna fleet tragedy was the first major event in the area’s life history creating the foundation of the historical dimension for successive settlement of Pensacola Bay.

**The Expedition of Don Tristan de Luna y Arellano 1559-1561**

Spanish explorations of the Gulf Coast were motivated by a need to bolster the growing mission network spread across Florida. In 1557, the Vicar of Panuco expressed initial interest in establishing a settlement at Pensacola:

“We in this region understand the great desire Your Majesty has that all the Indians of these parts come to a knowledge of God and to the royal obedience of Your Majesty . . . We are also informed by a royal decree and letter from Your Majesty of the great fervor and holy desire he [Friar Andres de Olmos] has to increase the faith in the Catholic Church… Friar Andres wanted assistance to colonize near three rivers, which would have no small result. They are the Rio de Las Palmas, the Rio Bravo, and the Rio de Achase [Pensacola]. It appears to us… a very good idea; and if all this cannot be done, at least the Achase should be colonized, both to provide aid to ships in distress and because it is the best entrance to Florida if it should be colonized in the future” (The Alcalde Mayor and Vicar of Panuco to His Majesty, Panuco 25 April 1557 in Priestly 1928:265-267).
This document illustrated three motivations the Spanish had for settling Pensacola Bay: conversion of Native Americans into Catholics, safety of stranded sailors, and a staging area for future colonization efforts. Also, it documented the preference of Pensacola over other areas of interest (e.g., Rio de Las Palmas and Rio Bravo). Although it was included in the evaluation of the area, the fact that Pensacola served as a defensive position was a lesser priority (Wells 1996:98).

In June 1559, Luna and 1500 soldiers, settlers, servants, women and children set out for La Florida. One hundred Aztecs joined the expedition to farm the rich farmland the Spanish hoped to find at their destination (Clune 2003:15; Wells 1996:100). Their mission was to construct a base at Pensacola and move overland to Punta de Santa Elena to establish a settlement (Wells 1996:99). Luna’s fleet landed at Pensacola in August of 1559 establishing a settlement named Santa María Filipina (Clune 2003:15). They were in the process of unpacking supplies when a hurricane sank eight out of eleven ships in Luna’s fleet (Clune 2003:15; Priestly 1928:245; Smith et al. 1999:3; Wells 1996:100).

Survivors struggled for approximately one year until Luna’s replacement, Angel de Villafañe, arrived. Villafañe found little worth saving and left 50 men to assist the colonists before sailing on (Clune 2003:15). The remaining colonists attempted to maintain the settlement, although lack of food caused a constant problem (Priestly 1928:143-145). Santa María Filipina was abandoned in April of 1561 and Spanish colonization efforts were focused elsewhere (Scott-Ireton 1999:26; Wells 1996:100). The tragedy befalling the Tristan de Luna expedition, and the resulting loss of Spanish
interest, was a clear example of a traumatic event in the historical dimension nullifying the assets found within the formal dimension.

The Establishment of Presidio Santa María de Galve

It was 140 years before Spanish attention returned to Pensacola Bay. La Salle was leading French colonists in an effort to colonize the Gulf Coast. Preventing non-Spanish Europeans from inhabiting an area so close to New Spain overrode any concerns of another disaster. This time it was not the possibility of future colonization that attracted them, it was Pensacola Bay’s defensive characteristics (Clune 2003:13; Coker 1999:7).

The bay was deep with a narrow, defensible mouth. In 1686, during a visit to Pensacola in search of a French settlement, Ensign Juan Jordán de Reina called it “the best [bay] that I have seen in my life” (Clune 2003:17). Jordán noted that local Native Americans called the bay Panzacola. The reported presence of friendly Native Americans prompted suggestions that the colony at St. Augustine be abandoned and all personnel relocated to Pensacola. The king responded favorably to this suggestion, while the royal council disapproved and ordered that a scientific survey be conducted before further colonization suggestions were entertained (Coker 1999:7).

In 1693, the Viceroy of New Spain commissioned Admiral Andrés de Pez to survey the northern Gulf Coast. He was instructed to inspect the entrance and interior of Pensacola Bay in order to determine if Native Americans were present and locate a viable area for fortifications and settlements. Pez, accompanied by the scientist Carlos de
Sigüenza y Góngora, spent 11 days at Pensacola Bay documenting its resources (Clune 2003:17-18). Their recommendation included this description of the bay:

“I hereby assert that that bay is the finest jewel possessed by His Majesty… not only here in America but in his entire kingdom, because it combines in itself virtues which make other bays great. The depth of four and half to eight fathoms, without hazards of shoals or reefs and with places where fair-sized frigates may sail right up to the very beach, make this bay no ordinary matter. When all the large fleets in the world at present could anchor in any part of its length of nearly eleven leagues and width of one, two, and three and be protected from all winds, it is evident that this bay is most unusual.” (Leonard 1939:193-94).

The scientific survey yielded information that the port was easily fortifiable, but no building stone was located near the bay. It also noted the absence of Native American populations who could be used to supply the necessary labor for construction efforts (Clune 2003:19). Despite these facts, a royal order was issued to colonize the bay. Any non-Spanish settlement on the northern Gulf coast was seen as a threat to the empire, mines of northern New Spain, and shipping lanes that tied their ports together (Chapman 1998:12). Because of King William’s War (1689-1697), settlement of Pensacola Bay was delayed until the war ended (Clune 2003:19). French colonization attempts prompted immediate action even though Spanish funding was lacking (Coker 1999:9).

Andrés de Arriola arrived from New Spain in 1698. Juan Jordán de Reina, who set out from Spain and acquired supplies in Havana, supported Arriola in fortifying Pensacola Bay (Manucy 1959:230). They convened a meeting of military officers and
engineers to choose a location for the settlement. Barrancas de Santo Tomé was chosen for the village of Santa María de Galve and Fort San Carlos de Austria (Clune 2003:20). The land was high and close to the mouth of Pensacola Bay so the French would be deterred from attacking by Spanish cannons pointing in their direction when they approached (Coker 1999:9). The first priority was to set up a fort for defense against the French, Arriola wrote,

“By the 6th day [after their arrival] a battery of 18 cannons… had been emplaced controlling the channel. At the same time, huts were under construction as quarters for the infantry and wood was cut and hauled for the fortification which… Don Jayme Franck had marked out” (Andrés Arriola, Letter to the King, 1 December 1698 in Manucy 1959:234).

As land was cleared for the fort wall to be constructed, colonists found that they were not in the exact location they had thought. They imagined they were closer to the mouth of the Mississippi River, but found that they were too far away to tap into Mexico's silver mines or the Mississippi valley's fur-trading networks (Clune 2003:21). Also, Presidio Santa María de Galve was too far away from shipping lanes that ran through the mouth of the bay that they were trying to defend (Clune et al. 2003:34). The width of bay's mouth was 2.7 kilometers and the shipping lane was in the center of that, though as Albert Manucy noted, “with any gun of 1698, a hit beyond one-half mile (800 meters) range was pure luck” (Manucy 1959:238). Arriola remarked that even with forts on both sides of the bay's mouth, the French could sail right in and anchor anywhere they wished to. He was not concerned though. He surmised that the French had not actually
explored Pensacola Bay and had no intention of settling somewhere so far from New Spain (Andrés Arriola, Letter to the Crown, 1 December 1698 in Manucy 1959:236).

Despite this reality, the Spanish continued to struggle for control over the area. There was evidence that they imported different types of cannons, as well as different types of shot, at the request of Arriola (Faye 1941:154). They experimented with different firing angles only to conclude that cannon fire from the fort would never sink a ship even by accident (Phelip Serrano y Perea, Reply to Viceroy, 1 March 1700, AHN Estado 2315). Deception was employed to supplement the inadequate artillery. When French ships arrived at Pensacola Bay on January 26, 1699, Arriola dressed forty of his men in the only uniforms they were supplied with. These men were stationed outside of the fort walls. The other non-uniformed soldiers and convict-laborers remained behind the wall so that only their heads were visible (Chapman 1998:1; Coker and Childers 1998:20-21; Harris 1999:24).

The presidio walls were constantly in need of repair. Franck described the challenges of repair:

“The fort which I build, which is done little by little because of the lack of men and supplies and because work is not compatible with their ignorance, is of timber and sand since there is nothing else to make it of. Therefore, before I may be able to finish it [the fort], the timbers shall be found to have rotted since it is already beginning to rot. The sand shall return to the ground another time and therefore, this is one work that shall never be finished” (Jayme Franck, Letter to the King, 3 June 1700, AGI Mexico 618).
Several fires occurred in the presidio that exacerbated the need for repair. The buildings were constructed out of highly combustible materials such as palmetto thatch and pine logs. Despite the danger of a single spark igniting the presidio, fires were necessary for warmth and cooking (Jayme Franck, Franck to Martin de Sierra Alta, Secretary Council of the Indies 1699 in Manucy 1959:239-240). When fires got out of control they also aggravated health problems.

Disease was a constant problem for the presidio. Yellow fever cases worsened when the garrison's sleeping quarters were destroyed by fire. A hospital was erected in 1701 in an attempt to alleviate health problems. Malnourishment continued to be a problem because of the constant supply shortages (Clune et al. 2003:30-31).

Life at Presidio Santa María de Galve was challenging. The presidio was poorly supported. The Spanish purchased labor and goods from the French in Mobile (Clune et al. 2003:39, 61-64). Fires, storms, diseases, and attacks by English allied Native Americans compounded the presidio’s problems (Clune 2003:12-13). In January 1704, Colonel James Moore of Carolina led 80 English and 1500 Native Americans against the Apalachee defeating them and their Spanish protectors (Faye 1941:155). At least nine Spanish and 200 Native Americans fled to Presidio Santa María de Galve and their attackers followed (Harris 1999:29). The English-allied Native Americans kept the presidio under siege from 1707 to 1715. Santa María de Galve was captured by the French in 1719 and was destroyed before Pensacola Bay returned to Spanish hands in 1722. The Spanish seized the opportunity to relocate their defenses from the mainland to Santa Rosa Island where they believed the Native Americans could not reach them.
Local and Global Connections to Presidio Santa María de Galve

Officials in Mexico City were indifferent to Pensacola since it was too far away from the silver mines to aid New Spain in silver exploitation (Clune 2003:13; Clune et al. 2003:25). In fact, Pensacola was seen as a port that could weaken the industry by circumventing royal revenue collection and facilitating illicit trade (Chapman 1998:13; Weddle 1991:104, 236). The Spanish planned to supplement the presidio’s resources with contributions from local Native American settlements. Through these contributions the colony would become self-sufficient. The colonists could then export supplies to the rest of the Spanish Empire. A combination of factors prevented Presidio Santa María de Galve from reaching this level of autonomy.

Andrés de Pez reported one Native American settlement when he scouted Pensacola Bay in 1688 (Harris 2003:266). Conflict with other Native Americans dispersed this settlement before the Spanish established the presidio in 1698 (Harris 2003:310). Without a local settlement of Native Americans providing a stable sabana the Spanish were forced to depend on resources imported from Spanish ranchers in Apalachee and an unreliable situado from Veracruz (Harris 2003:270; Clune et al. 2003:29, 54). Ironically when Native Americans came to the fort to trade, they found the Spanish were short on trade items (Clune 2003:22).

Imperial warfare in the 16th and 17th century weakened Spain’s economy and diminished its population. In the 18th century they were still struggling to recover (Clune 2003:19-20). English and French incursions increased as Spain struggled to supply, govern, and populate their American colonies (Clune 2003:20). Politically and militarily the English were stronger than the Spanish. In 1698, the English governor at Charleston,
Joseph Blake, boasted of his plans to capture Pensacola the following year to a Spanish visitor (Clune 2003:19). These plans were aborted when both France and Spain staked claims in the northern Gulf Coast before the English executed these plans.

Spain’s weakened state became increasingly apparent when the War of Spanish Succession (1702-1713) pitted France and Spain against England, Holland, and Austria (Clune 2003:21). In 1704, the Presidio Santa María de Galve lost access to the resources available from the Apalachee when Colonel James Moore invaded the area (Harris 1999:29). Native American refugees who fled to Presidio Santa María de Galve soon moved on to Mobile. In a letter to the French government Jean Baptiste Le Moyne Sieur d’Bienville described 200 Native American refugees arriving at Mobile. He asked them why they left the Spanish. The refugees replied, “they did not give them any guns, but the French gave them to all of their allies” (Swanton 1922:123).

Mobile and Pensacola became fast allies, but English allied Native Americans began sporadically attacking Santa María de Galve for about a decade (Hann 1988:40). Constant attacks meant that any important structures at Santa María de Galve had to be relocated within Fort San Carlos de Austria (Clune 2003:21-22). Everything outside of the fort was destroyed in the Native American raids of 1707. Colonists and their Native American allies were not able to leave the fort again until the War of Spanish Succession concluded (Clune 2003:22).

Colonists at Presidio Santa María de Galve only had five years to recover from the War of Spanish Succession. In 1718 the War of the Quadruple Alliance pitted England, Holland, Austria, and France against Spain. Without the aid of their former allies at Mobile, the Spanish had no chance of surviving the war and surrendered to Jean
Baptiste Le Moyne Sieur d’Bienville on May 14, 1719. The Spanish left for St. Joseph’s Bay, where they stayed until they mustered reinforcements to recapture Pensacola in August of 1719 only to lose to the French a month later. The Spanish regained a foothold in Pensacola bay on November 26, 1722 when Alejandro Wauchope arrived to find Presidio Santa María de Galve burned to the ground. He proceeded to set up a new fortification, this time across the bay on the barrier island. This settlement was called Presidio Isla de Santa Rosa (Clune 2003:17-21).

Spanish colonists were aware of the importance of relying on neighboring groups of people. When the Native American or French populations within Santa María de Galve's were inaccessible because of absence or war, the Spanish colonists’ formal dimension was negatively affected through lack of supplies. Pensacola's inability to produce surplus goods negatively affected the relational pathways between Pensacola and other Spanish landmarks in the Spanish landscape. Defensive performance characteristics related to keeping the French out of Pensacola Bay, such as the Presidio's location on the coastal bluffs, became less important than protection from Native American land based attacks and access to resources like fresh water. Presidio Santa María de Galve's destruction in 1719 provided opportunity for relocation in effort to create a successful settlement.

Despite their advantageous military position, inhabitants of the Presidio experienced constant hardship. Part of this problem was due to the social makeup of the Presidio’s population. Settlers were not only ethnically diverse, but came from a wide variety of social standings as well. The settlement functioned as both a military garrison and a penal colony, for Mexican convicts who were shipped to Pensacola to supplement
the meager population (Chapman 1998:14-15; Clune et al. 2003:25). Financial incentives were provided to military officers to obtain their service, but normal soldiers and convicts were offered nothing resulting in frequent desertion (Clune et al. 2003:26).

As the life history of the presidio progressed, the cost associated with occupying Pensacola Bay soon became more than the Spanish Empire was willing to endure. War expenses, rampant disease and Native American raids were only a few of the traumatic issues detracting from the strategic value of Pensacola. Leaving the mainland fortifications in favor of a position on Santa Rosa Island was an option to regain security while continuing to exploit the characteristics that originally attracted the Spanish to Pensacola Bay.

Relocating Spanish fortifications was always an option considered by the colonists. Punta de Sigüenza, the end of Santa Rosa Island close at the mouth of the bay, was the most prominent choice, especially after erosion of the bluff threatened Presidio Santa María de Galve. In 1713, Governor Salinas proposed relocating the presidio to Punta de Sigüenza. Salinas noted that the presence a stable shoreline would allow them to create fresh water wells (Griffen 1959:245; Stringfield 1996:11-14). The main problem was that a move to Punta de Sigüenza would sacrifice the high ground they had at Presidio Santa María de Galve (Clune et al. 2003:36). The area was also described a “water-level shifting island, all of it so low and marshy that it cannot make any kind of fortification (Andrés Arriola, Letter to the Crown, 1 December 1698a in Manucy 1959:234). The land had enough value that a compromise was reached and a wooden stake redoubt was constructed on Punta de Sigüenza in 1718. It was not until 1722, when
the Spanish returned and found the burned remains of the presidio and redoubt that the Spanish decided to fortify Santa Rosa Island (Clune et al. 2003:36).

**The Establishment of Presidio Isla de Santa Rosa**

Ignoring royal orders to build Presidio Isla de Santa Rosa on Punta de Sigüenza, colonists built their new settlement three-quarters of a mile east on the bay side of the island. They chose an area with protective dunes and trees, which indicated the area was not prone to flooding like Punta de Sigüenza (Coker 1999:15; Harris and Eschbach 2006:28; Stringfield 1996:16). Their decision was bolstered by the fact that pine trees were more accessible in the new location facilitating the exploitation of lumber (Harris and Eschbach 2006:30). Presidio Santa Rosa was built with materials imported from Veracruz and transported from Presidio San Jose (Harris and Eschbach 2006:31). The design of the presidio adhered to the same regulations that dictated the structure of Presidio Santa María de Galve.

Since they no longer had their cannons pointing at the mouth of the bay to deter the French, the Spanish attempted to alter Pensacola Bay itself. In 1723, Spanish royalty commanded the new Spanish governor, Lt. Col. Alejandro Wauchope, to cut a channel across Santa Rosa Island to drain the bay into the ocean (Coker 1999:15). Although it was intended to prevent enemy ships from entering the bay, the lower water level would effectively scuttle the bay so no one could use it (Griffen 1959:243). After experimenting and realizing that this was a futile task they considered anchoring ships across the mouth of Pensacola Bay (Coker 1999:16). There was no evidence that that this was ever attempted.
At this point the Spanish placed so little value on Pensacola Bay that they attempted to alter the formal dimension of the bay to render it unusable. Commands to cut a channel to drain the bay demonstrated the lack of knowledge the Spanish Crown had of the bay and coastal processes. At Presidio Santa Rosa the Spanish were less likely to be attacked by Native Americans (Harris and Eschbach 2006:34). Access to the presidio required crossing Pensacola Bay or approaching from the east on the barrier island itself. Since Santa Rosa Island was no wider than 1.1km (0.7 miles), it was easy to observe anyone approaching from the east. Despite this relative safety from Native American attacks, Spanish colonists were at the mercy of hurricanes that struck the island.

In 1740, a hurricane destroyed part of the presidio. The presidio’s accountant, Don Juan de Uruena, documented that destruction of the Presidio storage buildings prompted construction of a warehouse on the mainland (Juan Uruena, Report of the Previous Accountant, 12 August 1741, in Childers 2003:42). A series of hurricanes struck in September and October of 1751. In 1752, hurricanes ravaged Presidio Santa Rosa in August, October, and November. The final hurricane on November 3rd was well documented by survivors. Paymaster don Joseph de Yberri reported that the storm drowned many people as it inundated the island. It also took land from both sides of the island leaving almost nothing to live on (Joseph Yberri, Report of don Joseph de Yberri, 29 August 1753, in Childers 2003:38). Additional accounts described burials washed from the church floor leaving their contents on the beach (Inhabitants of Presidio Isla de Santa Rosa, Petition of the Infantry, 8 November 1752a, in Childers 2003:26-27, Inhabitants of Presidio Isla de Santa Rosa, 2nd Examination of Storm Damage, 8
November 1752b, in Childers 2003:96-97). The destruction of buildings, including the church and hospital, prompted the governor to move women, children, and supplies to the mainland in preparation for another storm (Juan Uruena, Report of the Accountant Uruena, 16 August 1753, in Childers 2003:50). Ultimately, the 1752 hurricane prompted the Spanish to relocate to the mainland leaving Presidio Santa Rosa and creating Presidio San Miguel (Harris and Eschbach 2006:19).

Local and Global Connections to Presidio Isla de Santa Rosa

Presidio Santa Rosa’s inhabitants were protected from Native American attacks that plagued Presidio Santa María de Galve. The colonists' relationship with local tribes existed mostly through mission villages on the mainland. Most lived in the Native American village of Escambé. Some Native American women married colonists or were taken as concubines (Harris and Eschbach 2006:42). There was very little documentary evidence regarding trade between Native Americans and the Spanish at Presidio Santa Rosa (Harris and Eschbach 2006:47). Spanish colonists acquired French and English muskets from the Native Americans. Yet the colonists were also instructed to stop any trade between the Native Americans and English (Harris and Eschbach 2006:47). It is not clear if Spanish efforts to halt Native American interactions with English colonists had any effect.

Trade with other Europeans was poorly documented during this period of Pensacola Bay’s settlement. Colonists continued to depend on unpredictable situados. Accounts of food shortages were present throughout Presidio Santa Rosa’s history. These shortages forced them to continue to rely on trade with Mobile (Harris and
Eschbach 2006:44). Illicit trade supplemented meager *situado* supplies, but records of black market trade were hard to track. Harris remarked that colonists trade networks were a “fluid environment in which food, supplies, hardware and even arms and munitions might come from any number of sources, none of which were legally recognized” (Harris and Eschbach 2006:43).

Presidio Santa Rosa was the second presidio on Pensacola Bay. Since support from the Spanish empire was sporadic, relational pathways between other Europeans and Native Americans became increasingly important to Presidio Santa Rosa's inhabitants. Without legal support via the *situado* from New Spain, Pensacola colonists were forced to depend on the illicit trade network for survival. Despite supply shortages there was little discussion of relocating to the mainland. It was the environment that ultimately forced Santa Rosa colonists to desert the barrier island.

**The Establishment of Presidio San Miguel de Panzacola**

A hurricane in 1740 prompted the governor of Presidio Isla de Santa Rosa, Nicholas Ximénez de Florencia, to have a warehouse constructed on the mainland to hold military supplies (Childers et al. 2007:20). In the aftermath of the 1752 hurricane Spanish officials recommended that the presidio be relocated to the mainland. Construction began on Presidio San Miguel de Panzacola in 1754. On October 24, 1755 the Commandant of Presidio Isla de Santa Rosa, Santiago Benito Eraso, ordered everyone to move to the mainland site (Childers et al. 2007:20). By 1757 the move had not been completed. Commandant Eraso was replaced by Governor Miguel Román de Castillo y Lugo who completed the move from Santa Rosa Island to the mainland.
Presidio San Miguel did not have the same defensive characteristics as the other two presidios, but it was protected from the Gulf. The presidio was established in an area that averaged three meters above sea level. Water bordered the presidio on all sides. The bay was on the south, two fresh water streams were on the east and west, and an extensive swamp was on the north (Bense 1999b:121; Stringfield 1996:149). The presidio was constructed so that the southern walls were eleven meters from Pensacola Bay (Childers et al. 2007:30). The northern face was protected by homes that were built at least six meters (18 feet) from the fort walls (Griffith 1988:16). Native Americans formed the villages of Escambé and San Antonio de Punta Rasa to supplement the presidio’s defenses by acting as a buffer between the presidio and hostile Native Americans (Childers et al. 2007:24). Twenty-one cannons were positioned along the wooden walls and 180 men manned the fort, twenty-five of who were civilians (Griffith 1988:16).

In 1761, hostile Native Americans, composed of 480 Talapoosa and 1225 Alibama warriors, threatened Presidio San Miguel (Childers et al. 2007:24-25). Those who were able fled the presidio to Havana (Childers et al. 2007:24). As the threat of Native American attacks grew, civilian houses clustered closer to the presidio walls (Childers et al. 2007:28). Eventually, Governor Román ordered all structures that were within range of gun or cannon fire of the fort walls be destroyed. Civilians occupying those structures had to take shelter within the fort walls. On February 9, 1761, Talapoosa warriors attacked San Antonio de Punta Rasa killing at least four people (Childers et al. 2007:25). On April 9, 1761 a combination of Talapoosas, Apisas, and Alibamas attacked the Spanish and Apalachee at the village of Escambé killing two and taking four
captive. Sporadic attacks continued until July 26, 1761 resulting in the deaths of civilian and military personnel as well as Spanish-allied Native Americans (Childers et al. 2007:25).

The relationship between the hostile Native American tribes and Presidio San Miguel de Panzacola became more peaceful when Governor Diego Ortíz Parilla replaced Governor Román in September 1761 (Childers et al. 2007:25). As governor, Ortíz spent his time investigating the corrupt behavior of Governor Román and shoring up the presidio’s defenses. His tenure was brief, lasting only two years. Ortíz delivered the presidio to the English on September 2, 1763 as a direct result of the Treaty of Paris at the conclusion of the Seven Years War (1756-1763). Approximately 723 people evacuated Presidio San Miguel de Panzacola. One hundred and eight of the evacuees were Christian Native Americans (Childers et al. 2007:22).

Presidio San Miguel was plagued with similar experiences to Santa María de Galve. Although friendly Native American tribes, including the Yamassee and Apalachee, assisted them, the Spanish colonists continued to struggle to maintain their foothold in Pensacola. Attacks, by British-allied Native Americans, supply shortages, and at least one hurricane were some of the experiences that settlers endured (Coker 1999:19-21; Whitaker 2005:29, 33). Similar to Presidio Santa María de Galve, the Spanish withdrew private residences inside fort walls (Benchley 2007:9). Unlike Presidio Santa María de Galve, Presidio San Miguel de Panzacola was not taken by force. Instead the English victory over France and Spain in the Seven Years War resulted in Spain transferring Pensacola and Florida to England in exchange for the return of Havana and Manila (Coker 1999:23).
Local and Global Connections to Presidio San Miguel de Panzacola

Unlike Presidio Isla de Santa Rosa, there were no geological barriers to protect the presidio from hostile Native Americans. Instead the villages of Escambé and San Antonio de Punta Rasa were established to act as a buffer zone between the presidio and its hostile British-allied Native American neighbors. These buffer settlements protected Presidio San Miguel de Panzacola at the cost of the lives of the villagers (Childers et al. 2007:25-28, 36). In September 1761, when Governor Ortíz replaced Governor Roman the relationship with the Native Americans became more peaceful (Childers et al. 2007:25).

There were several groups of Native Americans, including the Apalachee and Yamassee, who were affiliated with the Spanish colonists (Childers et al. 2007:22). Prior to 1752, a blockhouse with a small contingent of soldiers who were protecting Native Americans lived nearby (Childers et al. 2007:29). A mix of Spanish colonists and Native Americans inhabited buffer villages of Escambé and San Antonio de Punta Rasa. The villages not only protected the presidio from neighboring hostile tribes, churches and a restaurant were located there as well (Childers et al. 2007:36-38). Upon the evacuation of Presidio San Miguel de Panzacola ten families of Christian Native Americans evacuated to Veracruz.

Without the constant threat of attack, Governor Ortíz was able to concentrate on his other assignments shoring up the presidio’s defenses and conducting an investigation of the previous governor’s behavior. Ortiz found discrepancies in what the former governor was reporting to Veracruz. Román traded illegal goods, although Ortiz overlooked the fact that this was often essential to survival (Griffith 1988:52). Presidio
San Miguel de Panzacola’s economy was completely dependent on supplies from Veracruz and Havana (Childers 2000:12). Supplies were shipped every fifteen to eighteen months. When something went wrong with the shipments, such as the loss of the Nuestra Señora de la Concepcion on February 14, 1757, Spanish colonists were forced to turn to Mobile and New Orleans for supplies (Childers 2000:12, 16). Economic stress in Spain and its colonies caused supply shortages for Presidio San Miguel. In January of 1758, Governor Román sent a request for supplies to Havana stressing that Pensacola only had 15 days worth of supplies left and needed at least 400 barrels of flour as well as building materials. In 1759, supplies began to arrive at a regular interval, but no building materials were included in most of these shipments (Griffith 1988:17).

Presidio San Miguel continued to be manned by the dregs of Spanish society. In September 1761, the Spanish Captain Francisco Gallardo remarked that “thieves, whores, and drunks” inhabited the presidio (Childers et al. 2007:22). The number of soldiers and seamen varied in response to the threat to the presidio. Women were transported to the presidio with their husbands or with the intention of marrying someone at the presidio (Childers 2000:14; Childers et al. 2007:23). There were a number of gastadores (prisoners sentenced to hard labor) that amplified friction among the Presidio’s social groups. Later the cause of most of the problems at the presidio was blamed on Governor Román and his corrupt actions.

The Seven Years War began in 1756 just as Presidio San Miguel became established. At first Spain remained neutral in the conflict between France and Britain. British allied Native American tribes did not recognize the truce and conducted sporadic raids and ambushes on inhabitants of Presidio San Miguel (Griffith 1988:29, 31). Native
American attacks halted when the Governor of Louisiana intervened on Presidio San Miguel’s behalf (Griffith 1988:34-35). Britain declared war on Spain in 1762 when they discovered that the Spanish were planning to enter the war on behalf of France (Griffith 1988:27). On September 2nd, 1763, the Spanish delivered Pensacola to the British as a result of the treaty that ended the Seven Years War (Childers et al. 2007:20).

The value of Pensacola was low compared to other Spanish landmarks. When Havana and Manila were captured during the Seven Years War, the Spanish were more than willing to cede La Florida for their return (Coker 1999:22). British colonists occupied the Presidio from 1763-1781. They found conditions of the fort and village unacceptable and expended considerable effort molding the landscape to meet their needs.

Archaeological Evidence in the Historic Dimension

The archaeological record supplements the information yielded by historical documents. Archaeological data are a material manifestation of the historical dimension. Artifacts from archaeological investigations provide a direct link to the past succession of events that occurred at each of the First Spanish presidios. Stratigraphy documented during the excavations supports the time line depicted by historical documents by documenting successive occupations of a site and events that interrupted that (e.g., storm surge deposits). To provide context for the archaeological data used in the next chapter, excavations at each of the First Spanish Presidios are examined below.
Presidio Santa María de Galve Archaeology Overview

From 1995 through 1998 The University of West Florida conducted excavations at Presidio Santa María de Galve. Despite infrastructure development at the Pensacola Naval Air Station, the archaeological remnants of Santa María de Galve were relatively intact. Contrary to information in some historical documents, the archaeological remains were not located on the highest point of the bluff. Instead the presidio was located directly opposite from the pass into the bay (Wilson 2000:17). Perhaps the Spanish were trying to unload their supplies as quickly as they could and chose a lower location to expedite the fortification of the area through the use of an erosional gully providing access up the steep slope (Bense and Wilson 2003:87-88, 203). Through the course of The University of West Florida’s excavations a plethora of archaeological data was recovered from the fort walls, fort interior, and village.

Presidio Santa María de Galve produced high status artifacts associated with military officers (Bense and Wilson 2003:126). The presence of faience and delft indicated a link to cultures other than New Spain including French and English. As discussed earlier these supplies were probably acquired to support the presidio in times of shortage (Bense and Wilson 2003:184). The formal aspects of the fort are clearly visible in the archaeological record. Posts set in construction trenches were evident along the fort walls (Bense and Wilson 2003:99). Cannons and associated features interpreted as cannon supports outline the Spanish fortifications (Bense and Wilson 2003:102, 107). Historical documents describing disease within the presidio were reinforced by the discovery of burials under the church floor. Placement of individuals shoulder to
shoulder combined with the disturbance of earlier burials substantiated accounts of a high death rate (Bense and Wilson 2003:153).

Presidio Isla de Santa Rosa Archaeology Overview

The University of West Florida excavations at Presidio Santa Rosa (2002-2004) recovered more than 157,000 artifacts, 17,292 of which are imported ceramics (Harris and Eschbach 2006:95, 107). Faience and delft represented a link between Presidio Santa Rosa and the French, British and Dutch cultures (Harris and Eschbach 2006:95, 126). Out of 181 colonial features recorded by UWF, only a few refuse pits were found. Lack of refuse pits indicated that the Spanish were using nearby wetlands for refuse disposal (Harris and Eschbach 2006:113). Layers of white sand that were void of artifacts documented environmental forces that the Presidio’s inhabitants had to endure. Interpreted as “storm surge” deposits, these waterborne sediment layers capped the entire site.

Presidio San Miguel de Panzacola Archaeology Overview

When the Spanish retreated from Presidio Santa Rosa to Presidio San Miguel they created archaeological deposits throughout what is now downtown Pensacola. Archaeological projects conducted before 1999 between Cadet and Washerwoman Creeks recovered over 52,618 counted artifacts from excavated features (Bense 1999b:123). Only two hundred and thirty eight sherds are from First Spanish features (Bense 1999b:157). The differential distributions of British stoneware and coarse earthenwares suggested a status dichotomy between high status officers and lower status civilians (Bense 1999b:157). First Spanish material culture reflected strong ties to New
Spain through which they obtained their situado and the bulk of their supplies (Benchley 2007:9). Storm surge deposits, similar to Feature 153 from the Santa Rosa excavations, have been found on the mainland in excavations of a colonial midden at Old Christ Church (Williams 2004:111-117). Illicit goods were also available from Mobile and British smugglers (Benchley 2007:12; Childers 2000:12). The First Spanish component of Presidio San Miguel’s archaeological record cannot be as securely dated as Presidio Santa María de Galve since the majority of its features were dated with fifteen or fewer diagnostic ceramics (Bense 1999b:153). Excavations in 2006 revealed that the architectural complexity of Presidio San Miguel was greater than reflected by the First Spanish maps. Remains of the Presidio San Miguel occupation were also obscured and mixed as a result of repeated occupations by British, Spanish, and Americans.

**Historical Dimension Summary**

Several themes were common throughout First Spanish Period Pensacola’s historical dimension: war, hurricanes, resource exploitation, and interaction with Native American tribes. As a socio-ecological system, First Spanish Pensacola involved colonists in a dynamic relationship with its environment and neighboring systems. It was a complex landscape associated with rich archaeological deposits and numerous historical documents. Examination of Pensacola's First Spanish Period archaeology illuminates some of the material remains that are associated with this complex life history.
CHAPTER IV
INTEGRATING DIMENSIONS OF THE FIRST SPANISH PENSACOLA LANDSCAPE

To promote methodological clarity, this analysis employs María Nieves Zedeño’s (2000) conceptual framework of landscape archaeology. This approach defines three landscape dimensions: formal, relational, and historical. Formal dimensions refer to physical characteristics of landmarks (Zedeño 2000:107). Specifically, formal characteristics are exploitable resources, physiographic setting, etc. The relational dimension describes interactive links that connect landmarks within the landscape (Zedeño 2000:107). In other words, methods of communication or physical interactions between landmarks fall within this dimension. Historical dimensions refer to links within the landscape that result from use and occupation of a landmark (Zedeño 2000:107). This dimension encompasses the change in a landmark’s function resulting from successive uses.

This chapter is separated into sections focused on each of Zedeño’s dimensions. Data from Pensacola’s First Spanish Period Presidios is tabulated and correlated with positive and negative aspects for each dimension. Ceramic ratios calculated from each presidio’s ceramic assemblage provide insight into the relational dimension. The immediate meaning of each landscape characteristic is described after each characteristic table.
The Formal Dimension of First Spanish Pensacola

First Spanish Pensacola’s formal dimension was assessed in two ways. The first way involved analysis of each presidio’s location in relation to adjacent resources and other physical aspects of the landscape. The data in this analysis consisted of geophysical characteristics, hurricanes, erosion, distance of other important landmarks from the mouth of the bay, and cannon range. The second way involved evaluating subsistence and raw material use at each presidio. Data included in this analysis consisted of exploitable resources and the presence of Native American populations.

Pensacola Bay’s natural geophysical characteristics are described below and are followed by a chronological description of the human systems that affected it. Hurricanes and erosion are two geophysical factors that have enormous influence on human and natural systems. They are discussed separately to promote a clear presentation of this analysis. Although this section examines the formal aspects of First Spanish Pensacola’s landscape, it is clear that the relational pathways linking Pensacola with other areas impact this dimension. The formal dimension data are evaluated within the life of each presidio. Integration with the relational and historical dimensions occurs later in this chapter.

Geophysical Characteristics

Geophysical characteristics included not only the elevations of the Pensacola Bay landscape, but also the position of the rivers, proximity to various areas of the bay, as well as soil conditions. Spanish performance characteristics related to these geophysical characteristics changed in priority over time. The research area was divided into two
physiographic sections: the Coastal Lowlands and a Holocene barrier island. A brackish water bay separated the two sections. Freshwater rivers flowed into the northern part of this bay. Salinity of the bay increased toward its mouth as it opens into the Gulf of Mexico. Both sections experienced a mild subtropical climate as a result of their latitude and proximity to the Gulf (Wolfe et al. 1988:30). Temperatures were mild with winters ranging between 1 and 18 degrees Celsius and summers ranging from 20 to 31 degrees Celsius. Thunderstorms occurred approximately half of the days during the summer. Annual rainfall averaged 163 centimeters (Wolfe et al. 1988:33).

The mainland was located within the Citronelle Formation deposited during the Plio-Pleistocene epoch approximately one million years ago (Hunt 1974:223-226). This formation was within the Coastal Lowlands subdivision of the East Gulf Coastal Plain. Flat plains located less than 30.48 meters above sea level characterize the Coastal Lowlands (Hunt 1974:223-226). The high clay and silt percentages of the Citronelle Formation promoted runoff and erosion creating gullies and valleys in areas of high elevation. The Citronelle Formation was thin near the coast. Lakewood-Hurricane sand overlaid these thin areas (Carlisle 1960:19-21; Wolfe et al. 1988:14). This soil type was easily eroded, compounding the potential for erosion (Wilson 2000:22). Areas near the mouth of Pensacola Bay, such as the location of Santa Maria de Galve, were susceptible to the effects of waves, wind, and storm surges. These effects increased erosion of the bluff even undermining areas of higher elevation.

Coastal processes had an even greater effect on Santa Rosa Island. Santa Rosa Island was a Holocene barrier island that developed over a Pleistocene core (Davis 1997:167). It was composed of quartz sand and shell beds that supported a system of
dunes and ridges paralleling the coast. Swales between dunes contained standing fresh water. The island was bounded by a narrow, steep continental shelf causing the island to be wave dominated (Davis 1997:155-156, 167). During summer the area was subject to southwestern and southeastern winds ranging from low to moderate velocity with a long fetch creating an east to west longshore drift. Longshore transport along Santa Rosa Island reached more than 200,000 cubic meters of sediment a year (Davis 1997:155-156; Wolfe et al. 1988:34-36). This movement of sediment precipitated a western movement of the tip of Santa Rosa Island causing the location of the pass to migrate over one hundred meters west of its location in 1698 (Wilson 2000:21). Sediment was limited in the western Panhandle coast, a shift in sea level, sediment availability, or coastal processes would result in considerable coastal change (Davis 1997:168). The current created by the Escambia River system counteracted the western movement of Santa Rosa Island by eroding sediment from the western tip of Santa Rosa Island into the Gulf where it was lost. Without this current Santa Rosa Island would eventually seal Pensacola Bay.

In 2006, Santa Rosa Island was 80.46 kilometers long and no wider than 1.12 kilometers. Dredging activities placed spoil on the bay side of the island adding more than 152 meters of shoreline. It was frequently inundated during storms and possesses ridge-swale topography with wetlands between ridges. The wetlands formed after deposition of dredge spoil silted in outlets that formerly drained the wetlands (Harris and Eschbach 2006:6). In 2006, the highest elevation on Presidio Isla de Santa Rosa was 1.84 meters above sea level. Newhand-Corolla was the dominant soil complex. It was well drained and permeable. Most of the cultural material found during archaeological
excavations was located within this soil complex along the former shore 2.4 kilometers from the western edge of the island.

Hurricanes were a yearly hazard because of Pensacola’s subtropical location. A single hurricane could instigate shoreline changes that would take centuries under normal conditions (Davis 1997:155-156; Wolfe et al. 1988:39). Hurricanes were accompanied by high winds, high rainfall, and storm surges. Sustained winds also generated high waves, although they lose energy in shallow water. Wind could also pile water up along the coastline resulting in a storm surge and increased wave action. The height of storm surges and extent of inland flooding were determined by local topography and other factors including wind velocity and direction. Storm surges left salt in coastal soils that harmed soil-fertility and decreased crop production (Upchurch and Randazzo 1997:219).

In Colonial Pensacola hurricanes acted as geological agents by affecting the stratigraphic record through sediment deposition, by storm surges or massive erosional events capable of changing coastal morphology (Upchurch and Randazzo 1997:221).

In 1698, the Spanish arrived at Pensacola with the primary goal of fortifying a location close to the mouth of the bay. Punta de Sigüenza and Barrancas de Santo Tomé flanked the bay’s mouth. Punta de Sigüenza was a low-lying area on a barrier island. Barrancas de Santo Tomé was atop the red cliffs bordering the bay’s northern side. The obvious difference between these two locations was elevation. Higher elevation provided an increased view shed and advantageous locations for cannon placement. It also provided protection from water-based assaults on the presidio since attackers would have to moor their ships and climb the bluffs to reach the presidio. Although both locations
were in close proximity to the pass, the high elevation location had more positive performance characteristics associated than the low point (Table 6).

Table 6: Performance Characteristics of Geophysical Setting

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<th>Landmarks</th>
<th>Performance Characteristics</th>
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</tr>
<tr>
<td>Barrancas de Santo Tomé</td>
<td>Increased View</td>
</tr>
<tr>
<td></td>
<td>Close to Pass</td>
</tr>
<tr>
<td></td>
<td>Close to Shoreline</td>
</tr>
<tr>
<td></td>
<td>Good Cannon Placement</td>
</tr>
<tr>
<td>Punta de Sigüenza</td>
<td>Proximity to Mouth of Bay</td>
</tr>
<tr>
<td></td>
<td>Close to Shoreline</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Presidio Isla de Santa Rosa</td>
<td>Controlled Access from Mainland</td>
</tr>
<tr>
<td></td>
<td>Close to Shoreline</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Table 6 continues)
Rich agricultural soils were reported to be one of the positive features of the area’s topography during the 1698 survey of the area. Occupation of the area and attempts to practice agriculture revealed soil too acidic for farming (Clune et al. 2003:52-53). In addition to acidity, the Spanish realized that the soil was extremely susceptible to erosion. At Presidio Santa María de Galve, atop Barrancas de Santo Tomé, high elevation combined with its location, directly across the bay from the pass, aggravated erosion. Eroding materials washed sand into the seep springs the colonists depended on for fresh water (Wilson 2000:37). Erosion undermined the southern bastions of Presidio Santa María de Galve (Wilson 2000:38). The colonists dealt with the problems presented by the geophysical setting until a combination of negative characteristics, including the destruction of the presidio, influenced them to move across the bay to the barrier island.

Presidio Isla de Santa Rosa was built three-quarters of a mile east of Punta de Sigüenza on the bay side of the island. The presidio was built in an area with protective dunes and trees, which indicated that the area was not prone to flooding (Harris and
Eschbach 2006:28). Presidio Isla de Santa Rosa has a stable shoreline. Locating the presidio on the barrier island provided the additional benefit controlled access from the mainland. Accessing the presidio required crossing the bay or approaching from the east. This extra control provided security from unpredictable raids by the colonists’ Native American enemies (Harris and Eschbach 2006:34). Despite its virtues, the colonists soon found that Santa Rosa Island was vulnerable to hurricanes. Hurricanes created an environment where sediment erosion and deposition was more problematic than it had been on the mainland (Childers 2003). Consecutive hurricanes that resulted in massive casualties and damage to the presidio promoted the colonists’ return to the mainland.

Presidio San Miguel had almost none of the performance characteristics exhibited at the initial settlements of Pensacola Bay. The development of a traumatic life history of other landmarks around the bay, as well as a fluctuation in settlement priorities caused the colonists to be more concerned with maintaining a settlement safe from the elements and ignoring proximity to the bay’s mouth entirely. This issue is discussed in more detail later in this chapter in regards to the historical dimension.

Hurricanes

Pensacola’s coastal position made it prone to hurricanes. Although hurricanes were not a yearly occurrence, consecutive hurricanes/strong storms, had an increasingly negative impact on the coastal environment. Dunes and geomorphological responses to storms were affected by the availability of sediment on the barrier island. The island can only recover when there was time between storms for the vegetation to re-establish itself (Houser et al. 2008:2). Without time to repair, the beaches were subject to an increased
impact from storm events that may have otherwise had a minimal impact. Recent studies of the back of Santa Rosa Island reflected the differential impact from consecutive storms versus single storm events. Dunes did not have time to recover in the time between Hurricane Opal (1995) and Hurricane Ivan (2004) (Houser et al. 2008:15; Houser et al. 2007: 1, 9). Without a sufficient number of dunes, hurricanes generally had an increased impact on the barrier island in terms of over wash and storm surge.

Primary documents translated by Wayne Childers (see Childers 2003: 26-27, 29, 37-38, 42, 54, 83-84, 96-97, and 111) discussed the effects of two large hurricanes that hit Santa Rosa Island in 1740 and 1752. The 1752 hurricane prompted the settlers to relocate to the mainland since they realized that the land was fragile and practically impossible to fortify (Childers 2003:38). Historic documents agreed that the damage to the site was massive. It destroyed buildings and even washed burials from under the floor of the church (Childers 2003:26-27 and 96-97). Reports of the sea overtaking the island and causing erosion that made it “impossible to live without any terrain to do it on” were congruent with the impact of consecutive hurricanes (Childers 2003:38).

Archaeological data corroborated the historical data in the form of storm surge deposits recorded during The University of West Florida excavations (Harris and Eschbach 2006). Similar deposits were recorded in excavations in Presidio San Miguel at Old Christ Church (Williams 2004). Evidence of hurricanes was accessible through examination of eroded areas (Wilson 2000:63-64). Yet these features only indicated that storm surges affected the presidios. Primary documents were the best source of information on the damage caused to human systems by these storms, as noted above.
Coastal Erosion

Factors affecting coastal erosion were divided into two systems: human and natural. In general the human systems promoted an unbalanced, eroding environment. Natural systems promoted a balanced environment with feedback systems that eroded sediment and accreted it. Natural systems provided erosional inhibitors in the form of vegetation with roots that bound the sediments. Hurricanes and strong storms had the opposite effect. They flattened sand dunes through over wash, storm surge, and wave action. Sediment was often moved to the back of the island or lost in sediment sinks and resulted in the movement of barrier islands at 40 cm per year (Houser et al. 2008:4-5).

Human systems often disrupted the natural feedback systems. Resource exploitation, such as harvesting logs for fortifications, resulted in deforestation and, with nothing to bind the sediment, increased erosion. At Presidio Santa María de Galve, the human structures were the only sediment stabilizing elements in the landscape (Wilson 2000:37). In normal weather, the buildings and fortifications prevented wind and rain from causing massive erosion. However, in strong storms, these structures were similar to canals enabling substantial erosion and relocation of sediments. Eventually the structures themselves became unearthed as water eroded the supporting sand (Wilson 2000:37-38).

Coastal processes, such as wave action and storm surge, eroded the shorelines associated with each of the presidios. At Presidio Santa María de Galve coastal erosion eroded the bluff on which the presidio was situated. Eroded sediments covered the barrel wells at the base of the bluff (Wilson 2000:37). Presidio Santa María de Galve’s engineer, Jayme Franck, was aware of the erosion of the bluff noting that it eroded as
much as 41.9 cm (16.5 inches) in a one year (Clune et al. 2003:36). The Spanish attempted to mitigate the bluff erosion by constructing a series of earthen dikes perpendicular to the bluff. The dikes were destroyed during a storm. The bluff eventually eroded to the point that the southern bastions had to be rebuilt twenty feet away from the bluff’s edge (Wilson 2000:38).

Although the Spanish moved to Presidio Isla de Santa Rosa with the expectation of a stable shoreline, they experienced problems with erosion. Deforestation of the island created similar problems to those encountered at Presidio Santa María de Galve. The human impact on sand dunes presented additional problems with erosion. Structures prevented the reformation of sand dunes by disrupting wind flow across the beach. As a result, the wind did not have as much fetch lessening its power to pick up sediment. Without well-formed sand dunes, coastal processes associated with storms, such as storm surges, had a greater impact on the area. In 1751, several hurricanes hit Santa Rosa Island. These storms reduced the dune size on the island precipitating the enormous impact that the 1752 hurricane had on the island (Childers 2003; Harris and Eschbach 2006:19).

Archaeological evidence of erosion rates has been noted during excavations although it is difficult to document the rate of erosion. In the case of rapid erosion caused by storm surge and hurricane force winds, artifacts and soil particles would be size sorted. Unfortunately, size sorting was only evident where sediments were redeposited. In areas where erosion was continuous evidence of size sorting is often lost.
Cannon Range

The importance of cannon range became apparent in the attempt to defend the pass from non-Spanish incursion. Albert Manucy remarked that the maximum, accurate range of the Spanish cannons was 804 meters (Manucy 1959:238). Out of the three presidios, Santa María de Galve was the only one that had a chance of reaching the center of the 2.7 km wide pass from the Gulf into the Bay. Realizing that effectively defending the pass was impossible, even from the closest fortifiable location on land, the importance of proximity to the pass became a much lower priority. The two successive presidios were not as close to the pass.

Stanley Faye documented the placement of guns at Presidio Santa María de Galve. Once the Spanish realized that the pass was not effectively covered by their cannons, they sought another location to fortify the pass through the cross fire of cannons (Faye 1941:152). Spanish officials suggested the placement of guns on Punta de Sigüenza, but the area was considered to be too low and prone to flooding (Faye 1941:153). When the French captured Presidio Santa María de Galve they considered establishing a battery on Santa Rosa Island. Despite the need to establish crossfire, they found the upkeep of the battery in addition to the mainland fort to be cost prohibitive (Faye 1941:158-159).

Cannons affected how the Spanish treated the environment. In order to be effective, the cannons had to have clear line of sight. As a result, the vegetation was often cleared to the range of a cannon shot from the presidio. Structures were cleared from outside the presidio walls as well in order to provide clear shots. Cannon range affects the site layout. This is evident in Presidio San Miguel. In 1761, Governor Román
ordered that all structures within range of gun or cannon fire of the fort walls to be destroyed (Childers et al. 2007:28). This tactic was not limited to the Spanish. On August 6, 1763, Lt. Col. Augustin Prevost arrived with the British at Pensacola. He found that the woods had grown too close to the stockade and had them cleared for fear of a possible attack by Native Americans (Coker 1999:23-24).

**Exploitable Resources**

Ideally, the Pensacola presidios would produce surplus resources to become self-sufficient. The presidios never achieved this level of production during the First Spanish period, resulting in a reliance on their neighbors for goods to survive. Exploitable resources also changed over time. Presidio Santa María de Galve did not use local resources to make bricks. However there were records of a brickyard, and possibly a lime kiln, being constructed on the mainland during the occupation of Presidio Isla de Santa Rosa (Childers 2003:4-5, 15). Documents from Presidio San Miguel de Panzacola also noted the construction of brick kilns (Childers 2003:12-13).

Although there were only a handful of resources exploited, the process of harvesting and utilizing these goods had a tremendous impact on the environment (Table 7). Trees and palmetto plants were used in structure and fortification construction. Trees were also harvested and exported for use in ship construction at Spanish Empire landmarks (Hunter 2000). Acidic soil, which prevented intensive agriculture, was also responsible for rotting the wood used in the presidio walls and structures. Structures that did not rot were often destroyed by fire (Clune et al. 2003:41). Since these structures required constant repair, the Spanish were frequently harvesting nearby resources.
Table 7: Exploitable Resources in First Spanish Pensacola

<table>
<thead>
<tr>
<th>Resource</th>
<th>Purpose</th>
<th>Additional Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees</td>
<td>Ship timbers, fort walls, structures, and export</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>Bricks</td>
<td>Not exploited until Presidio Isla de Santa Rosa</td>
</tr>
<tr>
<td>Oyster Shell</td>
<td>Lime</td>
<td>Used for mortar and plaster</td>
</tr>
<tr>
<td>Agricultural Products</td>
<td>Create a self-sufficient settlement</td>
<td>Acidic soils prevent productive agriculture</td>
</tr>
<tr>
<td>Stone</td>
<td>Fortifications, buildings</td>
<td>Used sparingly at Presidio Isla de Santa Rosa and Presidio San Miguel de Panzacola for powder magazines and foundations of high status buildings</td>
</tr>
</tbody>
</table>

Resource exploitation began close to the presidio walls and progressed outward and away from the shoreline. Toward the end of the occupation of each presidio a large area around them may have been deforested. Such exploitation would have increased the distance from the presidio to the exploitable resources and concomitantly harvest time. In 1718, Governor Juan Pedro Matamoros remarked that it was impossible to fully repair the stockade because there were too few men and the nearest trees were three miles from the site (Renacker 2001:53). Deforestation, however, was not without its benefits. Such large treeless areas were desirable for effective defense of the landward side of structures.
at Presidio Santa María de Galve and Presidio San Miguel de Panzacola. As discussed earlier, these denuded areas also promoted erosion (Wilson 2000:38).

**Distance to Fresh Water**

Colonists in Pensacola Bay depended on fresh water for survival. Structures such as barrel wells and cisterns were used to collect water within and near the presidios (Table 8). Yet constant and dependable sources of fresh water were needed to ensure the colonists survival. Although Presidio Santa María de Galve collected water from seep springs at the base of the Barrancas de Santo Tomé, the closest source of fresh water was St. Bernardo Spring that was located about 670 meters to the east (Wilson 2000:26). When the presidio was under siege, the colonists within found it nearly impossible to escape the confines of the Presidio to collect fresh water without an armed contingent of soldiers. By 1713, the colonists had dug a cistern within the walls of the fort (Wilson 2000:40). However, cisterns were dependant on rain, and eroding materials could clog barrel wells. The closest dependable sources of fresh water remained those that were dangerous to access.

<table>
<thead>
<tr>
<th>Presidio</th>
<th>Location</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa María de Galve</td>
<td>St. Bernardo Spring, Cistern</td>
<td>0-667 meters</td>
</tr>
<tr>
<td>Isla de Santa Rosa</td>
<td>Barrel Wells</td>
<td>Unknown</td>
</tr>
<tr>
<td>San Miguel de Panzacola</td>
<td>Two fresh water streams and Barrel Wells</td>
<td>0-450 meters</td>
</tr>
</tbody>
</table>
The lack of an easily accessible fresh water source was one of the reasons for the migration to Presidio Isla de Santa Rosa. Although the exact location of the fort walls was unknown, fresh water sources were barrel wells that could be placed anywhere in relation to the presidio (Childers 2003:16). Archaeological evidence of barrel wells has not been found in association with Presidio Isla de Santa Rosa. Presidio San Miguel had access to two fresh water streams ranging from 230 – 450 meters away from the walls of the presidio. Features associated with barrel wells have been located within the fort walls in The University of West Florida excavations of the Commander’s Officers Compound at Presidio San Miguel de Panzacola in 2005 and 2006 (Benchley 2007).

The Relational Dimension of First Spanish Pensacola

The relational dimension described the interactive links between landmarks within a landscape. Analyzing the relational dimension required two different approaches. Methods of travel between landmarks described a physical aspect of the relational dimension. Comprehending this physical aspect involves the understanding of how the Spanish arrived at Pensacola Bay and how neighboring cultures reached the presidios to interact with them. The other approach required analysis of where First Spanish Pensacola falls within various social systems. Colonists were affected not only by local political systems, but also those in Europe as well.

Travel Between Landmarks

Spanish colonists, and other Europeans, arrived in Pensacola Bay by ship. Native American tribes interacted with the presidios via overland routes. A primary factor affecting each of these interactive methods was distance. Longer distances between
landmarks resulted in increased time required before interaction took place. It took one month (October 15, 1698 – November 21, 1698) for Arriola to travel approximately 1500 km from Veracruz to Pensacola (Coker 1999:8-9). Decisions that required input from the Spanish Crown had to travel approximately 8500 km and could take several months to a year to complete. Yet Native American tribes could attack the presidios several times in a month, especially after forming alliances with the British. For example, in August of 1707, approximately 1,200 Native Americans repeatedly attacked Presidio Santa María de Galve resulting in many casualties (Clune et al. 2003:31).

Increased distances were also affected by navigational difficulties. These can be tied to storms, unfavorable winds, political climate, or logistics. Navigational difficulties were often tied to supply shortages since it was difficult to get supply requests to other Spanish ports and settlements in the Empire. A loss of a ship, such as the 1757 wreck of *Nuestra Señora de la Concepcion*, forced the Spanish colonists to depend on the French for supplies (Childers 2000:12,16). The short distance between Mobile and Pensacola facilitated interaction between the French and the Spanish making it possible to cross the political boundaries between the two colonies. Ease of travel between these various landmarks increased the potential for trade between cultures in order to supplement resources obtained from Spanish sources.

**Situados**

Spanish colonists were supported by supply shipments from the Spanish empire. Known as a *situado*, these shipments were supposed to contain a set amount of goods. *Situados* were a colony’s lifeline, yet there was no guarantee that the shipments would be
shipped on a regular schedule. Even when shipments were on time, pirates, storms, and spoiled food often prevented the colonists from receiving supplies (Johnson 2003:316). Situados bound for Pensacola came from Veracruz in New Spain. The amount of food, money, candles, soap, and medicine in each shipment was based on the reported populations of each presidio. Other items, such as uniforms, blankets, munitions, and construction equipment, were provided on request (Clune et al. 2003:53). The actual contents of the situado were varied and lacked many of the supplies the colonists requested and needed to survive.

Supply shortages prompted illicit trade between Pensacola colonists and non-Spanish cultures in the Pensacola landscape. Colonists often turned to the French in Mobile or the Apalachee to supplement the partial situado because requests to the nearest Spanish landmarks often went unanswered for months (Clune et al. 2003:59-61; Harris 1999:28). James Moore’s 1704 raid decimated the tribes, including the Apalachee, in eastern Florida leaving only a few survivors around St. Augustine (Hudson 2007:436). Spanish colonists at Presidio Santa María de Galve found that they were no longer able to depend on Apalachee for supplies (Harris 2003:270). Colonists also relied on locally available food for survival, though food was often acquired through illicit trade as well. In 1711, Pensacola’s colonists owed French buffalo hunters for 10,000 pounds of buffalo meat (Clune et al. 2003:58).

Supply shortages continued through Presidio Santa Rosa as well. Situados were spaced six to eight months apart, yet they continued to be unpredictable (Harris and Eschbach 2006:43). Illicit trade continued. Harris describes Presidio Santa Rosa as a “fluid environment in which food, supplies, hardware, and even arms and munitions
might come from any number of sources, none of which were legally recognized” (Harris and Eschbach 2006:43). This trend continued into Presidio San Miguel de Panzacola. First Spanish Pensacola’s presidios were never self-sufficient and always relied on the situados to survive (Bense 1999a:212).

Distance Between Landmarks

First Spanish Pensacola began with the goal of defending the pass into Pensacola Bay (Coker 1999:9). The distance of landmarks in the First Spanish Pensacola landscape from the pass provided data on several factors some of which cross into the relational dimension. As discussed above, Spanish colonists depended on resources from the landmarks within the landscape. The increased distance between landmarks and resources impacted the amount of support that Pensacola obtained from them (Table 9). Each value was estimated by measuring the distance a ship would have to travel to get to each landmark. The position of the pass was determined from the 1698 shoreline extrapolated from previous research (Wilson 2000:25, Figure 9).

French colonists in Mobile were the closest Europeans to Pensacola Bay. The proximity between Mobile and Pensacola promoted illicit trade between the two since communication took place over a few days instead of a month. Longer distances decreased the number of interactions between landmarks because ships traveling the pathways between the two landmarks could only make the journey if conditions permitted.
Table 9: Estimation of the Distance of Landmarks from Pensacola Pass

<table>
<thead>
<tr>
<th>Landmark</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Bay</td>
<td>96.56 km</td>
</tr>
<tr>
<td>Havana</td>
<td>938.91 km</td>
</tr>
<tr>
<td>Veracruz</td>
<td>1535.77 km</td>
</tr>
<tr>
<td>Spain</td>
<td>8539.37 km</td>
</tr>
<tr>
<td>Presidio Santa María de Galve</td>
<td>2.46 km</td>
</tr>
<tr>
<td>Presidio Isla de Santa Rosa</td>
<td>2.45 km</td>
</tr>
<tr>
<td>Presidio San Miguel de Panzacola</td>
<td>13.39 km</td>
</tr>
</tbody>
</table>

Distance, however, did nothing to disrupt the hierarchy within the Spanish social system. Commands from the Spanish Crown carried the most weight within the relational dimension. Despite being the farthest from Pensacola, orders from the Crown were needed before large decisions, such as relocation of the presidios or reassignment of officers, could be made. Orders were not the only influence Spain had on the presidios. Events that affected Spain caused a chain reaction within the Spanish Empire that ultimately affected the support that Pensacola received.

Political Climate in Europe

Despite the distance between Europe and Pensacola Bay, politics affecting the Spanish crown affected the colonists as well. There were four wars involving Spain during the First Spanish Pensacola period (Table 10). Periods in which France was the enemy of Spain meant that Pensacola could no longer receive support from Mobile
legitimately. Wars involving England were associated with a rise in the raids of First Spanish Pensacola presidios by English-allied Native Americans. While France and Spain were allies, there was the opportunity for mutual assistance in the case of an attack by English-allied Native Americans or English soldiers.

Table 10: Wars in Europe During the First Spanish Period

<table>
<thead>
<tr>
<th>War</th>
<th>Years</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>King William's War</td>
<td>1689-1697</td>
<td>Spain vs. France</td>
</tr>
<tr>
<td>War of Spanish Succession</td>
<td>1701-1713</td>
<td>England, Holland, Austria vs. Spain and France</td>
</tr>
<tr>
<td>War of the Quadruple Alliance</td>
<td>1718-1721</td>
<td>England, Holland, Austria, France vs. Spain</td>
</tr>
<tr>
<td>Seven Years War</td>
<td>1756-1763</td>
<td>England vs. France and Spain</td>
</tr>
</tbody>
</table>

Wars that resulted in capture of territories within the Spanish Empire (e.g., Gibraltar, Havana, and Manila) resulted in the bartering of other Spanish territories, including Pensacola, for their return (Table 11). At the end of the First Spanish Period, La Florida was relinquished to England for the return of Havana and Manila.
Table 11: Treaties of the First Spanish Period

<table>
<thead>
<tr>
<th>Treaty</th>
<th>Year</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treaty of Utrecht</td>
<td>1713</td>
<td>Spain cedes Gibraltar and Minorca to England</td>
</tr>
<tr>
<td>Treaty ending war of Quadruple Alliance</td>
<td>1721</td>
<td>Return of possessions to owners before the war</td>
</tr>
<tr>
<td>Second Family Compact</td>
<td>1743</td>
<td>France and Spain guarantee to assist each other if attacked</td>
</tr>
<tr>
<td>Treaty ending Seven Years War</td>
<td>1763</td>
<td>Spain cedes La Florida to regain Havana and Manila</td>
</tr>
</tbody>
</table>

Relations with Native Americans

Pensacola Bay’s area contained archaeological evidence of Native American settlements from long before the Spanish colonists arrived. Most of these sites were located on or near the coastlines, rivers, and barrier islands (Harris 1999:9). Shell tempered pottery types, dating to the Mississippian Period (AD 900 – 1700), made up nearly eighty percent of the artifact assemblage associated with these sites (Harris 1999:8). Archaeologists hypothesize that these settlements were where the Native Americans spent most of the year, surviving off of abundant marine resources (Harris 1998:46-47).

Initial encounters between the Spanish and Native Americans were marked with violence and trickery. One encounter in 1539 involved Hernando de Soto’s expedition
abducting a Coosa cacique (Harris 1998:48; Hudson 2007:112, 429). Hernando de Soto’s expedition also documented villages that had been emptied by an earlier epidemic. Charles Hudson speculates that this was the result of earlier contact with Europeans, but the full impact of these early outbreaks is still unknown (Hudson 2007:4). These early interactions, in combination with wars between local tribes and tribes from Mobile, may have been responsible for the hesitancy of the Native Americans at Pensacola Bay to approach the Tristán de Luna expedition in 1559 (Harris 1998:49).

Official reports indicated that the Spanish priorities were construction of Fort San Carlos de Austria before contacting local Native Americans (Harris 1998:50). This meant that fortification of the area was more important than establishing relationships with local Native American populations. The Spanish tried to establish control over when they would and would not interact with other groups on the landscape. Once the fortifications were complete the Spanish were prepared to interact with indigenous Native Americans.

Typically, Spanish colonists depended on local tribes for resources in the form of a tribute known as a sabana. Tribes were converted to Christianity, which required tribes to live in nearby sedentary villages to observe daily religious rituals (Harris 1999:12). When diplomacy failed, soldiers would attempt to establish sedentary villages by force (Hudson 2007:433). Although conversion was a primary goal for most Spanish settlements, the establishment of a stable sabana was just as important. Providing supplies for Spanish presidios from local resources allowed successful presidios to generate surplus goods that could be exported to the rest of the Spanish empire. This was not the case with First Spanish Pensacola.
When Spanish colonists settled Presidio Santa María de Galve there were no permanent Native American settlements. Prior to the colonists’ arrival, local Native Americans experienced intertribal warfare, which led to the scattering of the tribes that were indigenous to the Pensacola Bay area (Dysart 1999:62-63; Harris 1999:38). To attract them back to the area the Spanish brought goods to trade, although they began to encounter such supply shortages that they found it increasingly hard to part with resources to be used as gifts. This difficulty resulted in a lack of success attracting Native American populations (Dysart 1999:62-63).

In 1703, the presidio’s Native American population was small and unstable, averaging populations of 80 people. At the end of July 1704, refugees from the English raids in Apalachee began arriving at Presidio Santa María de Galve (Harris 2003:270). They fled west from missions and villages near San Luis de Talimali. The missions in that area had attracted people from many regions of the Southeast resulting in groups of Native Americans from several different tribes (Harris 2003:270). The refugees that arrived at Presidio Santa María de Galve included Chacatos, Yamasees, Tabazas, and Apalachees. They were given seeds to begin farming near the presidio. However, the Spanish did not have enough farming equipment for the Native Americans. Many refugees continued west to Mobile after experiencing disagreements with the Spanish (Harris 2003:271). Those that stayed received a ration and a wage from the presidio. A few Native American women even married Spanish soldiers (Harris 2003:271-272).

Native Americans interacted with all of the European colonies. As a result, trade goods from several European groups circulated among the colonies. These trade networks made supplies such as British guns available to the Spanish. The Spanish
colonists participated in this commerce, but they also attempted to use the Native American tribes to interfere with British trade networks (Harris and Eschbach 2006:47). Raids suffered by inhabitants of Pensacola presidios were often blamed on the British-allied tribes. These tribes included the Caveta, Talapuce, Cusabu, Santee, Yamasee, Cherokee, Abica, and Alibamon (Harris 2003:270). Raids of Presidio Santa Maria de Galve forced the colonists to confine themselves within the walls of the fort. When groups would venture outside of the walls for water they were often killed or captured to become slaves by hostile Native Americans (Dysart 1999:64-65; Wilson 2000:38-40). Presidio Santa Rosa had less hostile interactions with Native Americans, yet there are accounts of Native American women being taken as concubines (Harris and Eschbach 2006:42). When the colonists moved to Presidio San Miguel de Panzacola they lived in fear of attack by the British-allied Native American tribes. Although nearby the Native American villages, San Antonio de Punta Rasa and Escambé, were raided by hostile Native Americans, the presidio itself was never attacked (Coker 1999:20-21).

Presence of Non-Spanish Ceramics

The presence of the non-Spanish Ceramics did not directly suggest that non-Spanish cultures inhabited or interacted with the people living at the sites in question. Instead it demonstrated that somewhere within the relational dimension a link existed. Ceramics could have arrived anywhere within the Spanish Empire and made their way into Pensacola through trade or the situado. Access to the historical record was necessary to differentiate between non-Spanish ceramics as evidence of legal or illicit trade. Goods
that arrived in situados were often associated with written documents that recorded their inventory (Clune et al. 2003:55, Table 3.2).

The roots of the First Spanish Pensacola’s economy were formed years before the settlement of Presidio Santa María de Galve. In 1621, the Dutch West India Company was formed. The Dutch navy executed a strategy to disrupt the Spanish hegemony in the Caribbean (Deagan 1987:22). In 1628, the Spanish suffered a major defeat when the entire Spanish fleet was captured. This event allowed France and England to expand into the Caribbean. In 1648, the Spanish lost the Thirty Years War resulting in a weaker military and economic position. By 1683, the Spanish Crown was unable to supply their colonies in Florida and granted permission for the Governor of St. Augustine to obtain supplies from English merchants from the British colonies on the Atlantic Coast (Deagan 1987:22).

Presidio Santa María de Galve’s archaeological assemblage contains sherds of faience and delft indicating the presence of French and British, or Dutch, populations within the relational dimension (Table 12). Frequent trade with the French at Mobile was responsible for the introduction of the faience into the presidio’s archaeology assemblage (Clune et al. 2003:39, 61-64). The British and Dutch ceramics were introduced to the First Spanish Pensacola landscape through trade within the Caribbean colonies (Deagan 1987:22).
Table 12: Ceramics recovered from Santa María de Galve (adapted from Bense and Wilson 2003:183, 186-187)

<table>
<thead>
<tr>
<th>Culture</th>
<th>Class</th>
<th>Artifact Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Spanish</td>
<td>Earthenware</td>
<td>El Morro</td>
<td>3,652</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guadalajara Polychrome</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Santa María Stamped</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexican Red Painted</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unglazed Earthenware</td>
<td>1,269</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Greenware</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reyware</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead-glaze slipware</td>
<td>1</td>
</tr>
<tr>
<td>Majolica</td>
<td>Various</td>
<td></td>
<td>5,879</td>
</tr>
<tr>
<td>Olive Jar</td>
<td>Glazed/Unglazed</td>
<td></td>
<td>2,023</td>
</tr>
<tr>
<td>Redware</td>
<td>Glazed Redware</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Unglazed Redware</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>British</td>
<td>Delft</td>
<td>Plain</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delft Blue-on-White</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indeterminate</td>
<td>7</td>
</tr>
<tr>
<td>Stoneware</td>
<td>Brown Salt-Glazed Stoneware</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>French</td>
<td>Faience</td>
<td>Saintonge faience</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Saintonge Slip</td>
<td>7</td>
</tr>
</tbody>
</table>

(Table 12 continues)
The presence of faience and delft in the Presidio Isla de Santa Rosa assemblage, with no major changes in the relational dimension (Table 13), indicate that the same relationships continued into Presidio Santa Rosa (Harris and Eschbach 2006:43-44).

There was a slight increase in the total percentage of French and British ceramics (from a negligible amount at Presidio Santa María de Galve to one percent at Presidio Isla de Santa Rosa). Any conclusions as to the cause of this slight rise were not sound since the
documents that verified these occurrences at Presidio Santa María de Galve did not exist for Presidio Santa Rosa.

Table 13: Ceramics recovered from Presidio Isla de Santa Rosa (adapted from Harris and Eschbach 2006:95, 107)

<table>
<thead>
<tr>
<th>Culture</th>
<th>Class</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Spanish</td>
<td>Earthenware</td>
<td>9,174</td>
</tr>
<tr>
<td></td>
<td>Greyware</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Majolica</td>
<td>6,906</td>
</tr>
<tr>
<td></td>
<td>Redware</td>
<td>204</td>
</tr>
<tr>
<td>British</td>
<td>Delft</td>
<td>457</td>
</tr>
<tr>
<td></td>
<td>Stoneware</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Creamware</td>
<td>2</td>
</tr>
<tr>
<td>French</td>
<td>Faience</td>
<td>348</td>
</tr>
<tr>
<td>Chinese</td>
<td>Porcelain</td>
<td>156</td>
</tr>
<tr>
<td>Spanish, British, or</td>
<td>Indeterminate</td>
<td>4645</td>
</tr>
<tr>
<td>French</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native Americans</td>
<td>Various</td>
<td>13,694</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>35,631</td>
</tr>
</tbody>
</table>

There was a dramatic rise in the number of British ceramics in three separate contexts at Presidio San Miguel. Excavations at Old Christ Church, in modern downtown Pensacola, yielded materials recovered from a living surface that spanned First Spanish and British periods (Williams 2004:91). Stratum 4 Revised contained both
Spanish and British middens with no visible separation between the two. British ceramics recovered from this context make up 28% of the artifact assemblage (Table 14).

Table 14: Ceramics recovered from Stratum 4 Revised at Old Christ Church (adapted from Williams 2004:93)

<table>
<thead>
<tr>
<th>Culture</th>
<th>Class</th>
<th>Artifact Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Spanish</td>
<td>Majolica</td>
<td>Various</td>
<td>59</td>
</tr>
<tr>
<td>Earthenware</td>
<td>El Morro Thick</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>El Morro Thin</td>
<td></td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>Guadalajara Polychrome</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mexican Red Painted</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Olive Jar</td>
<td>Glazed Olive Jar</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Unglazed Olive Jar</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>British</td>
<td>Delft</td>
<td>Indeterminate Delft</td>
<td>14</td>
</tr>
<tr>
<td>Stoneware</td>
<td>Brown Stoneware</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Edge-molded Stoneware</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Elers-like Stoneware</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Gray Salt Glazed Stoneware</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Indeterminate Stoneware</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Earthenware</td>
<td>Black Lead Glazed Coarse Earthenware</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Buckley</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Reyware</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

(Table 14 continues)
Excavations at Plaza Ferdinand examined two separate house lots (Whitaker 2005). Although both of the house lots contained features congruent with typical Spanish architecture, there were large percentages of British ceramics present in each of the

<table>
<thead>
<tr>
<th>Culture</th>
<th>Class</th>
<th>Artifact Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indeterminate Lead-Glazed</td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Creamware</td>
<td>Clouded Creamware</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Feather-edged Creamware</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Hand-Painted Creamware</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Indeterminate Creamware</td>
<td></td>
<td></td>
<td>115</td>
</tr>
<tr>
<td>Relief-molded Creamware</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Plain Creamware</td>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Indeterminate</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>French</td>
<td>Faience</td>
<td>Rouen Style Faience</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indeterminate Faience</td>
<td>2</td>
</tr>
<tr>
<td>Spanish, British,</td>
<td></td>
<td>Indeterminate</td>
<td>209</td>
</tr>
<tr>
<td>or French</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>Porcelain</td>
<td>Chinese Porcelain</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indeterminate Porcelain</td>
<td>2</td>
</tr>
<tr>
<td>Native American</td>
<td>Various</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>678</td>
</tr>
</tbody>
</table>
assemblages (Whitaker 2005:174-178). British ceramics make up 61% and 30% of the assemblages associated with house lots one and two respectively (Table 15, 16).

Table 15: Ceramics recovered from Plaza Ferdinand House Lot 1 Midden (adapted from Whitaker 2005:144-145)

<table>
<thead>
<tr>
<th>Culture</th>
<th>Class</th>
<th>Artifact Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Spanish</td>
<td>Earthenware</td>
<td>El Morro</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>El Morro Thin</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Greyware</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guadalajara Polychrome</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexican Red Painted</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unglazed coarse earthenware</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Majolica</td>
<td>Various</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>Olive Jar</td>
<td>Glazed</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unglazed</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Redware</td>
<td>Glazed</td>
<td>11</td>
</tr>
<tr>
<td>British</td>
<td>Creamware</td>
<td>Clouded</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feather-edged</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fruit and Vegetable</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indeterminate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plain</td>
<td>129</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relief-molded</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Royal Edge</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shell-edged</td>
<td>1</td>
</tr>
<tr>
<td>Delft</td>
<td>Pearlware</td>
<td>Blue-on-White</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indeterminate</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polychrome</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Powdered Purple</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Annularware</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Hand-painted Blue</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Molded-edge</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Plain</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Shell-edged</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Sprig Earthen Polychrome</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Transfer-printed</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Slipware</td>
<td>Lead-glazed</td>
<td>7</td>
</tr>
<tr>
<td>Stoneware</td>
<td>Pearlware</td>
<td>Barley pattern</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottle Ginger Beer</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brown Saltglazed</td>
<td>1</td>
</tr>
</tbody>
</table>

(Table 15 continues)
Table 15 continued

<table>
<thead>
<tr>
<th>Culture</th>
<th>Class</th>
<th>Artifact Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Dot-Diaper and Basket</td>
<td></td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Elers-like</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Gray Salt Glazed</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Grey Stoneware</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Jackfield</td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Nottingham</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Scratch Blue</td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>White Salt-glazed</td>
<td></td>
<td></td>
<td>68</td>
</tr>
<tr>
<td>Indeterminate</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Whiteware</td>
<td>Gilded</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Plain</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>French</td>
<td>Faience</td>
<td>Blue and White</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Indeterminate</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Plain</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Polychrome</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Rouen Style</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Spanish, British,</td>
<td>Indeterminate</td>
<td></td>
<td>79</td>
</tr>
<tr>
<td>or French</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>Porcelain</td>
<td>Chinese</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Hand-painted</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Indeterminate</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Native American</td>
<td>Various</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1,032</td>
</tr>
</tbody>
</table>

Table 16: Ceramics recovered from Plaza Ferdinand House Lot 2 Midden (adapted from Whitaker 2005:144-145)

<table>
<thead>
<tr>
<th>Culture</th>
<th>Class</th>
<th>Artifact Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Spanish</td>
<td>Earthenware</td>
<td>El Morro</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>El Morro Thin</td>
<td>11</td>
</tr>
<tr>
<td>Majolica</td>
<td>Various</td>
<td></td>
<td>39</td>
</tr>
</tbody>
</table>

(Table 16 continues)
Table 16 continued

<table>
<thead>
<tr>
<th>Culture</th>
<th>Class</th>
<th>Artifact Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redware</td>
<td>Glazed</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>British</td>
<td>Delft</td>
<td>Blue-on-White</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plain</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polychrome</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Powdered Purple</td>
<td>1</td>
</tr>
<tr>
<td>Stoneware</td>
<td>Dot-Diaper and Basket</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scratch Blue</td>
<td>2</td>
</tr>
<tr>
<td>Creamware</td>
<td>Clouded</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plain</td>
<td>3</td>
</tr>
<tr>
<td>Pearware</td>
<td>Plain</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>French</td>
<td>Faience</td>
<td>Blue and White</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plain</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rouen Style</td>
<td>3</td>
</tr>
<tr>
<td>Spanish, British, or French</td>
<td></td>
<td>Indeterminate</td>
<td>10</td>
</tr>
<tr>
<td>Chinese</td>
<td>Porcelain</td>
<td>Indeterminate</td>
<td>1</td>
</tr>
<tr>
<td>Native American</td>
<td>Various</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>111</td>
</tr>
</tbody>
</table>

The increase of British ceramics in First Spanish contexts could be explained by the British occupation of the site (Williams 2003:93). Illicit trade could have been responsible, although the relative amount of illicit trade at Presidio San Miguel de Panzacola may have been minor and mostly for personal use (Childers 2000:12). The rise of British ceramics at Presidio San Miguel de Panzacola is also concurrent with events that led to the dominance of non-Spanish ceramics in the Caribbean colonies (Deagan 1987:104). In the middle of the eighteenth century mass-produced refined earthenware was developing in England and other areas of Europe. These ceramics were
a higher quality than comparable Spanish wares. They were also available at a lower price (Deagan 1987:104). Relaxed economic policies, combined with the establishment of monopolistic joint-stock trading companies, provided the mechanism for the introduction of significant amounts of non-Spanish wares into the Pensacola landscape.

Ceramic Ratios and the Relational Dimension

Stanley South determined the function of a site (e.g., domestic or military) through the comparison of simple ratios. His comparisons yielded several site types in his comparison of 11 sites (South 2002: 172, Table 24). One of the most interesting ratios was the ceramic ratio through which he was able to differentiate between military-frontier sites (0.17 - 0.25) and domestic sites (0.44 – 0.79). South’s ceramic ratio method provided a simple way to examine the relational dimension of the First Spanish landscape.

As described in chapter two, The University of West Florida excavations have produced data that can be correlated with each of the presidios. The artifact counts for each of these contexts were discussed in the previous section (see Tables 12-16). The assemblage associated with Santa María de Galve was separated into artifacts recovered from the fort and the village (Bense and Wilson 2003:173, Table 4.8). Presidio Isla de Santa Rosa’s fort was not located in previous excavations. As a result the assemblage from that presidio was considered as a whole. The three contexts associated with Presidio San Miguel de Panzacola, Stratum Four Revised at Old Christ Church and house lots one and two at Plaza Ferdinand, were all located outside of the fort. The excavations at Plaza Ferdinand investigated different areas of each lot resulting in a different sample
from each of the two middens (Whitaker 2005:177). Presidio Santa María de Galve and
Presidio Isla de Santa Rosa’s assemblages were analyzed without distinguishing between
features and middens. The three contexts associated with Presidio San Miguel were
selected because they experienced minimal interference from subsequent occupations of
the area. When each of the ceramic ratios were calculated, a significant difference
between Presidio Santa María de Galve and the two subsequent presidios was revealed
(Table 17).

Table 17: Ceramic Ratios from the First Spanish Period Presidios

<table>
<thead>
<tr>
<th>Presidio</th>
<th>Ceramics</th>
<th>Total Artifacts (without Ceramics)</th>
<th>Ceramic Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa María de Galve Fort</td>
<td>21399</td>
<td>11880</td>
<td>1.80</td>
</tr>
<tr>
<td>Santa María de Galve Village</td>
<td>1926</td>
<td>1409</td>
<td>1.37</td>
</tr>
<tr>
<td>Santa María de Galve Total</td>
<td>23325</td>
<td>13292</td>
<td>1.75</td>
</tr>
<tr>
<td>Isla de Santa Rosa Total</td>
<td>35631</td>
<td>121524</td>
<td>0.29</td>
</tr>
<tr>
<td>Old Christ Church</td>
<td>678</td>
<td>3840</td>
<td>0.17</td>
</tr>
<tr>
<td>Plaza Ferdinand Lot 1</td>
<td>1032</td>
<td>5302</td>
<td>0.19</td>
</tr>
<tr>
<td>Plaza Ferdinand Lot 2</td>
<td>111</td>
<td>184</td>
<td>0.60</td>
</tr>
</tbody>
</table>

Based on these values, it was obvious that the results did not translate between
South’s British sites to the First Spanish Pensacola sites. In fact, the difference between
Santa María de Galve’s fort and village ratios suggested that the relationship could
actually be inversed from the relationship between domestic areas and military areas that South observed. Presidio Santa María de Galve’s village ratio was lower than the presidio’s fort ratio.

The division between fort and village was not discernable between the fort and village areas of Presidio Isla de Santa Rosa. All of the artifacts in the presidio’s assemblage were included in the calculation of the ceramic ratio which resulted in a ratio comparable with the British site of Ft. Moultrie A (South 2002:172, Table 24). South classified the site as a military-frontier site, which fits the description of Presidio Isla de Santa Rosa’s function.

Stratum Four Revised contains both Spanish and British artifacts as the result of being a shared living surface (Williams 2004:91-94). The immediate occupation of the Presidio San Miguel de Panzacola resulted in no discernable difference between the First Spanish Period and British Period in profiles of these excavations (Williams 2004:91). Since the First Spanish occupation of Presidio San Miguel de Panzacola varied from less than ten years to as many as twenty, it was possible that some of the contexts were essentially British sites that possessed little to no First Spanish deposits (Whitaker 2005:175).

The ratios from Old Christ Church and Plaza Ferdinand Lot 1 corresponded with the South’s military-frontier site ratios. Plaza Ferdinand Lot 2 had a ratio that fell within the range of South’s domestic sites. Although it was not clear that there was a difference in function between the two lots at Plaza Ferdinand, there was the possibility that they were constructed, and inhabited, at different times (Whitaker 2005:171). Lot 2 appeared to align to the Spanish grid. The structures in Lot 2 may have been constructed before
1760 and abandoned during the Native American raids (Whitaker 2005:171). At least 48% of the Lot 2 ceramics were First Spanish Period artifacts. The structures in Lot 1 may have been constructed after the Native American raids ended in 1761 (Whitaker 2005:171). Lot 1 fell within the military-frontier range. This result could have reflected that the Spanish were constantly preparing the presidio and village for defensive purposes (Coker 1999:23-35).

Continuing to examine the ceramics from First Spanish Pensacola, the ratios of non-Spanish European ceramics and Native American ceramics were examined (Table 18 and 19). Equations for these ratios were discussed in chapter 2 (see Table 4). The non-Spanish European ceramics included any materials associated with the British, French, or Chinese (see Tables 12-16). There were drastic differences in the non-Spanish European ceramic ratio between Presidio Santa María de Galve and the two later presidios.

Table 18: Non-Spanish European Ceramic Ratio

<table>
<thead>
<tr>
<th>Presidio</th>
<th>Non-Spanish European Ceramics</th>
<th>Total Ceramics (including Spanish and Native American)</th>
<th>Imported Ceramic Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa María de Galve</td>
<td>278</td>
<td>22121</td>
<td>0.13</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isla de Santa Rosa</td>
<td>1006</td>
<td>34625</td>
<td>0.02</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old Christ Church</td>
<td>205</td>
<td>473</td>
<td>0.43</td>
</tr>
</tbody>
</table>

(Table 18 continues)
Table 18 continued

<table>
<thead>
<tr>
<th>Presidio</th>
<th>Non-Spanish European Ceramics</th>
<th>Total Ceramics (including Spanish and Native American)</th>
<th>Imported Ceramic Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plaza Ferdinand Lot 1</td>
<td>712</td>
<td>320</td>
<td>2.22</td>
</tr>
<tr>
<td>Plaza Ferdinand Lot 2</td>
<td>45</td>
<td>66</td>
<td>0.68</td>
</tr>
</tbody>
</table>

Table 19: Native American Ceramic Ratio

<table>
<thead>
<tr>
<th>Presidio</th>
<th>Native American Ceramics</th>
<th>Total Ceramics (without Native American Ceramics)</th>
<th>Native American Ceramic Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa María de Galve Fort</td>
<td>7886</td>
<td>13513</td>
<td>0.58</td>
</tr>
<tr>
<td>Santa María de Galve Village</td>
<td>948</td>
<td>978</td>
<td>0.97</td>
</tr>
<tr>
<td>Santa María de Galve Total</td>
<td>8834</td>
<td>14491</td>
<td>0.61</td>
</tr>
<tr>
<td>Isla de Santa Rosa Total</td>
<td>13694</td>
<td>21937</td>
<td>0.62</td>
</tr>
<tr>
<td>Old Christ Church</td>
<td>32</td>
<td>646</td>
<td>0.05</td>
</tr>
<tr>
<td>Plaza Ferdinand Lot 1</td>
<td>30</td>
<td>1002</td>
<td>0.03</td>
</tr>
<tr>
<td>Plaza Ferdinand Lot 2</td>
<td>2</td>
<td>109</td>
<td>0.02</td>
</tr>
</tbody>
</table>
The lower ratio at Presidio Isla de Santa Rosa may have indicated that the Spanish colonists depended upon Mobile less than they did at Presidio Santa María de Galve. This ratio was not as sound as those at Presidio Santa María de Galve and Presidio San Miguel de Panzacola. The large number of Native American ceramics (13694 or 38%) and indeterminate ceramics (4645 or 13%) in the Presidio Isla de Santa Rosa assemblage skewed the non-Spanish European ceramic ratio.

The non-Spanish European ceramic ratios at Presidio San Miguel de Panzacola revealed information on how the areas related to each other. Excavations at Old Christ Church suggested that the area was heavily utilized during the First Spanish and British periods (Williams 2004:94). Lot 2 at Plaza Ferdinand was utilized primarily during the First Spanish Period (Whitaker 2005:171). The ratios at Old Christ Church and Plaza Ferdinand Lot 2, 0.43 and 0.68 respectively, were close enough that they suggested a similar use of the site. This hypothesis was supported by the facts that the two sites were occupied contemporaneously and experienced the same problems with Native American raids (Childers et al. 2007:25). Plaza Ferdinand Lot 1 could have been constructed closer to the end of the First Spanish Period resulting in a primarily British occupation (Whitaker 2005:171). This hypothesis was supported by the highest non-Spanish European ceramic ratio calculated for the First Spanish Period sites.

Native American ceramic ratios were calculated for each of the presidios. The high ratio of Presidio Santa María de Galve’s village versus that of the fort indicated that the village had more contact with Native Americans than the fort did. It could have meant that hostile Native Americans lived outside the fort during their siege. The ratios of Presidio Santa María de Galve and Presidio Isla de Santa Rosa were comparable,
which indicated that they had nearly the same amount of interaction with Native Americans. Despite Santa Rosa’s distance from the mainland, the colonists continued to interact with Native Americans often taking women as concubines (Harris and Eschbach 2006:42). This pattern may have changed once the colonists returned to the mainland.

Presidio San Miguel de Panzacola’s low ceramic ratio indicated that interaction with Native Americans were low in the three areas examined. This result could have indicated that the buffer villages of San Antonio de Punta Rasa and Escambé were the focus of all interaction that the presidio had with the friendly Native Americans. Whitaker suggested that the structures at Plaza Ferdinand Lot 2 were deserted during the hostile Native American raids prior to Governor Ortíz’s arrival in 1761. The fact that the Native American ceramic ratio was not higher at Lot 2 possibly indicated that hostile tribes did not occupy this area. These low ratios may have resulted from the majority of the hostilities being confined to the buffer villages and the lack of absence of an extended siege similar to Presidio Santa María de Galve.

A low non-Spanish European ceramic ratio at Presidio Santa María de Galve and Presidio Isla de Santa Rosa indicates that the colonists did not trade as much with non-Spanish Europeans as they did at Presidio San Miguel de Panzacola. However, a low Native American ratio indicates that interaction decreases between the Spanish and Native Americans at Presidio San Miguel de Panzacola. The historic documents indicate that this is not true. The flawed results of the Native American ceramic ratios at Presidio San Miguel de Panzacola indicates that the examination of shared living surfaces and mixed middens is not an accurate method of interpreting that archaeological assemblage.
A future endeavor may analyze only closed context features, but it may result in ratios that are incomparable to the other presidios that were analyzed on a larger scale.

Modified ceramic ratios were used in an attempt to correlate the amount of interaction between cultural groups in the First Spanish Pensacola landscape. Historic data discussed in chapter 3 was utilized to support interpretations based on the ceramic ratios. The ratios suggested shifts in the interaction between cultural groups. These hypotheses were only understood by comparing the ratio data with events in the historical dimension. The results suggested that a comprehensive analysis was the only method in which accurate conclusions can be reached with ceramic ratio calculations.

The Historical Dimension of First Spanish Pensacola

The historical dimension of Zedeño’s theories consists of links created through successive uses of a landmark. Examined from a regional perspective, the historical dimension of First Spanish Pensacola was divided into three events corresponding with the occupation of each presidio. The location of each settlement changed within the bay and, although the function stayed the same, each presidio’s effectiveness at accomplishing its goal was affected by the location.

Landmark Occupation Time and Associated Cost

William S. Coker examined the cost of maintaining the three presidios between 1698 and 1763. He found that each presidio’s expenses were divided between salaries 45.9%, provisions 38.9%, fortifications 4.7%, material 9.5%, and outstanding 1.0% (Coker 1999:22). The most interesting results from his study involved comparing the
expenditures of the three presidios with each other (Table 20). Spanish financial records note that money was allocated to the Pensacola presidios in five groups (Coker 1999:22).

Table 20: Cost Associated with the Presidios (adapted from Coker 1999:22)

<table>
<thead>
<tr>
<th>Presidio</th>
<th>Time Period</th>
<th>Total Years</th>
<th>Cost per Year (in pesos)</th>
<th>Total Cost (in pesos)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presidio Santa María de Galve</td>
<td>1698-1719</td>
<td>21</td>
<td>46,274.43</td>
<td>971,763.00</td>
</tr>
<tr>
<td>Presidio Isla de Santa Rosa</td>
<td>1722-1753</td>
<td>31</td>
<td>18,467.90</td>
<td>572,505.00</td>
</tr>
<tr>
<td>Presidio San Miguel de Panzacola</td>
<td>1754-1763</td>
<td>9</td>
<td>48,425.11</td>
<td>435,826.00</td>
</tr>
</tbody>
</table>

While Coker points out that the majority of the money went to salaries, leaving only 4.7 percent of the funds for fortifications, the present research is concerned with how the allocated funds differed between the presidios (Coker 1999:14). The most remarkable difference was the funds allocated to Presidio Isla de Santa Rosa were 40% lower than the other two presidios. This result could be another indication that the value of the bay was lower than it had been when Presidio Santa María de Galve was established because the decreased funding corresponds with instructions from Spanish officials to scuttle the bay (Coker 1999:15; Griffen 1959:243). Lower funds could also be the result of the War of the Quadruple Alliance, which cost the Spanish 1,070,284
pesos and emptied the Spanish treasury (Coker 1999:22). Another cause of the decreased funding could be the relative safety, resulting in less expenditure on fortifications, of Presidio Isla de Santa Rosa compared to the other presidios (Harris and Eschbach 2006:34).

Life History and Performance Characteristics

The location of each presidio was based on the life history of the area. As seen earlier in this chapter, each site was chosen after considering the performance characteristics associated with a particular area. As the life history of the site developed the Spanish became aware of additional performance characteristics associated with the chosen site (see Table 6). Presidio Santa María de Galve was positioned on Barrancas de Santo Tomé because of the immediate assessment of the performance characteristics in relation to the Spanish colonists’ needs. Initially colonists only considered two locations that were close to the pass, Barrancas de Santo Tomé and Punta de Sigüenza (Clune 2003:19; Coker 1999:19). At this time their primary goal was the defense of Pensacola Bay from French or British intrusion. Reports of rich agricultural soils and the immediate benefit of elevation for their needs caused the colonists to overlook the negative performance characteristics of the Barrancas until experience made them clear.

Attacks by Native Americans and erosion prompted the colonists to search for an area with performance characteristics that solved these problems (Clune 2003:17-21). The Spanish thought that Santa Rosa Island was relatively safe from the Native American attacks and had a stable shoreline that was not prone to erosion (Griffen 1959:245; Harris and Eschbach 2003:34; Stringfield 1996:11-14). As the traumatic life history of Presidio
Isla de Santa Rosa developed, characteristics such as controlled access from the mainland and proximity to the bay’s mouth became less important.

Presidio San Miguel de Panzacola possessed only a few of the performance characteristics that were important to the first two settlements (see Table 6). The Spanish colonists had learned about the dangers of Pensacola Bay through experience. When they arrived at Pensacola Bay they were primarily concerned with defending the bay from non-Spanish Europeans (Coker 1999:9). As the life history of First Spanish Pensacola developed it became evident that the major threats to the presidios were not other Europeans. Inclement weather, erosion, supply shortages, and hostile Native Americans were the major problems faced by Spanish colonists. As a result, Presidio San Miguel was located in an area that was protected from the Gulf with access to fresh water (Stringfield 1996:149). The villages of San Antonio de Punta Rasa and Escambé were established as a buffer between the presidio and hostile Native Americans (Childers et al. 2007:24). In the end the Spanish colonists were forced to leave Pensacola Bay as the result of events that were physically distant from First Spanish Pensacola (Coker 1999:23).

Summary

Dividing the landscape of First Spanish Pensacola into three dimensions results in a higher resolution picture of the operation of the First Spanish Pensacola presidios. Although this chapter was not a comprehensive examination of the facets of the First Spanish period, it does serve as a test for the utility of the landscape approach. It is also evident that dimensional aspects of the landscape are interrelated and intertwined with
one another. An integrated view of landscape dimensions is required to understand how a landscape functions as a whole. Chapter five provides such a view by examining the relationship between dimensional aspects and then contextualizing them within the broader framework of a socio-ecological system.
CHAPTER V

LANDSCAPE DIMENSIONS AND SOCIO-ECOLOGICAL SYSTEMS

At its most basic premise, socio-ecological systems theory integrates human and natural systems. Zedeño’s dimensions allow focused analysis of socio-ecological systems by separating them into three distinct dimensions. Formal dimensions describe physical characteristics, organizational structures, and resource availability of the socio-ecological system. Relational dimensions demonstrate how the socio-ecological system functions at different spatial scales. Historical dimensions depict how systems function in terms of long-term temporal scales.

First Spanish Pensacola illustrates a scenario in which human and natural systems begin at relative equilibrium and become increasingly unstable. Causal factors of system collapse become clear when the system is separated into three landscape dimensions. This chapter links each of the dimensions to changes within the socio-ecological landscape and contextualizes the landscape approach by identifying overarching themes uncovered by this research. The conclusions posited in this chapter are preliminary and additional theoretical approaches are suggested bolster the utility of a landscape approach to understanding socio-ecological systems.
A Synthesis of the Formal Aspects of First Spanish Pensacola

Formal dimensions are physical characteristics of the landscape. Formal aspects include natural systems (e.g., exploitable resources, climate, soil, etc.) and human systems (e.g., presidio organization, political hierarchy, trade and exchange etc.). Examining these characteristics of the formal dimension framework enables a more objective understanding of the balance between the two systems.

The exploitable resources of the Pensacola bay and its surroundings were one of the main reasons it attracted Spanish settlement. However, based on the historic documents and the archaeological record, continual use of these resources indicated that Spanish practices were not sustainable. Over time the colonists exploited local resources to a point of imbalance between human and natural systems. The combination of clear-cutting the timber, frequent storms, and soil composition caused and increased the potential of erosion at Presidio Santa María de Galve and Presidio Santa Rosa (Harris and Eschbach 2006:19; Wilson 2000:22, 37-38). The lack of stabilizing elements caused surface run off to cover barrel wells at Presidio Santa María de Galve and prevented the reformation of dunes on Santa Rosa Island (Houser et al. 2008:4-5; Wilson 2000:37).

Each presidio’s location could have exacerbated the imbalance between human and natural systems. Presidio Santa María de Galve’s location subjected it to continuous coastal processes. The Spanish engineer Jayme Franck estimated that Barrancas de San Tomé eroded between 11 and 16.5 inches per year in 1700. Realizing that the bluff would erode over 6 feet (undermining the southern bastion wall in the process) he entertained plans of shortening the fort, or relocating it to Punta de Sigüenza (Clune et. al 2003:36 and 40). A 1719 French map of the presidio showed that the two bastions on the southern
wall were foreshortened to make up for the loss of land at the bluff’s edge (Bense and Wilson 2003:98). This structural change was attributed to a storm surge undermining the bluff in 1713. Franck had originally predicted that the walls would be undermined by 1706. The fact that it took 4 to 5 years longer than Franck had originally predicted verified the historic description of earthen dikes that were constructed to mitigate erosion (Wilson 2000:38).

Despite the same level of resource exploitation on Santa Rosa Island, Presidio Isla de Santa Rosa did not have the constant problem with erosion because of the lack of topographic relief across the site. Different erosional processes were active on the island. With no elevation change, the constant erosional agent was wind, which would have been dissipated by the buildings constructed in Presidio Santa Rosa. The strongest erosional agent was storm surges that were capable of inundating the island. The 1752 hurricane that destroyed the site removed the presidio’s structures while massively eroding the island. Structures were undermined and the colonists responded by relocating their fortifications to Presidio San Miguel.

Presidio San Miguel de Panzacola was situated in an area of low topographical relief that seemed to be protected from the full force of hurricanes by Santa Rosa Island that was situated between the presidio and the Gulf (Bense 1999b:121). While storm surge deposits, probably dating to a 1778 hurricane, were found in excavations at Old Christ Church, it was unclear if Presidio San Miguel de Panzacola suffered from erosion as the result of resource exploitation during the First Spanish Period.

An eroding bluff prompted changes in the settlement layout of Presidio Santa María de Galve. Environmental factors may have been responsible for fluctuations in the
layouts of the other presidios as well. There was insufficient data to determine if the layout of Presidio Isla de Santa Rosa was different from that of Presidio Santa María de Galve and Presidio San Miguel de Panzacola. Their layouts deviated from the standard town plans that the Spanish created in “The Royal Ordinances Concerning the Laying Out of Towns” in 1573 (Clune et al. 2003:42-43). At Presidio Santa María de Galve and Presidio San Miguel de Panzacola compromises were evident in the layout of the fort, civil, and religious buildings that were located within the fort walls (Clune 2003:22). Presidio residents located their homes as close to the fort as they could manage (Childers et al. 2007:28; Coker 1999:20). These changes were the result of the threat of attack from Native Americans, as well as the constant repairs prompted by severe weather. One reason Spanish authorities did not force compliance with the Royal Ordinances may have been the delay in communication between the Crown and the colonists, a topic discussed later in this chapter. Removing the deviant structures from the settlement layout would have resulted in wasted resources, an unacceptable option for people already faced with shortages. However, at Presidio Santa María de Galve and Presidio San Miguel de Panzacola there were documented cases of non-regulation structures (domestic structures that were too close to the fort wall) being destroyed to protect the fort (Childers et al. 2007:28; Clune 2003:22). Usually these structures were no longer in use because of the threat of Native Americans attacking the villagers.

Fire, hurricanes, decay, and war resulted in a constant need to repair the presidio structures. The need for wood was massive. In 1712 the Presidio’s governor reported that more than 3000 stakes were used in the stockade. Wooden stakes took about one year to rot, while a building lasted around three years (Clune et al. 2003:39-40). In addition to
construction, trees were also harvested for export from Pensacola (Chapman 1998:24-25; Ford 1939:77; Hunter 2000). Initially, the trees required for the presidios were located close by. As each presidio developed, exploitation of the landscape increased. In 1718, Presidio Santa María de Galve’s colonists had to venture a league (5556 meters) away from the fort in order to find the wood they needed (Clune et al. 2003:37-38).

It is clear that the exploitation of natural resources had a cumulative negative effect on the success potential of First Spanish Pensacola’s colonial endeavors. Yet viewing the formal dimensions separate from the others does not result in a comprehensive picture of the Spanish landscape. Resources from other parts of the Spanish Empire and trade with foreign groups provided resources that are not examined by the formal dimension. To understand what effects these interactions had for the Spanish inhabitants of Pensacola, relational dimensions of landscape are taken into consideration.

**A Synthesis of the Relational Aspects of First Spanish Pensacola**

The key relational aspects of the Spanish landscape were as follows: interaction with Native American groups, trade with French colonists in Mobile, and supplies sent from established Spanish colonies. These facets of the relational dimension had a dramatic effect on the success of Pensacola as a Spanish colony. Pathways that connected Spanish colonists to the empire brought legal and illicit goods, orders, people and the effects of war to the Pensacola landscape. Some aspects of the relational dimension were affected by distance between landmarks (Childers 2000:12, 16; Clune et
al. 2003:31; Coker 1999:8-9). Other aspects of the relational dimension retained their strength regardless of the distance involved.

One goal of the presidios was to become self-sufficient and export goods and other forms of support to the rest of the Spanish landscape. As such, the Spanish had to manipulate the natural environment as well as their relations with other groups so that a surplus of exportable goods could be produced (Harris 2003:268). Part of this manipulation took the form of altering the relational pathways of Native Americans by encouraging a settlement pattern change (Hudson 2007:431-433). The Spanish incorporated and imposed their relational pathways onto the Native American’s landscape. In exchange for use of these pathways, and the goods available from them, Native Americans had to observe the practices of Catholic Christianity (Harris 2003:260).

Sedentary groups of Native Americans provided the additional benefit of exploitable resources produced by the Native Americans and surrendered to the Spanish in a tribute known as sabana (Bushnell 1994). This method of local population exploitation, which was successful at St. Augustine, failed in Pensacola. Prior to the establishment of Presidio Santa María de Galve, intertribal warfare scattered Native American tribes indigenous to the Pensacola Bay area (Dysart 1999:62-63; Harris 1999:38). Without a stable Native American population, the Spanish were unable to procure a sabana. Throughout the First Spanish Period, Spanish colonists attempted to entice Native Americans into settling near the presidio. However they had little success since they already suffered from supply shortages (Dysart 1999:62-63; Harris 2003:271). As a result, Spanish colonists were forced to rely on the goods and resources obtained through the situados and illegal trade.
Despite the necessity of the situados to Spanish survival, shipments were neither timely nor complete (Clune et al. 2003:58; Johnson 2003:316). Often the shipments were missing items ordered by the Spanish or were short on supplies resulting in the need to borrow goods from Mobile (Clune et al 2003: 59-61). Tardy shipments could signify that the decision to settle Pensacola Bay was not completely supported by New Spain. There were no silver mines in Pensacola and the settlement was too far away from the Mississippi River to participate in fur trading networks (Manucy 1959:223). Before the Luna expedition, the Spanish were focused on the more productive land in the south of New Spain. Albert Manucy argued that the greatest asset of La Florida was that it provided “a great wilderness buffer that kept intruders away from the silver mines of Mexico and the homeward-bound shipping that flowed out of the Caribbean” (Manucy 1959:225). When Captain Andrés de Pez proposed to the Spanish Royalty that St. Augustine be abandoned and Pensacola fortified he was met by opposition from the Spanish war council. They were skeptical that France, Britain, or Holland would move into Pensacola Bay since they already had better fortifications in the Caribbean (Manucy 1959:229). However, the Spanish presence in La Florida prevented non-Spanish Europeans from settling in the area and disrupting the Spanish treasure fleets.

Pensacola Bay was settled once there was a possibility of other Europeans settling in the area. The timing of the Spanish settlement indicated that the true value of Pensacola Bay lay not in the resources of the area, but in its relational dimension. Each of the 18th century presidios’ primary goals was to keep the bay and Gulf out of enemy hands. Spanish officials preferred a buffer of uninhabited land between New Spain and the British settlements to the north. Pensacola’s First Spanish presidios served the
purpose of maintaining this buffer. However, it was a colonial settlement on the periphery of the Spanish empire and was physically distant from other important areas in the Spanish Empire.

Pensacola Bay had major potential for a deep-water port that was accessible by any ship of the First Spanish Period (Leonard 1939:193-94). Mobile Bay, occupied by the French, was only ca. 96 km away, making it the closest European landmark to Pensacola. Havana and Veracruz were ca. 930 – 1500 km away from the Spanish colonists and could take as long as a month to reach Pensacola. Spain, the core of the Spanish empire, was much farther away from the Pensacola colonists. Interestingly, distance between landmarks delayed communication between landmarks, but it did not negate the power one landmark had over another. The hierarchy of the First Spanish chain of command was exercised every time colonists executed orders they received from the Spanish Crown. Delayed communication also allowed for some resistance on the part of the colonists, as evidenced by the settlement layouts of the towns and presidios, which did not correspond to guidelines dictated by the Law of the Indies.

While Pensacola Bay was on the periphery of the Spanish Empire, it was located closer to French colonists than any other European settlement. This proximity resulted in a symbiotic relationship that was necessary for both their survival. Spanish colonists often relied on the French for supplies and communication with Havana or Veracruz. Colonists at Presidio Santa María de Galve were able to acquire supplies from Apalachee in addition to assistance from Mobile (Clune et al. 2003:59-61). Wars in Europe, as well as other areas of La Florida, created barriers within the relational dimension that prevented Spanish colonists from receiving support from these areas. In 1704, James
Moore’s raids decimated tribes in eastern La Florida (Hudson 2007:436). His raids left only a few survivors and removed Apalachee as a source of supplies within Presidio Santa María de Galve’s relational dimension. The loss of Apalachee also resulted in increased hostilities from British-allied Native Americans who arrived at Presidio Santa María de Galve after the refugees from Apalachee. The War of the Quadruple Alliance (1718-1721) created a barrier in the relational dimension that terminated mutual support between Mobile and Pensacola. In 1719, the French captured Presidio Santa María de Galve. The Spanish colonists were forced to leave Pensacola and wait until the war was over before they could return.

Despite Manucy’s (1959:225) concept of Pensacola as a Spanish settlement meant to maintain the wilderness buffer, there was a considerable amount of interaction between Spanish colonists and non-Spanish Europeans. Relational aspects of First Spanish Pensacola encompassed aspects of the Spanish colonies interaction with other entities. The presence of non-Spanish ceramics in the artifact assemblages from the three presidios indicated that British goods were available through trade. British ceramics were introduced to the First Spanish Pensacola landscape through trade with the Caribbean colonies (Deagan 1987:22). British guns were available through trade with Native Americans (Harris and Eschbach 2006:47). These fluctuating interactions were a result of the relationship among the colonists, their governments and the distances between them. Relational aspects of the landscape affected the formal dimension specifically through resource availability.

Pensacola colonists settled on the periphery of the Spanish Empire. Communication with other areas of the Spanish landscape could have taken a month or
more. Often the colonists did not have a sea-worthy vessel to communicate with other Spanish settlements resulting in requests for French ships to communicate for them (Griffen 1959:244). Delays in communication caused the relational pathways to be unreliable, contributing to the overall instability of the colonial attempt. Such instability compounded the problems for Spanish success that were outlined in the previous section on the formal dimensions of the landscape. Delays in communications, combined with environmental characteristics such as poor agricultural soils and devastating hurricanes, negatively affected the Spanish colonists causing them to divert from their original settlement strategies (Childers 2000:12, 16). Such changes and alterations to Spanish settlement strategies and polices are evident in the history of the Spanish occupation of the Pensacola Bay area.

**A Synthesis of the Historic Aspects of First Spanish Pensacola**

First Spanish Pensacola began with tragedy. In 1559, Luna’s fleet was destroyed by a hurricane that sank eight of the eleven ships in Luna’s fleet (Smith et al. 1999:3). Survivors struggled with issues of starvation and shelter for a few years until the settlement was ultimately abandoned in April of 1561 (Scott-Ireton 1999:26). Pensacola’s turbulent environment coupled with the lack of support from the Spanish Empire caused the colonists to abandon Pensacola for 140 years.

Realizing that the French were attempting to colonize the Gulf Coast, the Spanish returned to the bay to construct Presidio Santa María de Galve. Flawed scientific surveys touted the positive characteristics of the bay supporting the decision of the Spanish to attempt settling the bay once again (Clune 2003:17-18). Presidio Santa María de Galve
was constructed. Soon the colonists faced a new set of challenges in the Pensacola landscape. Erosion threatened the presidio walls. Native Americans attacked from the landward side of the presidio. Local soil could not support agriculture. Colonists soon realized their suffering was for naught. Their presidio was outside of cannon range of the pass and they were too far away to access New Spain’s silver mines or the Mississippi valley’s fur-trading networks (Clune 2003:21; Manucy 1959:238).

Presidio Santa María de Galve was captured and destroyed in 1719. When the Spanish returned in 1722, their experiences with the presidio’s location guided their choice of the location of the next presidio. Presidio Isla de Santa Rosa was located in an area of low elevation that was not prone to the erosional problems that plagued its predecessor. Although the presidio’s colonists were protected from the inland attacks from Native Americans, they were exposed to the elements (Childers 2003; Coker 1999:12). After 30 years, consecutive hurricanes caused substantial damage to the presidio and prompted the colonists to relocate to the mainland.

The fact that the Spanish financed Presidio San Miguel at the same level as Presidio Santa María de Galve indicated something changed after the failed settlement of Presidio Isla de Santa Rosa. A possible explanation was that the Spanish did not have the money to fund Presidio Isla de Santa Rosa because of the cost incurred during the War of the Quadruple Alliance (Coker 1999:22). The third presidio constructed in First Spanish Pensacola possessed only a few performance characteristics of its predecessors (see Table 6). As the life history of First Spanish Pensacola developed, the Spanish learned what the major barriers to a successful settlement were and attempted to overcome them. However, Pensacola remained on the periphery of the Spanish empire. When the more
central settlements of Havana and Manila were captured during the Seven Years War, Pensacola Bay was surrendered for their return. Despite Spanish attempts to mediate problems and challenges ultimately the colonial endeavor collapsed. The collapse was due to actions that were physically distant from Pensacola Bay, but they had a tremendous impact on the relational dimension of the Spanish Empire as a whole.

**The First Spanish Socio-Ecological System**

Socio-ecological systems theory facilitates cross-disciplinary research that emphasizes an “integrative framework equipped with comprehensive models, reinforcing methods, and complementary data” (Redman et al. 2004:162). Redman attributes four characteristics to a socio-ecological system. They possess biophysical and social factors that interact in a sustainable fashion on a scale that can be defined at several spatial, temporal, and organizational scales. They also have systems that regulate the use and flow of critical resources. Socio-ecological systems are subject to continuous adaptation requiring a flexible theory that can be adjusted to focus at a variety of resolutions.

First Spanish Pensacola was a system that could be defined at several spatial, temporal, and organizational scales that were hierarchically linked. A series of presidios were located around Pensacola Bay. However the bay was only one landmark within the expansive Spanish Empire. Political and military elements controlled characteristics of the relational and formal dimensions. Previous events within the relational and formal dimensions heavily influenced the decisions made by the Spanish colonists.

Natural resources (e.g., trees), socioeconomic resources (e.g., the defensible bay), and cultural resources (e.g., Native Americans to be converted to Christianity)
represented a set of critical resources contain within Pensacola Bay’s formal and relational dimensions. Their flow and use was regulated by the combination of ecological and social factors that were revealed within the formal and relational dimensions and the past events within the historical dimensions. With each successive settlement, the Spanish colonists adapted to the regulatory systems affecting Pensacola’s critical resources. While these adaptations demonstrated that First Spanish Pensacola fulfilled the fourth characteristic of a socio-ecological system (a perpetually dynamic, complex system with continuous adaptation), it was still a system that was not sustainable.

Redman’s first characteristic of a socio-ecological system was “a coherent system of biophysical and social factors that regularly interact in a resilient, sustained manner.” While it is clear that the biophysical and social factors within First Spanish Pensacola interacted extensively, the sustainability of this interaction was lacking. Exploitation of trees was rampant in First Spanish Pensacola’s landscape. Not only was timber an exportable resource, Spanish colonists used it for everything from building construction to fuel for fires. Trees were cleared for the distance of a cannon shot around each presidio for defensive purposes. Destructive fires, hurricanes, and the constant rotting of fort timbers increased the exploitation of Pensacola Bay’s forests in an exhaustive pattern. At Presidio Santa María de Galve, unmitigated erosion was only one of the problems caused by this continual exploitation. As the distance between the presidio and the forest increased, the colonists had to expend more energy to gather timber for their needs. This behavior persisted through Presidio Santa María de Galve and Presidio Isla de Santa Rosa. When the British arrived at Pensacola in 1763, they described the woods
growing too close to the village (Coker 1999:23). The proximity of the woods could have been the result of a change in behavior (e.g., supplementing the wood with other building materials) or simply the lack of maintenance since the British also describe the poor condition of the presidio (Coker 1999:23).

Lacking one of the four characteristics of socio-ecological systems, First Spanish Pensacola was never resilient. Instead it was a non-sustainable socio-ecological system that exhibited periods of equilibrium and collapse. Yet the lack of resilience was only the most obvious factor sparking instability. By examining the relational aspects of First Spanish Pensacola, the external influences to the socio-ecological system became apparent. War in Europe and hostile raids aggravated the non-sustainable nature of the First Spanish Pensacola socio-ecological system. Sporadic situados were an indication of failed regulatory social systems that prevented critical resources from reaching Pensacola. First Spanish Pensacola portrayed colonists who were continuously adapting, but the colonial system they were trying to establish was collapsing from a variety of causes. Although the collapse of this colonial endeavor shares characteristics with collapses of other societies, there are important differences.

The collapse of complex societies is a topic that has recently been addressed by social scientists. Studies by Joseph Tainter (1988) and the popular book by Jared Diamond (2005) examine the process of collapse through the analysis of complex civilizations. First Spanish Pensacola exhibits characteristics of collapse (see Tainter 1988:4). Presidio Santa María de Galve was razed by the French while the Spanish were absent from Pensacola Bay. French colonists had captured the presidio from the Spanish but could not realize a return on their investment. However, this failure was not a case of
declining marginal returns as defined by Tainter; the French did not have the resources to create the complexity needed to maintain a settlement in Pensacola Bay (Tainter 1988:205-209). The difference between the razing of Presidio Santa María de Galve and Presidio Santa Rosa was that a “power vacuum” occurred when the French colonists left Pensacola Bay as a result of the peace treaty signed on March 27, 1721 (Coker 1999:15; Tainter 1988:202). On November 26, 1722, Spanish colonists returned to find the burned presidio (Coker 1999:15). During that short period of desertion, Pensacola Bay exemplified an event of collapse. However, it was not the collapse of a society, but the collapse of a colonial endeavor. When viewed from the scale of the entire Spanish empire there was never a power vacuum in Pensacola Bay. Despite the absence of Spanish colonists, their claim of Pensacola Bay was implicit after the peace treaty was signed. The collapse of the presidios in Pensacola Bay was merely the failure of the Spanish to establish a stable settlement in the periphery of their empire.

Analyzing the First Spanish landscape through the framework of the three landscape dimensions contextualized within a socio-ecological system provides a methodology for examining societies, including those experiencing collapse, in several scenarios. This approach can be used at a variety of scales and could answer the call for studies that lie between “grand, sweeping, general theories” and “detailed particularities of events” (Cowgill 1988:248-249). Although the potential of this approach is great, it is not without its limitations.
Limitations of the Landscape Approach

It is evident that a comprehensive assessment of the multiplicity of scales, dimensions, and landmarks that affect First Spanish Pensacola is impossible. Examining one scale, of one period, of one landmark within the Spanish Empire is an exercise that is meant to test the theories involved rather than comprehensively understand the nature of First Spanish Pensacola as a socio-ecological system. Despite this limitation, applying a landscape approach to the First Spanish Period and comparing it to the characteristics of a socio-ecological system has allowed general conclusions regarding the Spanish motivations for their actions and the sustainability of the socio-ecological system as a whole.

Theoretically socio-ecological systems are integrated units. While encouraging nomothetic approaches, utilizing Zedeño’s dimensions allows socio-ecological systems to be analyzed in distinct parts. Assessment of these parts at fine-scale resolutions allows for the understanding of the influence of each of these dimensions on the system as a whole. In order to comprehensively, and objectively, assess a socio-ecological system the particularistic assessment must occur before examining the general entity. Analysis of each of the parts also allows a broader range of comparisons to occur between cultures. Despite its benefits, a framework based solely on Zedeño’s three landscape dimensions is too simplistic for a comprehensive analysis of a socio-ecological system.

While allowing an objective examination of a landscape, Zedeno's dimensions are confined to a landscape’s somatic space. Originally described by Tilley, there are several different types of space including architectural, cognitive, and somatic space. Zedeño
disregards the complex differences between types of space. Historical aspects of landscape scratch the surface of a landscape’s cognitive space through memories of past events within a place, but this view is far from comprehensive. A finer resolution of analysis would be possible if Adam Smith's concepts of spatial perception, experience, and imagination were combined with each of Zedeno's dimensions.

For example, Spanish colonists arrived in Pensacola Bay expecting a set of characteristics they desired for a settlement location, but their perception of the area was influenced by the flawed scientific reports of rich agricultural soil and Native American settlements. Ideally, frontier presidios were to be self-sufficient in order to produce surplus goods to ship to other places in the Spanish empire. Had the Spanish realized that poor soils and fluctuating Native American populations made their chances of becoming self-sufficient slim, they may not have settled Pensacola Bay or chosen a different method to defend it. Spatial perception and imagination lacked the landscape details that are reached through spatial experience. The Spanish Crown interacted with Pensacola Bay solely through spatial perception and imagination. Lacking experience with the physical realm resulted in the Spanish Crown’s ideas such as trenching across Santa Rosa Island to drain the Bay. The fact that Spanish colonists considered executing the Crown’s impractical orders demonstrated another theoretical avenue that Zedeno's dimensions do not directly address: power relations.

Socio-ecological systems theory describes a hierarchical relation between the system’s parts, but it does not provide a way to quantify the influence one part has over another. While power relations can be manifested in the relational dimension through restricted pathways, an understanding of the relational dimension does not provide a
comprehensive idea of the spatial control and military standards embedded in the Spanish presidio’s social structure. Different power hierarchies exist within the presidios ranging from military officers to prisoners as well as between colonists and the governing agencies of other landmarks within the Spanish empire such as the Spanish Crown and Viceroy in Mexico City. These power relations hint at the inability of a landscape approach to follow individuals within a socio-economic landscape. Yet powerful individuals at the top of social hierarchies are the ones who shape certain aspects and motivations within the landscape.

Historical documents were often the only source of information on individuals within a landscape. Documents regarding First Spanish Pensacola illustrated many examples of subversive statements, often made with the purpose of pleasing the Crown. Assuming these statements were purposely written to further the author’s own position with the Crown, the act of creating these falsehoods exhibited certain characteristics of the human landscape. Jayme Franck, the engineer for Presidio Santa María de Galve, provided the most vivid example of this. Presidio Santa María de Galve was considered to be one of the least desirable places to live in the Spanish Empire. Franck’s job was to complete the fort. His false reports of finishing fortifications and blaming lack of progress on the ignorance of the soldiers who were meant to assist him indicated he was eager to keep his reputation intact so he might be able to move to a different location within the Spanish Empire (Jayme Franck, Letter to the King, 3 June 1700, AGI Mexico 618). This demonstrated that some degree of success was needed before useful members of society were allowed to travel some of the social pathways between places within the Spanish landscape.
Conversely, individuals who are detrimental to a particular landmark could be exiled to a less desirable area. Exiling prisoners from Veracruz to Pensacola removed individuals who were not contributing to a flourishing socio-economic system to a less important area of the Spanish landscape. Individuals with specialized skills were allowed a degree of freedom that others did not have. French carpenters from Mobile were allowed to assist in repairs of certain areas of a Presidio (Johnson 2003:320-321). Despite their ability to cross a relational dimensional boundary between two cultures, the hierarchical relationship within their own landscape continued to dictate their actions. They stayed past the time that they were allowed and the commander of Mobile’s army had to come and retrieve his men (Johnson 2003:320-321). The carpenters stalled for more time within the landmark of Pensacola in order to obtain a higher payment for the same work they did in Mobile. Their preference of Presidio Santa María de Galve over Mobile indicates they were willing to overlook the decrepit living conditions of the presidio for better cash payment.

Performance characteristics are only one set of factors that determine the actors’ satisfaction with place. Continuous occupation of space involves trauma, performance characteristics, and invested resources. Together these elements form the trauma threshold of a landmark. Trauma is mitigated by the performance characteristics (both the amount and importance), as well as the actors’ sense of duty, and the amount of support they receive. Trauma is increased by the type, duration, and repetition.

For example, traumatic elements were clear in the life history of Presidio Santa María de Galve. The presidio’s location provided performance characteristics necessary to the primary objective of the settlement: defend the pass from non-Spanish intrusion.
Trauma suffered by the colonists included Native American raids, malnutrition, supply shortages, disease, fires, and threats to the integrity of their fortifications from erosion. Despite these traumas the colonists had invested so many resources in the presidio that they could not justify moving to Santa Rosa Island (an area seemingly free of most of the traumas that Presidio Santa María de Galve suffered). It took the trauma of war, and the destruction of the fortifications that they had invested so much in, to justify the relocation of the presidio from one location to the other. This moment in time had the balance of the trauma threshold shifted by having all of their invested assets removed from the picture. Traumatic factors outweighed the performance characteristics of Presidio Santa María de Galve.

Presidio Santa Rosa had many of the same performance characteristics that its predecessor did and it lacked a history of traumatic events. This allowed the settlers to reinvest resources in hopes that traumas encountered at Presidio Santa María de Galve could be avoided in the future. The colonists were protected from the hostilities that plagued the previous settlement. However, hurricanes in 1740 and 1752 caused massive damage to the presidio easily overriding the trauma threshold and prompting the colonists’ return to the mainland.

The location of Presidio San Miguel de Panzacola was selected based on the colonists’ experience with the previous two settlements. Performance characteristics, including slightly elevated land, abundant fresh water, access to mainland resources, and distance from the Gulf, made the location particularly attractive. However, the presidio experience traumatic events including hurricanes and the threat of Native American
attacks, but neither resulted in the destruction of the settlement. Presidio San Miguel had not reached its trauma threshold when it was transferred to the British in 1763.

**Conclusions**

This research traced the theoretical development of space and applied the concept of socio-ecological systems to First Spanish Pensacola. By examining Zedeño’s dimensions within the spatial and temporal limits of First Spanish Pensacola, it became apparent that isolating the research area was impossible. This research demonstrates how integrated a landscape is with other entities distantly related, both physically and ideologically, to the research area. By examining the dimensions separately, motivations for the colonists’ actions could be explored and aspects of First Spanish Pensacola that contributed to its collapse could be identified.

Historical documents allowed the role of individual actions within the landscape to be described. Once integrated into the research framework, information from the documents allow an individual’s actions to reveal causal factors within the formal, relational, and historical dimensions of the landscape. By understanding the role that each dimension plays and the qualitative characteristics that affect each one, analogies may be drawn between the First Spanish Pensacola landscape and similar landscapes that lack historical records in future research.
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