FAUNAL REMAINS AS MARKERS OF ETHNIC IDENTITY: THE PHILADELPHIA HOUSE AS A CASE STUDY OF GERMAN-AMERICAN ETHNICITY

A Thesis

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THE PHILADELPHIA HOUSE AS A CASE STUDY OF

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A Thesis

by

Jennifer Marie Muñoz

Fall 2011

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DEDICATION

This thesis is dedicated to two people.

For Tad, my greatest champion, my best friend, my light and my love. You taught me how to restore faith in myself when I needed it the most. You have seen me at my best and my worst, and yet you still stand beside me, supporting me with the kind of maturity and optimism that I did not known could exist in a single person. Thank you for always believing in me, and for supporting my thesis work with the patience of a saint.

And to my Mookie, my sweet mom. By your example, I have learned that a mother's love for her daughter transcends even the greatest hardships that life can present.

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For the last three decades, zooarchaeologists have been fairly successful in utilizing the faunal remains from historical archaeological sites to provide insights into the socio-economic status and ethnicity of those groups of people who generated each faunal assemblage. Most zooarchaeological studies on ethnicity have focused on those groups of people considered to have minority status, with little attention paid to those thought to be part of the mainstream majority. This study utilizes the faunal assemblage from a late 19th century historical site from Sacramento, California known as the Philadelphia House to expand upon the available literature on socio-economic status and ethnicity.

The Philadelphia House, which for most of its existence was operated by and catered to German immigrants, provides a wonderful opportunity to examine anthropological and zooarchaeological perspectives on an ethnic group long treated as a mainstream, majority group, and thus not likely to be easily recognizable in the archaeological record. The German immigrants who settled in early Sacramento however, created their own neighborhoods and businesses, and established institutions such as the *Turn Verein* through which they could maintain traditional beliefs and customs. It was thus hypothesized that the faunal assemblage from the Philadelphia House would reveal patterns that could be attributed to socio-economic status as well as German-American food preferences.

Using a conjunctive approach that included an analysis of anthropological perspectives on immigrant ethnicity combined with the history of German immigration into California, a traditional zooarchaeological analysis of species and meat cut frequencies as compared to similar sites in Sacramento, and a cookbook analysis of traditional German cuisine, it was found that faunal specimens could indeed by used as indicators of German-American ethnicity. The results revealed that in terms of beef cuts, the Philadelphia House assemblage was significantly different from the Sacramento City Jail site, Hannan's Saloon, Klebitz and Green's Saloon, and the Golden Eagle Hotel. The meat cuts with the highest frequencies identified for beef, pork, chicken, and rabbit corresponded well to the frequencies of these cuts as they appeared in German cookbooks. One unanticipated discovery was a relatively high frequency of sheep or goat specimens, which may be a reflection of dietary preferences,

socio-economic status, or a possible business relationship with German immigrant sheep ranchers within the Sacramento area.

CHAPTER I

ANTHROPOLOGY AND ETHNICITY

Introduction

The study of ethnicity in anthropology, and particularly in zooarchaeology can provide significant opportunities for investigating how ethnic identity is preserved in the archaeological record. This is especially true in the historic archaeology of the United States, where over 100 different ethnic groups established a homeland with unique opportunities for the formation, maintenance, and alteration of their cultural identities.

The field of anthropology has generated many avenues for exploring the issues surrounding ethnicity, but my interests lie in those paths founded in archaeology, and specifically within zooarchaeology. Archaeological studies on ethnicity have focused on finding connections between cultural material and the ethnic groups who created them. For example, Priscilla Wegar's (1991) study of rock-dome ovens associated with railroad sites in the United States showed a correlation between oven construction and Chinese-American ethnicity. Studies have focused on cultural material such as pottery, lithics, basketry, and faunal-based food remains to indicate how the decisions made regarding material choice and style. In the case of faunal remains, food preferences can be reflections of cultural and ethnic identity.

The belief is that groups of people with distinctive identities will tend to maintain traditions they consciously or subconsciously regard as significant, and that

these traditions will be manifested in the archaeological record in such a way as to make it possible to distinguish between ethnic groups. One of the strongest cases that can be made for a correlation between material culture and ethnicity can be found in the field of zooarchaeology–specifically those studies focusing on how faunal remains may be used as indicators of ethnic-based food preferences.

While it is true that foodways (a group of peoples' dietary preferences and their cooking, serving, and consuming techniques) can certainly be flexible, and often need to be whenever ethnic groups encounter changes in the availability of preferred resources, there is a case to be made for the enduring qualities of traditional cuisines. This is especially true for those groups of early immigrants in the United States, who faced social, political, and economic challenges that often drove them to establish even greater ethnic ties than may have existed in their homelands. I find this situation to be particularly intriguing, because by focusing on the situation faced by America's early immigrant populations, we may be able to develop a greater understanding of how ethnic identities were formed, maintained, and altered during the 19th century.

Anthropology and Ethnicity

The concept of ethnicity has altered over time in meaning and use. The term "ethnicity" comes from the Greek word "*ethos*," for which there is no direct English translation. Its earliest known use occurred in Homer's *Iliad* as "ethnos," used to describe "large and undifferentiated groups of either animals or warriors" (Chapman et al. 1989:12). In later uses it came to signify "others," thus establishing, at least in a general sense, an "us" and "them" duality. "Ethnos" was succeeded by "gentile" or "gentilis,"

used to denote a pagan or non-Christian. It retained this meaning until the mid-nineteenth century when “ethnos” became a word used by scholars to describe groups of people with shared characteristics (Chapman et al. 1989:14). Although the term “ethnos” has not become part of commonplace English, “ethnic,” “ethnography,” and “ethnicity” have, as part of the discourse on the issue of “race.” Ethnology, in fact, was initially the study of races (Chapman et al. 1989:14; Fesler and Franklin 1999:1). Over time (and because of its painful relationship to racial doctrines), scholars began avoiding the biological implications of a term such as “race” in favor of “ethnic group,” which tended to relate more to cultural and geographic boundaries.

Chapman et al. (1989:15) stated that it is not surprising that “social anthropology should have found ‘ethnicity’ consonant with its ambitions and wishes, since an appetite for significant difference has always been present in the anthropological project, even when this has been disavowed.” This “appetite” for significant difference has turned “ethnicity” into an abstract noun that makes the most sense in a context of relatives involving the processes of identity formation. Despite its ambiguity, “ethnicity” has come to be used as both an analytical concept and as an attribute of identity at both the individual and group level.

Although it is my belief that future anthropological works regarding ethnicity will focus on similarities as well as differences, it is unfortunate that the emphasis placed on cultural uniqueness has focused so heavily on groups with minority status. Such a status creates the illusion of a small, stable community of individuals little influenced by the surrounding population. It is also unfortunate because a focus on minority groups has meant the treatment of large nations of people such as Germany as an undesirable and

unlikely subject for study. As Chapman et al. (1989:20) stated, however, “no area of collective representation, European or otherwise, needs to be considered outside the bounds of anthropological interest.”

Regardless of who the favored group of interest may be, utilization of the concept of ethnicity in anthropology is as varied as the individuals who make use of it. Several of the primary tenants in early anthropological literature that characterize the identification of ethnicity include the following: sharing fundamental cultural values and traditions; biologically self-perpetuating; geographically bounded; communication and interaction, and; consciousness of a specific identity that is also recognized by others (Banks 1996:12). Taken in any combination, these tenants characterize fairly well the majority of the anthropological definitions of “ethnicity.” In 1969 however, Fredrik Barth (a well known Norwegian anthropologist) and colleagues published *Ethnic Groups and Boundaries*, which reflected on the flaws inherent in these features. Barth, whose work became the core for much of anthropological teaching on ethnicity throughout the 1970s and 1980s, pointed out that these features of ethnicity are *a priori* assumptions. Barth posited that ethnic groups are social constructs subject to environmental constraints, and that greater attention should be paid to the boundaries of a group. He saw a correlation “between the physical boundaries of a population and the conceptual boundary of its ethnic identity” (Banks 1996:14), and urged a movement away from discussions that focused on the content of ethnic identity. This content took two forms of ethnic markers: diacritical (such as language, food, and dress), and value orientations (such as social norms) (Barth 1969:17). Barth saw both of these types as a hindrance to the recognition

that the individual, choice, and situational context are all significant factors in the construction of an ethnic identity.

For Yulian Bromley—a Soviet primordialist anthropologist and contemporary of Barth—ethnicity was viewed as a stable core that persists, despite changing economic and political environments, through all levels of social formation. The trick, however, is to find the most typical features of this core (Banks 1996:18). The primary problem with Bromley's characterization of ethnicity is that it assumes prevailing psychological traits and a uniformity of consciousness differing from other, similar groups of people. It also assumed that this "stable core" is the mere sum of specific features and traits.

Although predating at times Bromley and Barth, members of the Manchester School (Max Gluckman, Philip Mayer, Abner Cohen, A.L. Epstein, etc.) tended to utilize a "laundry list" type of analysis for discussing material and cultural differences between two ethnic groups. Gluckman warned, however, that such differences are likely situational, and stressed the significance of context and boundary maintenance (Banks 1996:27-28). Mayer stressed the importance of choice as a factor in the creation and adoption of an ethnic identity. Cohen, in his 1969 study of Hausa migrants, proposed that economic and political reasons, rather than psychological reasons, are behind the creation and maintenance of an ethnic identity (Banks 1996:33-36; Cohen 1969:27). His "political ethnicity" is similar to instrumentalist characterizations of group behavior: "individuals join ethnic groups or social coalitions when it is in their interest to do so" (Neiman 1999:139). And Epstein, in his 1978 *Ethos and Identity*, described ethnic identity as a form of "terminal identity" by which an individual embraces any number of statuses, roles, or identities, and thus must be viewed objectively and subjectively (Epstein

1978:38, 101). He does point out, however, that although the adoption of a particular identity may appear to be situational, this does not mean that ethnicity has an aim or agenda in order to be active (Banks 1996:37).

In *Ethnicity: Theory and Experience* (1975), Glazer and Moynihan discussed ethnicity as a social fact and a product of the modern world. Brackette Williams (1989) appeared to agree, stating that "ethnicity" is a confusing term only because it is important in the modern world; it's very ambiguity is what makes it so powerful (Williams 1989:426). It is Carter G. Bentley's (1987) incorporation of P. Bourdieu's praxis theory with his own beliefs about identity formation that provides a particularly intriguing analysis of the concept of ethnicity. In *Outline of a Theory of Practice* (2003), Bourdieu recognized what he called '*habitus*' as the central attribute of ethnic identification. Habitus is described as the "complex of unconscious habitual action and behavior towards the world" (Banks 1996:45) that is generated through a group of individuals' shared world experiences.

Like Epstein, Bourdieu did not believe ethnicity to be goal-oriented, and viewed habitus as changeable—especially from generation to generation—whenever the material and economic conditions of life change. Contrary to Barth, Bentley contended that the content of an ethnic identity (generated through changing, shared world experiences) is just as significant as the boundary around it (Banks 1996:46). Intriguing as the Bentley-Bourdieu perspective on ethnicity may be, it lays too much importance on the "objective conditions" or activities of the ethnic group, with little regard to the group members' own definition of their identity (Banks 1996:46).

There are those in anthropology—particularly in symbolic anthropology and the German school of phenomenology—who find identity and ethnicity to be inaccessible, unless it is from oneself or one's own society. And although I do believe that we must be especially careful and respectful when attempting to understand a group of people's beliefs and traditions, it is an extremely worthwhile and necessary endeavor. I find that I hold with Klejn and M. Leone, that this view from symbolic anthropology—which extends to all living people, past and present—is "pernicious because it is unproductive. Its relativism is paralytic" (Leone 1978:665).

These are powerful words, and are not meant to downplay the significance of maintaining cultural relativism and reflexivity. Without cultural relativism, anthropology runs the risk of destroying its very foundation. It is my intention to show that we can have the best of all theoretical perspectives. It is unlikely that we can reconstruct a "metal template" for past and present groups of people (Leone 1982; Mithen 1995), however perhaps it is possible to reconstruct patterns of past lifeways that can provide us with meaningful data about ethnicity as a form of individual and group identity. One way to do so is provided in the field of archaeology, and especially in zooarchaeology.

Archaeology and Ethnicity

Archaeology has struggled with the concept of ethnicity just as much as any field in anthropology. As Neiman pointed out, prehistoric and historical archaeologists alike question how we can "make inferences about the character of the larger social strategies in which the artifacts we excavate functioned" (1999:140). Can similarities between artifacts and artifact assemblages be assumed to be the product of individuals

with common (though often situational) cultural descent? Although archaeologists certainly recognize that any number of reasons may account for homologous cultural material (trade, diffusion, and independent invention, to name a few), the belief that these similarities are a reflection of cultural and ethnic continuity is still prevalent.

Inherent in archaeological studies of ethnicity is the assumption that the beliefs and values of a particular ethnic group will be "visible" among their cultural material as a symbolic expression of their common identity. Such artifacts and artifact assemblages can help identify not only specific ethnicities, but cultural and socio-economic changes as well, and have come to be known as "ethnic markers."

Although ethnicity has been the focus of many professions—namely anthropologists, historians, and social scientists—historical archaeologists in particular have made great advances in showing that material culture can indeed be utilized to reveal patterns of ethnicity. This is especially true for groups such as the Chinese (Langenwalter 1980; Simons 1984; Sisson 1993; Wegars 1991) and African-Americans (Crader 1984; Crader 1990; Fountain 1995; Singleton 1995; Steen 1999; Wilson 1964) who E. Staski noted "exhibit the behavior and cultural distinctions of their ethnic identity, as well as the physical distinction of their race, and as a result are easily recognizable minorities" (Nettles and Hamilton 2005:26; Staski 1990:125). Putting the stereotype of physical distinctions and the fact that "minority" is a relative term aside, discrimination and segregation from mainstream culture are and have been realities among many ethnic groups. These prejudicial social processes appear to have resulted in ethnic patterns that are highly visible in the archaeological record.

Yet as Nettles and Hamilton (2005:26) have noted, other groups, namely European immigrants, have received very little attention from archaeologists. In his 1982 article "The Study of Ethnicity in Historical Archaeology" McGuire noted that perhaps the "melting pot" is an inappropriate analogy for the ethnic relations of American society. He seemed to suggest that there are certain aspects of ethnic identity that transcend the process of assimilation usually associated with United States history.

The 1980 compilation *Harvard Encyclopedia of American Ethnic Groups* listed more than one hundred ethnic groups in the United States alone (Thernstrom et al. 1980). Considering that over 30 years have passed since this listing was published, one can only imagine the number of groups today who claim to have a distinctive ethnicity. As discussed previously, there are likely as many (if not more) definitions of ethnicity as there are ethnic groups. Complex as the debate may seem, it generally boils down to two schools of thought: primordialism and instrumentalism/circumstantialism. Primordialist's tend to "acknowledge the core of ethnic attachment to be ineffable, emotional sentiments or psychological bonds between people centered on blood ties" (Fesler and Franklin 1999:2) and tend to have biological deterministic leanings. Instrumentalists on the other hand, find ethnicity to be a malleable, often situational manifestation of culture alone. Although it may be said that my thesis takes on a more instrumentalist perspective, I tend to hold with Fesler and Franklin (1999:2) and McGuire (1982) that it is much more meaningful and important to ask questions about how people in the past constructed and utilized ethnic identities, rather than trying to pigeon-hole them into our own, inflexible definitions. They also suggested that because all material culture is bound to have ethnic overtones, a one-to-one correlation between artifacts and ethnicity is impossible, and

therefore “ethnic markers” can better serve to raise questions about the creation and maintenance of ethnic identity.

Although my focus is on food remains and foodways as markers of ethnicity, I hope to show that an analysis of historical, social, and economic factors that impact the production of material culture can be utilized in combination with ethnic attributes, and need not lead to the drawing of a false boundary around a particular group of people. One way to do so is through the theoretical and methodological frameworks established in the field of zooarchaeology.

Zooarchaeology and Ethnicity

Zooarchaeology is an interdisciplinary field which seeks to better understand the relationship between humans and their environment, “especially between humans and other animal populations” (Reitz and Wing 1999:1). In general, zooarchaeological research can be broken down into two overlapping goals: to understand the relationship between the biology and ecology of animals, and to more fully understand human behavior.

Early zooarchaeological and archaeological research focused on classification and description (19th century), cultural history (early 20th century), and context and function (late 20th century), with cultural ecology and ecological anthropology dominating more recent research (Reitz and Wing 1999:15-27). Other, related zooarchaeological orientations include methodological, biological, and anthropological research. Although methodological and biological questions are certainly taken into

consideration, it is from the anthropological concern with social status and ethnic identity that this thesis seeks to follow.

Many zooarchaeological studies focus on the relationship between humans and animals in subsistence strategies, particularly in relation to energy, nutrients, and other benefits provided by animals as resources. Understanding the subsistence strategies required to ensure that costs did not exceed benefits also requires an understanding of the differences between nutrition, menus, diet, and cuisine. Nutrition is a measure of the "physiological adequacy of a diet in terms of basic biological requirements for growth, repair, and reproduction" (Reitz and Wing 1999:239). Menus refer to the foods available (regardless of whether or not they are actually eaten), whereas diets are the foods actually consumed. Cuisines, on the other hand, are the result of choices made regarding the ways in which foods are "produced, distributed, prepared, and served" (Reitz and Wing 1999:239). Although nutrition, menus, diet, and cuisine all involve elements of cultural beliefs and choices, cuisine seems the most likely to yield data about identity formation and maintenance, especially ethnic identity.

Zooarchaeological studies recognize that status, ethnicity, and belief systems are tightly integrated aspects of social life. Because these aspects of social identity tend to overlap, any attempt to segregate them creates artificial boundaries, resulting in "laundry list" type analyses. This is particularly the case with studies attempting to define strictly "ethnic" reasons behind patterns observed among artifact assemblages. For zooarchaeological studies, this could mean a one-to-one correlation between a particular ethnic group and their food-related faunal remains. There are significant factors working against the notion that such a tight correlation can exist. To name a few: taphonomic

variables affecting faunal preservation; availability of resources; cost and consumer choice; individual choices and preferences; urban vs. rural settings affecting the location of food consumption; household structure and; differential preservation of non-faunal food remains.

Many of these fall into what Schmitt and Zeier (1993:22) call systemic, structural, and consumer-related variation. Systemic variation–or "market variables" (Singer 1987:87)–refers to the local availability of foods, and include the following variables: seasonal variation; changes in prices; changes in cost of transporting goods, and; short-term fluctuations in availability (Schmitt and Zeier 1993:22). Structural variation refers to the places where foods are prepared and consumed. Structural variables include: places where meals are prepared regularly, such as restaurants, boarding houses, and group or individual dwellings; dwellings where meals are prepared infrequently, and; dwellings where no food preparation takes place (Schmitt and Zeier 1993:23). Consumer-related variation refers to the "differing individual, family/group, or commercial strategies regarding foodways. These strategies would have been influenced by the types of cuisine served at restaurants or boarding houses, ethnic patterns of food choice or preparation, the economic status of the group or individual, or the occupant's time investment in food preparation" (Schmitt and Zeier 1993:23).

Although patterns visible from analysis of meat cuts are often associated with cost and socio-economic status, Schmitt and Zeier (1993:24) noted that these patterns, including meat types or cuts, the use of a "limited variety of meat types" and/or the use of exotic or imported taxa, may actually reflect behavior associated with ethnic consumer choices. This suggests that if the systemic and structural variables can be controlled or

accounted for, (i.e., through comparative analysis of households or businesses occupied by groups similar in composition), then one might be more clearly able to assess consumer-related variability (Singer 1987:87).

In his 1984 study of the avifaunal remains from a 19th century Chinese Laundry in Woodland, California, D. Simons focused primarily on consumer-related variables. Through the use of faunal spectrum analysis and the study of butchering patterns, Simons showed that distinctive foodway patterns could be identified among Chinese immigrants; patterns that reflected socio-economic as well as ethnic diet and food preparation choices (1984:167-172).

One of the most effective analyses of faunal remains as markers of ethnicity is Langenwalter's (1980) study of the mid-nineteenth-century Lower China Store in Madera County, California. His analysis of the faunal remains showed a clear distinction between cleaver-butchered pigs, and saw-butchered cattle and sheep, reflecting distinguishable Chinese and Anglo-American butchering patterns, respectively. In contrast, Schulz and Gust's (1983a) study of four nineteenth-century sites in Sacramento, California, revealed faunal patterns that were a reflection of social and economic status, rather than of ethnicity. The same is true for D. Crader's (1984 and 1990) analysis of slave diet from Monticello.

Despite the difficulties zooarchaeologists have had establishing a link between faunal remains and ethnic identities, cultural anthropologists have shown that there is a strong link between food habits and ethnicity (Beardsworth and Keil 1997; Caplan 1999; Goodman et al. 2000; Mintz and Dubois 2002; Pottier 1999). C. St. Pierre's (2006) analysis of the faunal remains from the St. Lawrence Estuary in Quebec, Canada

combined an understanding of seasonality, subsistence patterns, butchering patterns, and ethnoarchaeology to show a strong correlation between faunal remains and the St. Lawrence Iroquoians. She warned however, that perhaps a correlation can only be established for very specific cases (St. Pierre 2006:5).

A thorough analysis of historical documents, archaeological evidence, and comparative studies may work to establish a more formidable relationship between choices associated with nutrition, diet, and cuisine, and ethnicity. Robert Jolley (1983) suggested that historic documentation is one of the most valuable tools than can be utilized by historic sites archaeologists. “Historic documentation can be used as a check on the real versus the ideal; written records often reflect what people should have done, not necessarily what happened” (Jolley 1983:69). Their use can help establish stronger cultural inferences from faunal assemblages such as ethnicity, and social and ideological systems, as well as political factors, leisure time, food taboos, and cultural preferences for food preparation (Jolley 1983:71-72).

Keeping this in mind, the use of faunal data in the archaeological study of ethnicity could come to represent an example of W.W. Taylor’s (1983:7) “conjunctive approach” to archaeological interpretation, “where multiple lines of evidence are brought to bear on a single question” (Crabtree 1990:171). By using a combination of historic documentation, faunal data, and comparative studies, one fundamental problem that this thesis will address is determining just what kinds of faunal data are most likely to reflect ethnicity. For example, species ratios, body part frequencies, methods of butchering, methods of cooking, and aging evidence may be linked to social and economic status, as well as to ethnic identity.

Schuyler (1980:vii) noted that "two of the most critical problems [facing contemporary archaeology] are those of defining ethnicity and recognizing it in the archaeological record." This is especially the case in plural societies where the definition of ethnicity involves the ongoing maintenance of traditions and identities (Crabtree 1990:177). However, as Hesse (1986:17) noted, "foodways are resilient and conservative elements of human cultures. They can be as distinctive a marker of ethnic identity as any other element of material remains."

There are those who believe that using faunal remains as markers of ethnicity (or using any type of material culture) is not only impossible, but perhaps self-defeating and reductionist (Fesler and Franklin 1999:7) because it tends to create content-based descriptions of particular ethnic groups (Barth 1969). These content-based descriptions are often viewed as little more than yet another attempt at creating a classificatory system for pigeon-holing people. Although there are certain truths to these viewpoints, it is not one of the goals of this thesis to establish a mathematical proof (*if* n meat cuts + n butchery patterns, *then* German) for "German-ness." A pure, distilled formula for what constitutes German, or German-American ethnicity does not exist. Nevertheless, I hope to show the significant role that an ethnicity-based faunal analysis can play towards a greater understanding of late 19th century California immigrant identity formation and maintenance.

The Philadelphia House: A Case Study

My interests in immigrant ethnicity and identity formation, especially as revealed within foodways and food preferences, lends itself to the zooarchaeological

study of faunal remains as markers of ethnicity. However, many analyses of ethnicity have tended to focus on minority groups (Langenwalter 1980; Simons 1984) due to the belief that these groups are somehow smaller and more isolated from majority traditions, and thus more likely to have generated more distinctive cultural material. Problems with this way of thinking will be discussed later. For now, suffice it to know that I find this an inaccurate portrayal of America's ethnic groups. I think it is very worthwhile to perhaps shift gears, and take a look at those groups often pigeon-holed for their size as being without an ethnicity. The case of the Philadelphia House presents just such an opportunity.

The Philadelphia House was a late 19th and early 20th century boarding house, saloon, and restaurant established in Sacramento, California. Its location within the JK89 (J and K, 8th and 9th streets) block placed it squarely within a neighborhood structured around Sacramento's German immigrant population. Though it changed hands frequently, the Philadelphia House was for the most part, operated by German immigrants, and catered to blue-collar German immigrant workers.

During its existence as the Philadelphia House, the building's basement was utilized as an area for the disposal of refuse, much of which preserved in the form of faunal remains. The building was demolished in the 1930s, although the contents of the basement remained relatively intact. In 2004, Tremaine and Associates, Inc. (TREMAINE) excavated what was once the Philadelphia House's basement, and recovered nearly 14,000 faunal specimens that eventually came under the guardianship of CSU Chico's Archaeology Laboratory.

Identifications were made on a small sample of the faunal collection by Melanie Beasley for by TREMAINE, yet the bulk of the material remains unexamined. The faunal collection as a whole presents a perfect opportunity for examining the possible relationship between the Philadelphia House's food-based faunal remains and German-American immigrant ethnicity. Often considered to be far too large a group to have a distinctive ethnicity, the United States' early German-Americans have been treated as a majority tradition, one without material culture that can be recognizable as "German." An examination of the history of German immigrants in America reveals this to be far from the truth; Sacramento's early German immigrants often found themselves outside of the majority Anglo-American ways of life, and at times were treated as minorities (Terry 2005).

My Hypothesis

Early in U.S. history, German immigrants were numerically a minority, with distinctive customs and communities. Since their arrival the traditions and knowledge they brought to this country have become widely adopted, and are often no longer recognizable as "German." What then, constitutes German ethnicity in America? Is German ethnicity distinguishable in the archaeological record, and more specifically, within faunal-based food remains? In particular, knowing that the Philadelphia House was established by German-born immigrants and catered to blue-collar German immigrant workers, can the over 7,000 unidentified faunal remains from the remainder of the Philadelphia House basement/cellar be utilized as markers of German/German-American ethnicity? With the focus being on the latter, these are the questions and issues

that this thesis hopes to address. Generally it may be expected that the Philadelphia House faunal assemblage will perhaps reflect foodways thought to be German in origin; for example, stereotypes for German cuisine include a high frequency of pork, beef, and rabbit dishes that utilize all portions of the animal, and a smaller proportion of lamb/mutton and fish dishes (Scharfenberg 1989; Simms 1967; Smith 1990; Weaver 1983). Simply stated, my hypothesis is as follows: Analysis of the faunal remains recovered from the Philadelphia House will reveal patterns not explicable by socio-economics alone, but by ethnicity and patterns of German-American cuisine as well.

Thesis Organization

This thesis is organized into eight chapters, with Chapter II focusing on the historical and archaeological context, highlighting the history of German immigration into America–specifically to California–as well as the role German immigrants played in the creation of Sacramento. Chapter II also focuses on the historical context of the Philadelphia House, including boarding house and hotel life, and the proprietors who maintained the Philadelphia House in the "best German style." Chapter III provides an application of the theories on ethnicity as they apply to the question of German ethnicity in late 19th century California. Chapter IV is an application of zooarchaeological theory, including discussions on meat cuts, meat cut ranking, units of analysis, and comparative zooarchaeological studies. The following chapter delves into the specific methodology utilized to establish a workable data set from those faunal remains not examined by TREMAINE. Chapter VI then discusses the results of the data set analysis, particularly the faunal identifications (species, age, etc.), the meat cuts identified, and any patterns

revealed (such as butchering patterns), especially those that could relate to ethnicity and socio-economic status. This is followed by Chapter VII, which attempts an interpretation of the patterns visible from the faunal remains. My interpretations combine a traditional zooarchaeological analysis of the meat cuts with a comparison to traditional German cuisine as well as to comparative zooarchaeological studies such as Schulz and Gust's analyses of the Golden Eagle Hotel. The final chapter—Chapter VIII—concludes with a discussion on the limitations presented by this thesis and the potential for future research.

CHAPTER II

HISTORICAL AND ARCHAEOLOGICAL CONTEXT

Introduction

In her review essay "The Tangible Past: Historical Archaeology in Cities" (2007:633), Rebecca Yamin stated that "the most extraordinary thing about urban archaeology is that there is anything at all left to find." Early American archaeologists—professional and amateur alike—focused their attentions almost entirely on the prehistoric past. Their focus often led them to dig right through the eighteenth- and nineteenth-century archaeological deposits. Even when urban cities were the object of study (as with classical world archaeology), the focus had primarily been on the world of the elites. Looking into the common people of an urban environment is still relatively new, perhaps because it does not have the "exotic" appeal that studying the upper class has had, or perhaps because the lives of common folk are not as well documented historically. In any case, as Yamin stated, "there is no more powerful way to confront the reality of the past than in the presence of its physical remains" (2007:636).

Eighteenth- and nineteenth-century everyday life is not something that is well documented, although a collaborative use of the historical documents available and an analysis of the physical remains is bound to provide new insights into the ways people negotiated early urban city life. The historical and archaeological context of the

Philadelphia House provides a wonderful opportunity for just such a collaborative effort, particularly as it relates to the everyday lives of Sacramento's earliest historic residents.

Before an analysis can be made of the Philadelphia House and its historical and archaeological contexts however, it is important to establish a better understanding of the history behind German immigration in the United States, in California in particular, and especially the role they played in the establishment of the City of Sacramento. This is then followed by a discussion of the German element in 19th century Sacramento, the function of boarding houses, saloons and restaurants in establishing ethnic identities, and finally, the archaeological and historical context of the Philadelphia House itself.

Germans in America

It is unknown when the first individual of German ethnicity may have arrived in North America. What is certain is that their reasons and motivations were many, and often related to conditions in Germany. These conditions, including political unrest, compulsory military service, religious discontent, and declining economic factors, were greatly magnified in 1814 following the fall of Napoleon. German national patriotism grew intensely during Napoleon's reign and the fight against France, and the reorganization of Europe by the Congress of Vienna followed France's defeat. The Germanic Confederation created by the Congress received little support from neighboring states however, and the unfulfilled promise of a liberal constitution caused large numbers of people to leave Germany (Hammond 1920:1-2).

On March 13, 1813, the *Landwehr* and *Landsturm* were established whereby every man between ages 17-49 was made liable for national service. Compulsory service

was only supposed to last for the duration of the war. In 1814 it became a permanent institution by law, causing much discontent (particularly in southern Germany), and an additional reason for migration from Germany (Hammond 1920:5). Meanwhile, reports in praise of the United States were being received in Western and Central Europe; so influential were the reports that several German states such as Hessia, Baden, and Bavaria either prohibited or hindered emigration, while others such as Wurtemberg left their population to make their own decisions (Hammond 1920:6).

Religious discontent was another factor prompting emigration. Protestant persecution and attacks on religious liberty throughout the 19th century led many to leave the country in search of the freedom to worship promised by America. Religious sects such as the Rappists (named for their leader, priest Johann Georg Rapp) who settled in Pennsylvania, found a ready home in America.

Harsh economic conditions also led Germans to seek a new environment within which to settle. Cold winters, increases in taxes to restore war damages, the introduction of new restrictions by lords and princes, combined with devastating crop failures from 1815-1819 created an emigration exodus (Hammond 1920:8). This was particularly the case in the southern states (and especially among the poor), although by 1817 the desire to emigrate had spread throughout the country. Between May 1st and May 15th of 1817, 5,517 emigrants left Mainz, and another 4,000 left Baden; over 16,000 people left Wurtemberg during the same year (Hammond 1920:8). Between 1817 and 1818, over 60,000 people had left Germany. It was not until 1819, when crop failures and harsh winters subsided that the flood of emigration diminished to 20,000 individuals.

Mass emigration began again in 1825 due to crop failures (such as rye and potatoes) and the flooding of the Rhine. By the fall of 1830, political, religious, and economic discontent led several Germans to publish a pamphlet contrasting the miserable state of Germany to the wealth, abundance, opportunity, and freedom of choice available in America (Hammond 1920:10). This appealed to many German citizens, particularly poor agriculturalists. After the failed revolutions of July 1830, the appeal for exodus extended to the upper classes as well. By this time, emigration shifted from primarily southern Germany to northern Germany. From 1832-1840, an annual average of 11,000 persons sailed from the port of Bremen, the primary location for embarkation; between 1841-1846, the average increased to 19,000 (Hammond 1920:13). George Hammond, whose Master's Thesis focused on German interests in California prior to 1850 stated that in eleven years, "418,252, not including those not listed as 'German' and those who sailed on small ships" emigrated from the Bremen port alone (1920:13).

The first great wave of German immigration to the United States occurred between 1843 and 1860, when continued economic and political pressure pushed 1.5 million Germans to the U.S. The U.S. census report for 1860 listed 66 percent of these German immigrants as having resided in southern and western Germany, with another 15 percent from the Prussian Rhineland (Nadel 1990:18). Following continued war tensions in Europe and the end of the Civil War in the United States, many more Germans fled to America to avoid compulsory service.

The second great wave occurred between 1865 and 1878, when over one million German immigrants arrived in the United States. Unlike the first great wave, only 25 percent came from southern and western Germany. A third wave between 1880 and

1900 brought nearly 1.8 million Germans to America, although by 1880 the census takers no longer recorded where in Germany the immigrants had come from (Nadel 1990:19). This is unfortunate for a number of reasons. Prior to 1880, a correlation could be made between the origins of the individuals and their choice of destination. For example, individuals who had been farmers in Germany tended to settle in rural farming areas, usually in the Midwest. They were also drawn by kinship ties and by the routes followed by earlier immigrants, who established labor pools and social networks, allowing future immigrants to settle in groups.

Germans in California

How many of these individuals settled in California is unclear. What is known is that a German presence may have existed in California as early as 1711, when German Jesuits led by Eusebius Kino urged the northward extension of the frontier between Sonora and California (Gudde 1927:5). By 1760, the majority of the Spanish missions in southern California were in the hands of German Jesuits. In 1767, a prohibition against the Jesuit order put an end to their work; the following three decades were “the only time the German element did not play a prominent role in California history” (Gudde 1927:7).

Most historical texts dealing with early, non-native exploration into California focus heavily on the Spanish and Russian presence, with little mention of Germans. This is unfortunate because it was due primarily to the reports written in the early 1800s by German scientists and explorers that California came to be viewed as a land of promise. The first two reports on northern California were by Alexander von Humboldt and Robert Shaler in 1804 (Gudde 1927:7). Despite the fact that he never set foot on California soil,

von Humboldt's *Political Essay on the Kingdom of New Spain* is believed to have greatly enhanced German interests in California (Hammond 1920:ix).

Many of the first known Germans in California were under Russian employ; the same vessel that in 1812 brought Russians to settle Fort Ross brought with them M. von Schmidt of Germany, the fort's second governor (Hammond 1920:9). Perhaps their employment by the Russians and Spanish has masked the influence Germans have had in the settlement of California. Regardless, the influence was widespread. For example, merchant Heinrich C. Virmond—a Rhinelander by birth—instituted the first regular passenger and freight service along the Pacific Coast (Gudde 1927:x; Hammond 1920:9).

German immigrants in California tended to settle in groups; "they [had] a purpose in thus holding together. It [had] always been their great hope and ambition to found a German state somewhere in America" (Hammond 1920:22). In the 18th century they put their efforts into turning Pennsylvania into a "German state." Their attempts to put the German language into the courts and schools were however, defeated in the legislature (Hammond 1920:23). Following this defeat, newspapers such as Pittsburg's *Adler des Westens* and Philadelphia's *Alte und Neue Welt* worked to promote the West, particularly California, as the new German state.

In Germany, California guide books continued to be published, directing German emigration to and settlement of Upper California. These included Hannah Kunzel's 1848 *Obercalifornien,* Captain B. Schmoelder's *Neuer praktischer wegweiser fuer auswanderer nach Nord-amerika,* Bromme's 1846 *Rathgeber fuer auswande rungslustige* (the first book to deal exclusively with California as the objective of German

emigration), and Oswald's 1848 *Californien und seine Verhaeltnisse* (Hammond 1920:25-38).

The Gold Rush was an obvious draw as well, but the vast number of people it brought virtually extinguished many of their attempts at turning California into a German state.

The Creation of Sacramento

The Spanish entered the Sacramento Valley as early as 1808, when Moraga and his soldiers named the Sacramento and American rivers. However, they and subsequent Spanish explorers did not establish a settlement. "Trappers and mountain men explored the Sacramento Valley as early as 1826, leading the way for Euroamerican settlement along the Sacramento River" (Nelson 2005:12). By 1832 the Hudson Bay Company was making its exploration of the Sacramento River.

In 1842, the German politician Baron Christian Charles Josias Bunsen attempted to convince the King of Prussia to accept the offer from the Mexican government to purchase California (Hammond 1920:24). Baron von Humboldt however, managed to convince his majesty otherwise. This was likely a fortunate occurrence for German immigrants for whom the United States was viewed as the land of "kein König da,"–"no king there" (Nadel 1990:18).

California continued to be controlled by the Spanish under Mexican rule which, beginning in 1824, divided California into parcels available as land grants in the hopes of creating stability. By 1846, eight land grants had been claimed in Sacramento County alone; these included New Helvetia, granted to Johann Sutter (a German

immigrant from Baden) in 1839. New Helvetia became the first settlement in the Sacramento area. It was very successful, and became the nucleus of economic activity for northern California. By 1841 Fort Sutter had been built, and the first organized party of immigrants, namely German, had arrived (Gudde 1927:12). This was followed by the establishment of wheat fields, a flour mill, an irrigation system, grazing stock, and a boat that "handled freight and passengers between the fort and San Francisco" (Nelson 2005:13). Fort Sutter quickly became a destination for immigrants traveling to northern California.

When the Mexican-American War broke out in 1846, New Helvetia sided with the United States. German immigrants enlisted whole-heartedly, and although no major engagements were fought, enlisted Germans outnumbered all other nationalities (Gudde 1927:15).

In 1847 Sutter built a sawmill at Coloma; less than a year later, carpenter James Marshall and German millwright Peter Wimmer discovered the first gold nugget (Gudde 1927:16). It was not long before gold seekers established mining camps, including the German camps at Stoutenberg, Mosquito Gulch, and Dutch Flat. Unfortunately the discovery of gold spelled the ruin of Sutter, as the U.S. Supreme Court gave most of his land to squatters.

Fort Sutter became a tent city, as did Sacramento, and by 1850, New Helvetia gave way to Sacramento as the center of interior northern California (Nelson 2005:13-14). In 1854, Sacramento became the capital of California, and within 20 years the Wells Fargo stage line and rails were established, along with a road system that converged in Sacramento, connecting the major towns in the valley (Beck and Haase 1974:51; Nelson

2005:14). By the 1870s (right about the time the Philadelphia House was established), Sacramento had become a stable industrial, commercial, and social center.

The German Element

The "German element" was felt in many areas of early California besides Sacramento. These areas included Los Angeles, San Francisco, Stockton, and Marysville. Jacob P. Leese, a trader, is credited with being the founder of modern San Francisco, then called Yerba Buena. In 1845, San Francisco had only several hundred inhabitants, with "the German being the chief element besides the natives and Americans" (Gudde 1927:19). San Francisco's first blacksmith, tailor, baker, butcher, and real estate owner were all Germans. Its water works, first savings bank, coining of the U.S. mint, and its first public hospital were all established by German immigrants (Gudde 1927:20-22).

"The most striking evidence of the importance of the German element in the Golden State is the fact that the three pioneer towns of the interior valley, Stockton, Sacramento, and Marysville, were all founded by Germans" (Gudde 1927:22). Stockton was founded in 1845 by Charles N. Weber, a German pioneer from Hamburg who initially called the town Tuleburg. Marysville grew out of a settlement founded by Theodor Cordua, who originally named it after his hometown, New Mecklenburg (Gudde 1927:22-23).

German immigrants had their hands in many of California's firsts, including the first carriage factory, salt works, macaroni factory, weaving mill, shoe factory, coastal manufacturer of explosive powder and dynamite, musical instruments, billiard tables, vineyards, cattle raisers, and the first almond seeds (Gudde 1927:24-26). Although a list

such as the above can be produced for many immigrant groups, it is important to recognize the impact that the “German element” had on the formation of California.

Boarding Houses, Saloons, and Hotels

It is evident from the previous discussions that Sacramento’s early history is a history composed largely of a transient population. The gold rush brought to Sacramento a transient population of mostly males, and the massive, sudden increase in human bodies made the town into a tent city practically overnight. Sacramento’s residents attempted to establish order through formal urban planning; however, their designs left Sacramento without an official town center. “The lack of urban order and its corresponding sense of social freedom found expression in the basic units of urban form” (Eifler 2000:195). Despite the lack of physical order, differences in wealth, ethnicity, and family background divided residents into sharply structured classes. The large transient population however, obscured social inequalities until the 1870s, when such inequalities became politically explosive (Rice et al. 2002:292). Nevertheless, Sacramento residents developed institutions such as civic centers to provide food, shelter, trade, and entertainment. These institutions provided a framework for making sense of the world around them (Eifler 2000:197).

With so many people and so little physical structuring, boarding houses, hotels, and restaurants became a necessity. These institutions transformed into social centers around which residents could create small domestic enclaves and social networks (Eifler 2000:197). Hotels were built along J and Second streets, while boarding houses and restaurants could be found throughout the city. Many hotels, such as the Hotel de

France, the City Hotel, the Pioneer Hotel, the Eagle Hotel, the Orleans, and the Golden Eagle, catered to the wealthy (Nelson 2005:20). Most however, including boarding houses, catered to the less prosperous blue-collar workers. These workers were primarily single male European immigrants requiring establishments that could provide meals and lodging. The Philadelphia House was such a place.

As part of dealing with a city under construction, residents sought dining and living arrangements with people from either the same region of the United States, or from areas of the same home country. A number of boarding houses and restaurants openly advertised their affiliated regions such as the Illinois House, the Missouri Hotel, and the New York Lunch (Eifler 2000:198). It is unknown whether the Philadelphia House could be included in this list, but there is a strong likelihood that it was named for the city that became home to thousands of German immigrants, and for which they had hoped to create a new German state. In any case, restaurants, boarding houses, and even saloons became places where individuals could share ideas and observations grounded in a common value system. It was in these places that "young men found a measure of stability in the cultural wilderness of the city" (Eifler 2000:198). It stands to reason that the Philadelphia House, as a boarding house, restaurant, <u>and</u> saloon, may have provided a strong location for German immigrants to feel more at home.

Nelson (2005:20) noted that as of 1860, less than three percent of German-born immigrants had settled in the western United States. Those three percent tended to settle in cities like Sacramento, where their fellow countrymen had formed German neighborhoods. "Although not documented as such, the neighborhood between J and K and 9th and 10th streets [where the Philadelphia House was located] seemed to have

attracted a large number of business owners and residents who were German immigrants" (Nelson 2005:21). In the late 1850s the German Methodist Church was built at the corner of 9th and K streets. In 1867 it became the German Lutheran Church. And in 1854, the same year that Sacramento became the capital of California, German-American residents established a *Turn Verein* (literally, a gymnastics society), for holding meetings. The first meetings were held at the Zinc House, located between 7th and 8th and J and K streets; five years later the meetings were held at their Turnerhalle on K Street between 9th and 10th (Nelson 2005:21). "In 1870, members of the Turn Verein…met to discuss ways to encourage German immigrants to settle in Sacramento" (Nelson 2005:21). From this, it is evident that a German presence existed in Sacramento, in the very neighborhood where the Philadelphia House was established, long before it opened.

The Philadelphia House: Archaeological and Historical Context

In 2004, Tremaine and Associates, Inc. (TREMAINE) was contracted by the CIM Group and the City of Sacramento Economic Development Department to conduct archaeological testing and monitoring for the Plaza Lofts Project. The Project proposed for an apartment and retail complex to be built along the northern half of the JK89 block in downtown Sacramento, California. Its plan proposed the construction of a seven-story combination retail, restaurant, and apartment building, as well as subsurface disturbances from planned below-grade (below the current street level) parking.

The contract was initially meant to include primarily testing and monitoring of the project area. Data recovery excavations and analysis of the recovered material became necessary upon the discovery of a brick cellar wall known to be associated with

the historic Philadelphia House boarding house, saloon, and restaurant. Archaeological excavations took place primarily between April 27th and July 21st, 2004. Following the data recovery and subsequent analysis, TREMAINE compiled their final report—*Archaeological Investigations for the J and 9th Streets "Plaza Lofts" Project and Data Recovery Excavations for the Philadelphia House Hotel (CA-SAC-692H), Sacramento, California* (Nelson 2005)—from which much of the known information on the Philadelphia House has been compiled.

The Philadelphia House, once located at 47 8th Street (later changed to 1015 8th Street), was originally constructed between 1860 and 1862, and was thought to have been a possible wagon-making shop. Located at the confluence of the Sacramento and American rivers, Sacramento was vulnerable to major flooding during this time. Despite the construction of numerous levees, flooding and damage to buildings continued until 1863, when an official high-grade was established to raise the levels of the streets, thus protecting homes and businesses from future flooding (Nelson 2005:17). "By 1869, J and K streets from Front to 10th were raised as were 9th and 10th between J and K" (Nelson 2005:17). A year later, the section of 8th Street between J and K (where the building that was to become the Philadelphia House was located) was also raised to the new high-grade street level.

Prior to the street raising, the building, like most in the area, was composed of three levels: a basement or cellar, a first floor, and a second floor. Once the streets were raised, the original first floor of many buildings became the basement/cellar. This was not the case for all buildings, as many were physically lifted to the new street level, thus maintaining their original floor plans.

An ad dating from May 25, 1872 placed in the *Sacramento Bee* discussed the ability of G.J. Cross to raise brick buildings, and suggested that he may have raised buildings on 8th Street (Nelson 2005:41). It is unclear if the building that would house the future Philadelphia House was one of the buildings on 8th Street raised by Cross. If so, this would indicate that the Philadelphia House maintained its original first floor, rather than its first floor becoming its basement, as was the case with the buildings that were not raised. Regardless, when the Philadelphia House opened in 1873, it had a basement that was utilized (as many basements during the late 1800s) to dispose of refuse produced from the boarding house, saloon, and accompanying restaurant. The lack of local government policies regarding the proper disposal of refuse meant that the basement/cellar was utilized as the Philadelphia House's primary garbage repository. It remained so until March 26, 1919 when a building permit called for its closure (Nelson 2005:48).

This is of particular interest because it was primarily the cellar/basement that was excavated by TREMAINE in 2004. The excavation yielded a variety of historical refuse including over 13,500 faunal fragments, most of which represent food remains. Of the 13,500 bone fragments, a total of 5,798 were analyzed by TREMAINE. These included a sample from a ceramic feature of accumulated broken and whole ceramic specimens, as well as the totality of one excavated unit. All bone fragments, including those not analyzed, were then donated to the CSU, Chico Zooarchaeology Laboratory where they have been made available for student analysis.

"In the Best German Style"

Augustus Koch's 1870 bird's eye view depiction of Sacramento indicates that there was a two or three-story commercial building on the lot that was to be the Philadelphia House (See Figure 1). This is interesting to note because the city directory

FIGURE 1. Koch's 1870 "Bird's Eye View" of Sacramento. The area in red indicates the general location for the Philadelphia House.

Source: KOCH, A., 1870, *Bird's-eye View of the City of Sacramento.* Britton and Rey, Sacramento. Courtesy of The Bancroft Library, University of California, Berkeley. Reprinted with permission.

does not list the Philadelphia House until 1873. The function of the building prior to 1873 is unknown, though it is thought to have possibly been a wagon shop. (See Nelson 2005:40 for a more detailed discussion.) The lot and the building went through several ownerships until 1862, when Matthew Watts (who had owned it in 1858 and 1860) purchased 1015 8th Street, continuing his ownership until 1876 (Nelson 2005:36-37).

By 1873, the Philadelphia House was firmly established, with Ernest Metzler as its first proprietor. Under Metzler the Philadelphia House was listed in the city directory under "board and lodging," and served blue-collar workers. Nine boarders were housed, and with the exception of Mrs. Muller, a widow, all were males. Nelson (2005:42) noted that the majority of the boarders "appear to [have been] immigrants of northern European descent, in particular Germany, a pattern that is consistent with the neighborhood which in the 1860s included a German Church at 9th and K streets."

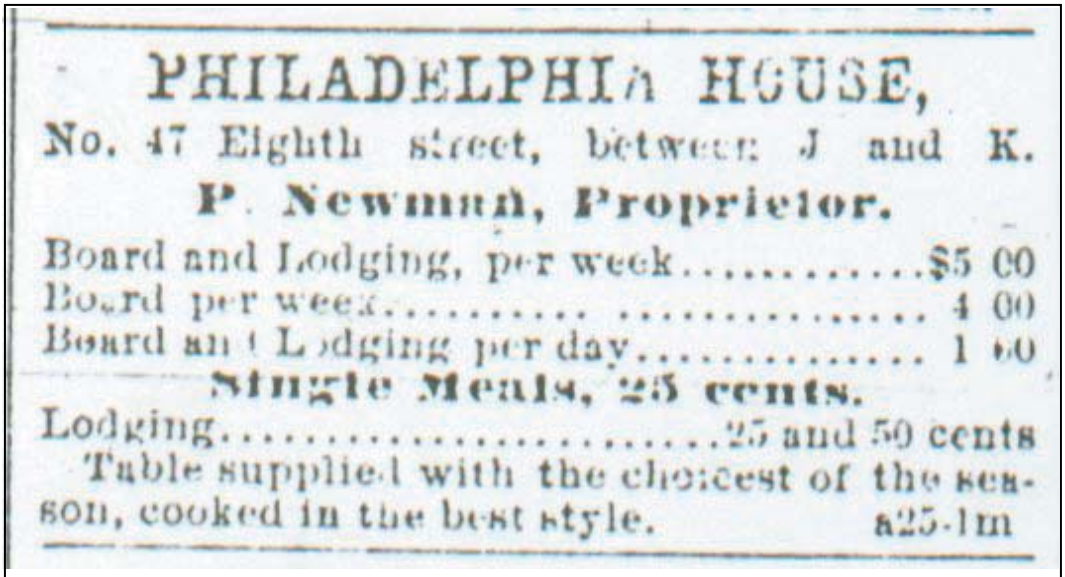
In 1877, Peter Newman of Bavaria became the Philadelphia House's owner and proprietor, and under him it was listed as "board and lodging" and "hotels." Three years later, Newman, his wife (Bavaria), their four children (California), and his mother-in-law (Bavaria), took up residence at the Philadelphia House, along with 12 male boarders (Nelson 2005:42). Five of these boarders were immigrants: three from Great Britain and two from Germany. Newman and family remained there until 1887, when Newman purchased the El Dorado House and sold the Philadelphia House to Patrick S. Quaid. That same year (but prior to the sell), Newman began advertising the Philadelphia House in the newspaper, describing the food as being "in the best style" (Nelson 2005:44). Quaid continued the newspaper ads, though he described it as a first-class boarding house, providing its occupants with the "best the market affords" (October 22,

1887 Sacramento Bee). Under Quaid, the Philadelphia House was listed in the city directory under “hotels” only, and despite expensive improvements he made to the building in 1891, the demographics of the occupants remained the same (Nelson 2005:42).

Quaid passed away in 1895, leaving the property to his wife, Martha. Lautenschlager and Bauman took over proprietorship under Quaid’s widow, and it was through them that the Philadelphia House came to be advertised as “kept in the best German Style” (see Figures 2 and 3). What exactly is meant by the “best German style” is unclear, but perhaps this detail lends credence to the notion that the proprietors of the Philadelphia House may have worked intentionally to establish a boarding house or hotel with a distinctive German identity.

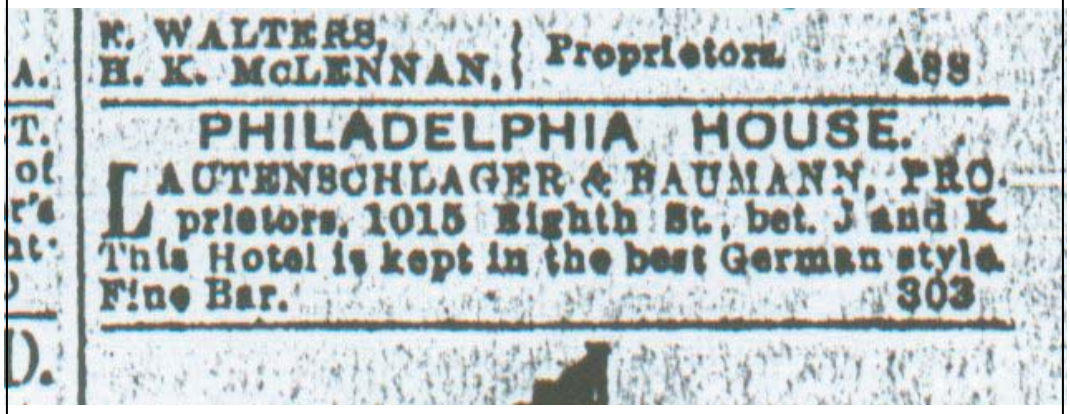
By 1900 the Philadelphia House was owned by Martha Hicks, with Xavier Arnold, a Swiss farmer, as proprietor. At this time seven boarders were housed there, including four Californians and three Germans (Nelson 2005:48). Details on the origin of the owners, proprietors, and boarders may seem trite or unnecessary, but they are significant for the fact that despite changing hands and occupants, the Philadelphia House continued to attract individuals from Germany.

Ten years later there were only five residents and no proprietor, though it was owned by Charles Campbell and Geo Brewer. Campbell continued as owner until 1934. Between 1905 and 1919, it is unknown what the building was utilized for, but it appears it had reached its end as the Philadelphia House. By 1919 the city directory listed *The Rex,* a boarding and lodging house, at 1015 ½ 8th Street; the front half of the building that had once housed the Philadelphia House saloon, was vacant (Nelson 2005:39, 48). That



PHILADELPHIA HOUSE,
No. 47 Eighth street, between J and K.
P. Newmann, Proprietor.
Board and Lodging, per week.....$5 00
Board per week..... 4 00
Board and Lodging per day..... 1 00
Single Meals, 25 cents.
Lodging.....25 and 50 cents
Table supplied with the choicest of the season, cooked in the best style. a25-1m

January 19 1895, Sacramento Bee (detail)



K. WALTERS,
H. K. McLENNAN, } Proprietors. 488
PHILADELPHIA HOUSE.
LAUTENSCHLAGER & BAUMANN, PROprietors, 1015 Eighth St., bet. J and K.
This Hotel is kept in the best German style.
Fine Bar. 303

August 31 1887, Sacramento Bee (detail)

FIGURE 2. Philadelphia House Newspaper Advertisements.

Source: Photographs of advertisements courtesy Brandon Spencer-Hartle, Portland, Oregon. Reprinted with permission.

same year, owner C. Campbell had the basement closed. As noted previously, the basement acted as the location for refuse disposal from the boarding house, saloon, and restaurant, generating the artifact assemblage from which this thesis is derived. The closing of the basement in 1919 thus establishes a terminus date for analysis.

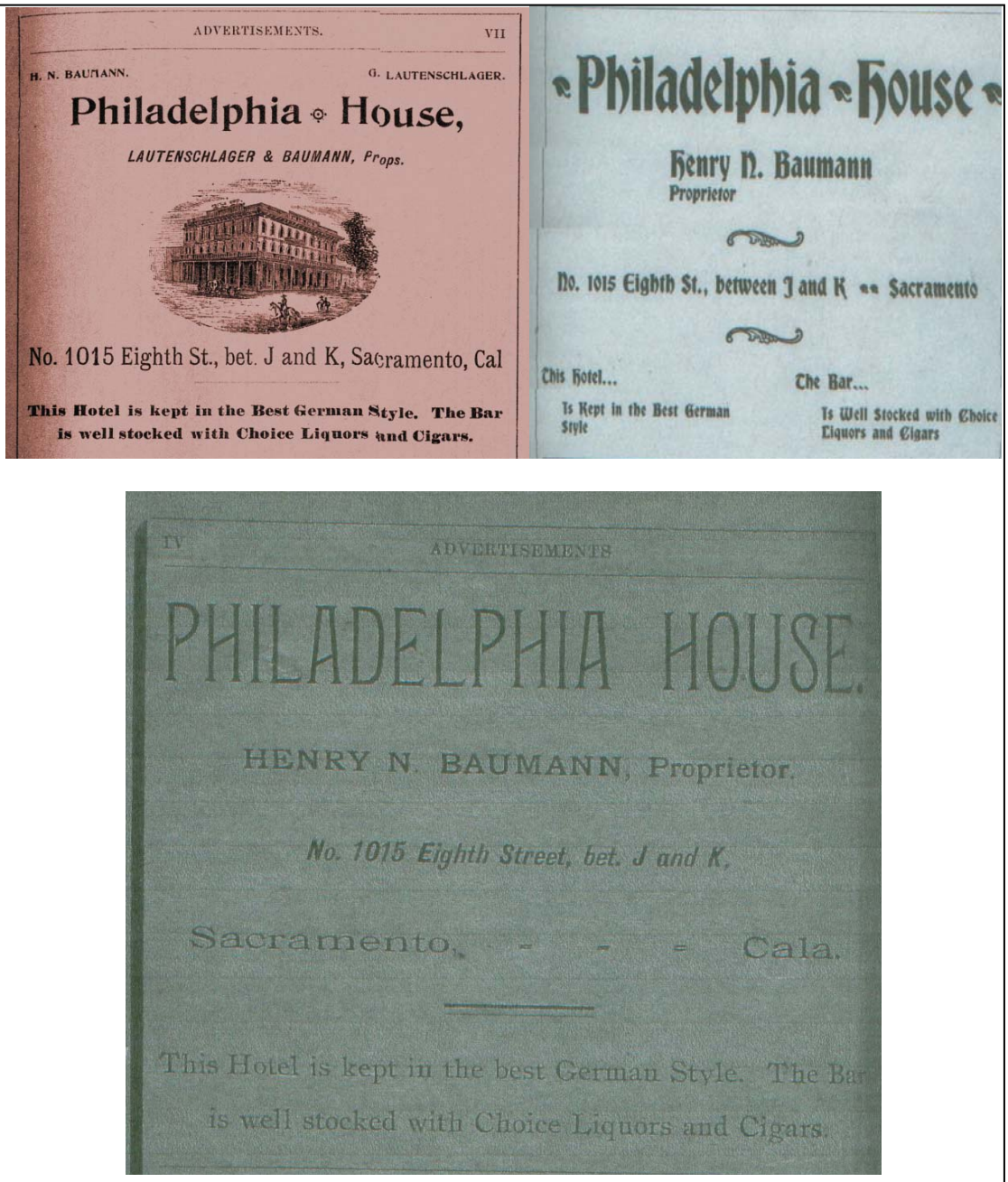


FIGURE 3. Philadelphia House City Directory Advertisements. Philadelphia House Lithograph, 1895 Sacramento City Directory (detail, above left); Philadelphia House Advertisement, Sacramento City Directory 1897 (detail, above right); Philadelphia House Advertisement, Sacramento City Directory 1897 (detail, bottom).

Source: Photographs of city directory advertisements courtesy Brandon Spencer-Hartle, Portland, Oregon. Reprinted with permission.

After 1919, the back half of the building continued as *The Rex*, with the front half vacant. By 1933, the front of the building had become a photography studio, and the back half was the *Rex Rooms* (see Figure 4). Four years later a permit was issued for the construction of a new building on the lot (Nelson 2005:48), and in the year 2000, this newer building was demolished.

Summary

Archaeological remains (including pottery, textiles, ovens, and food remains) have often been used in recent decades as markers of ethnicity. The focus however, has often been on groups of people currently described as minorities, with customs considered unique enough to be distinguished from the mainstream, even archaeologically. Little attention has been paid to people with ethnic identities that have become well-integrated into American life.

In their final report on the Plaza Lofts/Philadelphia House Project, TREMAINE discussed a number of research questions that the data recovered could possibly help to answer. Of interest here were their cursory questions regarding the faunal remains, and their potential for yielding data about the ethnicity, class, and urban life of the Philadelphia House occupants and more broadly, of early Sacramento residents. From the 5,798 bone fragments analyzed, TREMAINE postulated that they could possibly represent the remains of meals consumed by individuals of German ethnicity—more specifically that the faunal remains could represent German-style cuisine.

This postulation is in part derived from the fact that for much of its existence, the Philadelphia House catered to blue-collar German immigrants, and advertised as

FIGURE 4. 1936 Photo of the CM Campbell Building (former Philadelphia House).

Source: Photo courtesy Center for Sacramento History, Eugene Hepting Collection, 1985/024/1273. Reprinted with permission.

being kept “in the best German style” (Nelson 2005:42). The relatively large number of faunal remains analyzed however, represent only a small portion of the entire excavated area. Thus, any argument towards the existence of a pattern of German cuisine would be greatly enhanced by further analysis.

This kind of further analysis includes the identification and exploration of the faunal remains from other areas of the site (to be discussed in Chapters VI and VII) that comprises the zooarchaeological aspect of this thesis. It also includes the development within the current chapter of a discussion on the history of German immigration in the United States and the manner in which Sacramento’s German-born residents became active citizens in the city’s development, while forming and maintaining their own ethnic identity. The Philadelphia House, in both its historical and archaeological context, provides a starting point for developing an analytical framework for the use of faunal-based food remains as markers of German-American ethnicity.

CHAPTER III

WHAT IT MEANS TO BE GERMAN

Introduction

The problem with which I am concerned is the nature of 19th century German-American identity and its expression in the archaeological record; in essence, what the physical manifestation would be for what it meant to be German in the United States. This implies how people understood and used the word "German," what they did in the name of "German-ness," as well as what it meant to feel (or perhaps not to feel), German. While it might be impossible archaeologically to get at what it feels like to be German, textual analysis and zooarchaeological studies can provide significant avenues for understanding the former two implications.

Anthropologists have often sought to study those cultures considered to have a minority status, with little interest in those groups with a majority tradition. It has been argued that cultural distinctiveness in the archaeological record is much more likely to be visible for those ethnic groups treated as minorities, as they are thought to have been relatively isolated from the majority, and were thus able to retain unique ethnic, material signatures. "Minority" however, is a relative term, and can be utilized to imply social and economic, as well as ethnic status. What is interesting in the case of German ethnicity is that despite its current recognition as a "majority" group–at least within Europe–the German element in 19th century Sacramento was one treated as a minority.

Germany was still a relatively new country when German immigrants began settling in Sacramento. "*Die Vergangenheit*"–"the past"–as a country had begun in 1814 when the Congress of Vienna established the Germanic Confederation of 39 states and principalities. Leaving aside the first German Reich formed in the tenth century, a unified German state did not exist until 1871 to 1945 under Bismarck's unification. Prior to 1871, the Germanic Confederation acted as a collection of loose and ever-shifting states. During the time that a "unified German state did exist–during the Kaiserreich, the Weimar Republic, and the Third Reich, - its boundaries fluctuated rapidly," (Forsythe 1989:141) and from 1949 to 1989, there were two Germanies. Deutschland therefore, was a geographically ambiguous entity, a fact that is extremely significant in relation to the question of German identity.

At one level, this question of German identity becomes a problem of physical or territorial boundaries; assuming that the notion of being "German" is meaningful to people with regards to the way in which they identify themselves, then it makes sense to examine where and how they drew the line around what was–and what was not–German. Considering the ambiguity of Germany's boundaries during Sacramento's settlement, establishing what it meant to be "German" for these early immigrants from a purely territorial sense seems impossible. Based on the fact that Sacramento's German immigrants identified themselves as German, what *is* probable is the assumption of a shared definition of what was meant by "Germany." For the purposes of this thesis then, the problem of establishing a definition for the physical limits of a German country is somewhat irrelevant. Rather, the issue in question is how "German-ness" was manifested, defined, and maintained outside of Germany, specifically in 19th century Sacramento,

California and especially in relation to foodways. Several lines of inquiry are necessary for a discussion of German ethnicity in America: theoretical perspectives on the relationship between immigration and ethnicity; what is meant by having a "German" identity; German ethnicity within 19th century Sacramento, and; what is meant by "German cuisine" and foodways.

Immigrants and Ethnicity: Theoretical Perspectives

If 19th century Germany, with its indefinable physical boundaries, produces a difficult situation for establishing a framework for German identity, it would seem that the migratory process from Germany to the United States would make this task even more difficult. This is why it is important to have an understanding of the anthropological discourse on immigration and ethnicity.

Early anthropological writings on migrant ethnic groups in the United States tended to assume that members of these groups would eventually shed their ethnic distinctiveness, and assimilate or "Americanize" into the majority tradition. Later writings however, recognized that assimilation and "melting pot" hypotheses might not be appropriate explanations, and sought to explain why not.

Early views on assimilation held that structural patterns were created by the earliest white Americans, and by the nineteenth- and early twentieth- century, European migrants were expected to, and did, conform to these patterns (Banks 1996:65). In *The Social Systems of American Ethnic Groups* (1945), Warner and Srole found the "melting pot" metaphor to be an inappropriate description of the migrant experience. They found that, rather than "melting" into a new identity forged out of many elements, what was

actually happening was the conformity of the minority parts to the greater whole of the "American system"–yet another argument for assimilation (Banks 1996:67).

In their massive five-volume work *The Polish Peasant in Europe and America*, William Thomas and Florian Znaniecki (1984), however, found that Polish immigrants in America sought not to reiterate their culture (which would have been impossible), but to make sense of their shared migration experiences by recreating a common group identity. They created a group that was "neither Polish nor American but constitute[d] a specific new product whose raw materials [had] been partly drawn from Polish traditions, partly from the new conditions in which these immigrants live[d], and partly from American social values as the immigrant [saw] and interpret[ed] them" (Thomas and Znaniecki 1984:240). This may sound a little like Warner and Srole's description of the melting pot, with its many elements combined to form a new identity, but in my opinion, the melting pot metaphor seems to imply that, while there are many "ingredients" in the pot, influencing the final product, in the end there is only one "product" or identity, rather than many. Thomas and Znaniecki on the other hand, present a much stronger postulation for how ethnic identities are generated and maintained among immigrant groups, for they seem to indicate an intentionality (whether conscious or not) behind *which* elements or "ingredients" are chosen, with an infinite number of end products.

Banks (1996:70) considered the greatest challenge to the melting pot theory to be Glazer and Moynihan's *Beyond the Melting Pot*, in which they described ethnicity as a new phenomenon not necessarily derived from the 'national' or 'original' cultures the immigrants left behind (1970:16). They argued that a man is "connected to his [ethnic]

group by ties of family and friendship. But he is also connected by ties of *interest*" (1970:17; emphasis in original). In their 1975 *Ethnicity: Theory and Experience,* Glazer and Moynihan found ethnicity lacking in content, and described America's ethnic groups as differing not culturally, but rather in their histories and in their status in the American political economy. Glazer and Moynihan thus found culture to be thin and ephemeral, and therefore had no weight in analysis (Banks 1996:76).

Barth made a similar argument, although he was careful to recognize the difference between the superficial aspects of the "stuff" of culture (such as language, dress, and food), and the cultural significance of such items. He found that "it is not so much the objective presence or absence of such items of cultural "stuff" that matters, but the symbolic weight…such items have" (Banks 1996:75). These items may perhaps change–and change drastically over time–but the idea, and the symbolic power of culture and ethnicity will remain. For anthropologists such as Barth and Abner Cohen, ethnicity is manifested in a *perception* of common origins, regardless of each individual's country of origin.

Stephen Steinberg argued that externally observable facets of culture such as ethnic foods have ceased to be distinctive ethnic markers; rather they have adapted or assimilated to non-ethnic preferences and thus are nothing more than superficial, empty symbols (Banks 1996:80-81; Steinberg 1981:61-65). The flaw with this way of thinking is that it fails to recognize that it is not the things themselves that are important, but the values imbued to them culturally.

German and German-American Identity

As discussed in Chapter II, the reasons for German immigration to the United States were many, and involved primarily political, religious, and economic conflicts and uncertainty. Despite the American promise of better opportunities, the migrations involved few family units; German immigrant populations were composed primarily of young male laborers, many of whom were fleeing long-term compulsory military service. This situation might lead some to think that, for many immigrants, the most readily available social process to adopt would be that of assimilation to the dominant, or majority tradition. However, as N. Gonzalez (1989:2) stated, "…the definition of both self and group in ethnic terms is enhanced, if not actually generated, by the conflict/migration/conflict situations in which the subjects of our papers have found themselves." Regardless of the motivating factors, the migratory process can actually enhance the sense of solidarity among those who migrate. Symbols of a common ethnicity such as language, dress, dietary practices, and religious behavior serve as reminders of a common origin to the migrants themselves. "It matters little whether the migrants have all shared these symbols earlier in their lives, for they now serve to bind them together, perhaps in new ways, and to shield them from an often hostile receiving society" (Gonzalez 1989:4).

In the new setting provided by the migratory process, individuals may have found themselves drawn to personal and group attachments outside of their original kinship and identity groups. This can create what in anthropology is referred to as "situational ethnicity," through which "individuals identify with one ethnic group for some purposes or under certain conditions, but with others or with only the national

culture when that suits them better" (Gonzalez 1989:4). It can also create a phenomenon known as "nativism," "revivalism," or "revitalization," through which ethnicity may be invented, or "reawakened" as a reaction to outside forces. Durkheim discussed this phenomenon as the manipulation of ethnic symbols for specific ends. Whether or not any of these terms are appropriate for describing the establishment of the "German element" in 19th century Sacramento has yet to be decided. Perhaps by taking Durkheim's instrumentalist perspective, the creation of traditional German establishments such as the *Turn Verein*, (gymnastics society), along with the advertisement of the Philadelphia House as "in the best German style" can be viewed as the manipulation of ethnic symbols towards the desire for a greater German presence in Sacramento.

Glazer and Moynihan (1970:311-314) however, described the group of individuals known as "German-Americans" to be a case of 'non-ethnicity.' Although their focus was on New York, they argued that early German immigrants in North America had the same potential for establishing an ethnic identity as other groups of immigrants, but because they did not establish one, there is no such thing as a German-American ethnic identity. Their evidence for this argument was that there are no "German" politicians in the same way that there are "Irish" or "Italian" politicians who can appeal to individuals with a similar ethnic identity (1970:311). They explained that German immigrants so closely resembled the old stock of white, Anglo-Saxon Americans that they merged into the dominant group, thus becoming a 'non-ethnicity.' Perhaps their argument was more relevant during the time it was published, when the more not-so-distant Nazi history had led many people to disown their German heritage; this may also

be why it is difficult for many people today to believe that in any point in American history, “German-American” was a valid ethnic identity.

In point of fact, 19th century New York, with its *kleindeutschland* (“little Germany”) Manhattan neighborhood, was the third capital of the German-speaking world. Between 1855 and 1890, only Vienna and Berlin had larger German populations than New York City (Nadel 1990:1). It must be remembered that during this time, those groups establishing German neighborhoods were coming from a very politically-fragmented Germany. Each of the major 39 German states ruled over a diverse and poorly integrated population, though most also still retained core territories that helped to define them historically (Nadel 1990:13). “This [was] at a time when German ethnicity itself (at least in the related form of German nationalism), had not yet penetrated very far below the intellectually sophisticated strata of German-speaking Europe” (Nadel 1990:4). The communities they established, and thus community identity, existed within shifting boundaries.

Despite the shifting boundaries, by 1850 New York’s German press had begun to use the term “German-American,” as well as “Germans in America” as an ethnic identity. This led Oscar Handlin to argue that the migratory and resettlement processes had broken down the regional divisions as they had existed in the Germanic Confederation, and transformed them into the new ethnicity of German-American (Nadel 1990:5). As anthropologist Joan Vincent noted, the notion of ethnicity is a social process, and any analysis that attempts to reify ethnicity into static entities is doomed to lose its very meaning (Nadel 1990:5).

This is in part why it is important to stress the awkwardness of trying to describe German ethnicity in terms of the various German states the immigrants came from, which can tend to obscure their settlement patterns in the United States. Doing so would fail to distinguish, for example, Prussians from Prussia itself, Prussians from Poland, and Prussians from the Prussian-ruled Rhinelands (Nadel 1990:39). Nevertheless, Nadel was sure to point out that "German particularism did not end with the voyage across the Atlantic or with the choice of an American city, and this must be kept in mind when analyzing German settlements in America" (1990:39). Nadel found that both before and after 1871, German Europe was divided much more by linguistic, cultural, and religious regions than by its states. He argued that German settlement patterns in the United States, rather than reflecting a "mythical German nation," more closely approximated their region of origin in Germany (1990:155-156).

Despite these findings, German-American settlement patterns could be viewed as a residual feature of the migration process. But when considering other forms of social interaction, more long-term regional patterns seem to emerge. For example, Nadel described the *Verein*, or voluntary association, as one way by which German-Americans "institutionalized German particularism and subnational ethnic identities into a new context" (1990:158). In this new context, social markers such as dress and dialect were lost over time, but perhaps others such as foodways and cuisine persisted or were reformed. It is not a simple task to discover how these markers may be manifested in the archaeological record, but it is a worthwhile endeavor, for it is far <u>too</u> easy (and unnecessary) to assume that the ethnic formations that developed in the United States gave way to Americanization and the "melting pot." As Nadel stated, "what we need to

do is to develop a new historical conception of ethnicity, one rooted in the careful study of the complex social behavior of real people and real groups acting in different social settings" (1990:160).

German and German-American ethnicity must be viewed as a complex and fluid social process. This kind of complexity has lead many anthropologists to abandon any notion that we are dealing with a real social group with visible differences. However, even if "there are no objective grounds by which an analyst could see a self-proclaimed 'ethnic group' as distinctive, there must be some reason in their claiming such a distinctiveness" (Banks 1996:133). The German-Americans of 19th century Sacramento, California provide an opportunity for analyzing both the physical manifestations of an ethnic identity, and the reasons behind their establishment.

German Ethnicity in Sacramento, California

In order for the case to be made that faunal remains from the Philadelphia House can be used as markers of German-American identity, it is important to establish an understanding of how German immigrants came to create a strong ethnic identity within Sacramento. In *The Transplanted: A History of Immigration in Urban America* (1985), John Bodnar described a process by which European immigrants who settled in the United States willingly and readily formed ethnic communities together because they were clinging to the cultural practices familiar from their homelands. In general, Sacramento's early German immigrants seem to fit this model, although perhaps the term "clinging" is a little too strong, especially considering that their activities present a picture of a formidable German element, rather than a desperate one such as the word

“clinging” implies. Semantics aside, the censuses and City Directories indicate that the German immigrants were more likely to settle within neighborhoods with other German immigrants, rather than as individuals (Faust 1909:465). Their banding together into ethnically-based neighborhoods allowed them to create a sub-culture of “German-ness” through which they could practice rituals and customs familiar to them (Terry 2005:1). This does not mean that they were segregated from the Anglo-American majority. Contemporary newspapers, directories, and historical accounts attest to the fact that they were actively involved in resolving issues Sacramento was facing (such as gold rush population increases, flooding, and fires), as well as in their own attempts to establish institutions similar to those remembered from Germany and from other German settlements in America.

Historian Carole Cosgrove Terry (2005) noted that, compared to the racial minorities which were marginalized in California, the Germans had a definite advantage. They looked like the Anglo-Americans, many knew English before settling in Sacramento, and they were often from a middle class background with resources that allowed for an easier beginning in a new place. This does not mean that they assimilated to the majority Anglo culture. Instead they created their own identity, founded in their own common experiences.

Drawn to Sacramento by prospects of economic advancement, German immigrants became significant members of the city’s merchant and professional classes. Number-wise however, they were a distinctive minority. The 1850 census documented between 300-320 German family units residing in Sacramento out of a total of 9,087 family units in Sacramento County. By 1852 the census listed 730 German immigrants

out of a total population of 12,589 (Terry 2005:3). They were primarily male, and had often resided in other regions of the United States before settling in California (Avella 2008:115; Terry 2005:3). In 1860 the number had nearly doubled, reaching its peak in 1890 with 2,182 German-born residents (Avella 2008:115). These numbers are not entirely accurate however, due to census-taking issues; despite inconsistencies, the small number of known individuals in the German community had a great impact on Sacramento, particularly in relation to strengthening their own ethnic ties.

One of their significant institutions was the *Turn Verein* (literally "to do gymnastics exercise") formed in Sacramento in 1854. The first *Turn Verein* in the United States was organized in 1848 in Cincinnati by Frederick Hecker, and became a movement which quickly spread throughout America (Barney 1982:62-63). Sacramento's *Turn Verein* was a replication of these fraternal associations, created to preserve their customs by providing a location for political discourse, programs for physical well-being (such as gymnastics), and social and cultural gatherings. The *Turn Verein* acted as a community center, providing support for new German immigrants, as well as sponsoring balls, dances, picnics, sporting events, and Christmas celebrations (Terry 2005:3).

This does not mean that German individuals remained secluded from their fellow citizens. They joined Anglo-Americans in a variety of organizations such as bands, singing, and shooting societies. "By 1859, the Anglo-Americans, as demonstrated in contemporary newspaper accounts, increasingly adopted customs identified with the German newcomers and recognized the German *Turn Verein* and its participation in the growth and settlement of the city" (Terry 2005:3). The Germans however, continued to

gravitate to their own German neighborhoods rather than assimilate to the dominant Anglo traditions.

German-born residents were also actively involved in the formation and support of churches. The German Methodists had organized a church in 1856, but ten years later, debts and small membership led to is closing. German Lutherans formally organized in 1861, though they had been in Sacramento as early as 1850 (Avella 2008:115). In 1867, they opened a church at the corner of Twelfth and K streets. The Lutheran Church was successful, prompting Sacramento's German Catholics to try forming their own church. The German-speaking Catholics had grown weary of attending St. Rose Church, where antagonism between the Irish clergy and the German parishioners had grown intense (Avella 2008:116). So intense were their issues that Anthony Coolot, a local German-speaking millionaire, raised funds and purchased a lot near the German Lutheran Church on which to construct a German Catholic Church.

Soon after the purchase, tensions mounted between Sacramento's Irish and German Catholics over the outcome of the Franco-Prussian War. Germans openly celebrated while the Irish, siding with the French, openly displayed their anger and frustration. Eventually a compromise was reached when the Archidiocese of San Francisco stationed Reverend Leon Haupts - a German-speaking priest - at St. Rose Church. In the early 1890s, Haupts left Sacramento. He was not replaced by another German-speaking priest, which generated conflict between St. Rose's Irish and German members. These conflicts lead to the construction of St. Francis Parish near Sutter's Fort in 1895. St. Francis Parish was a multi-cultural church where German Catholics could hear German sermons and observe German-Catholic customs and traditions (such as in

music and décor), perpetuated by the church's friars. German-language sermons and services continued until WWI, and "inevitably, the Franciscan friars shed their Germanic shells and even became more visibly Americanized than the Irish" (Avella 2008:118-119).

Germans also played a role in non-religious activities and associations, such as the first Masonic Lodge, the Sacramento Lodge, the Union Masonic Lodge, and the International Order of Odd Fellows El Dorado Lodge (Terry 2005:14). They organized musical societies in Sacramento such as the Philharmonic society (1855) and the Sacramento Union Brass band (1857), which organized concerts for Sacramento's entertainment using traditional German music to offer new German immigrants a link to their homelands (Terry 2005:15). They also created formal clubs for the popular German sport of target shooting.

Despite the interaction with citizens of all ethnicities that such organizations led to, Sacramento's Anglo-American majority were not always accepting of their German-born neighbors. There is evidence to suggest that Germans were resented in the gold fields by Americans who felt that the gold rightfully belonged to native-born citizens (Terry 2005:16). Germans were also targeted for crimes they did not commit, and only released from jail when no evidence came to light against them (Terry 2005:16).

Antagonism against the Germanic sub-culture was evident in more subtle ways as well. Although they joined Anglos in city-wide activities such as concerts, the German community was kept at a distance. Newspapers remarking on the activities of the *Turn Verein* often gave the impression that they were reporting about outsiders, noting the number of German-born participants, but not the Anglo participants (Terry 2005:17).

Like many other Americans at the time, with their heavy Victorian traditions, Sacramento's Anglo-Americans often disapproved of German practices and customs of sociability and festivity. They especially disapproved of the German "continental-Sunday," by which Germans showed their belief that alcohol consumption on Sundays was not sinful.

Sacramento's German-born citizens were critical of the solemnity they saw in the American lifestyle, disapproving of solemn Christmas celebrations and state and local laws that made Sunday a sober day. Instead they believed that festivity, public camaraderie and joyful celebrations involving wine, beer, dancing, female part-goers, and gift-giving were all aspects of basic human needs (Terry 2005:17). They often held festivals on the outskirts of town, including *Turnfests* (celebrations connected to national events), *Schützenfeste* (competitions in target-shooting), and physical competitions such as in gymnastics, reflecting their belief that physical strength was an essential aspect of well-being (Conzen 1989:48-50). Their festivities often copied customs and rituals from their homeland, allowing German-born Sacramentans to celebrate and assert their own "German-ness." Over time they would come to influence the dominant Anglo culture to adopt many of their traditions and joyful celebrations, but for 19th century German immigrants living in Sacramento, it was just such customs that set them apart from their neighbors.

German and German-American Cuisine, and Faunal Expectations

Cuisine, foodways, and food preferences are issues that continue to fascinate many professions, including nutrition, psychology, history, and anthropology. For

anthropologists, and archaeologists in particular, differential preservation of food remains often makes the study of past food preferences and diets a difficult task. Preservation issues are compounded by the influence such factors as cost and availability have on a group's culinary choices, especially when–as with the current study–those groups of people are removed from their traditional and familiar homelands. The German immigrants who settled in Sacramento (or anywhere in the United States) were met with a physical and social environment that differed from what they were used to, often making it difficult to maintain traditional practices. Despite any difficulties they may have encountered, foodways are one of the most enduring of cultural traditions, often existing longer than other elements such as dress. Why this is so is not entirely clear, and I will not attempt to provide a psychological explanation for resilient food preferences. Suffice it to say that food, and all that it entails (preferences, preparation, consumption, etc.) is one of the most subtle and formidable factors tying groups of people together.

This is not to say that Sacramento's German residents established a cuisine that perfectly mirrored that from Germany. For many reasons, such an assumption is unnecessary and incorrect. For example, as discussed previously, ethnicity in Germany itself was anything but homogenous. Horst Scharfenberg (1989:14) noted that each province in Germany developed its own variety of foods, with Austria, France, Switzerland, Poland, Czechoslovakia, The Netherlands, Denmark, Belgium, Italy, Hungary, and several of the Balkan countries all contributing to German cuisine.

German cuisine was and is regionally diverse, and the United States' early German immigrants brought with them equally diverse food preferences. Those who settled in Sacramento were from many areas of Germany, making it all the more difficult

to create an analysis of German-American cuisine as compared to any form of "traditional" German cuisine.

From the preceding discussion, it may seem an impossible task to establish an understanding of how German ethnicity may be visible in the archaeological record. It must be remembered however, that regardless of their regional variation, Sacramento's German-Americans banded together, and created institutions aimed at strengthening and maintaining their German identity. Their intentional efforts towards continuing customs and rituals in a new environment may have led to the manipulation of such customs to make them familiar to all German immigrants, regardless of their specific homelands within Germany. From this perspective, rather than a one-to-one correlation between German cuisine and German-American cuisine, what we should be looking for are the patterns that indicate the creation and maintenance of a German-American ethnicity adapted to the choices available within 19th- and early 20th- century urban Sacramento.

Perhaps one avenue for examining what kinds of patterns may be expected from the Philadelphia House remains is an analysis of German and German-American cookbooks. Although no cookbooks could be found relating specifically to German-American cuisine in California, *The Cuisines of Germany: Regional Specialties and Traditional Home Cooking* (Scharfenberg 1989), *German-American Cookery: A Bilingual Guide* (Simms 1967), *The Frugal Gourmet On Our Immigrant Ancestors* (Smith 1990) and *Sauerkraut Yankees: Pennsylvania-German Foods and Foodways* (Weaver 1983), may provide valuable insights into the specific meat cuts likely to be reflected by the Philadelphia House's faunal remains.

This topic will be more fully developed in Chapter VII (Results), however a cursory examination of these four cookbooks indicates a strong preference for sausage and organ meat, both of which would not be visible in the archaeological record. Of those culinary choices that would appear as faunal remains, the German-American cookbooks are dominated by beef recipes that include chuck roast, round steak, and sirloin steak. These are followed by pork dishes of ham and loin chops, and poultry dishes (chicken, turkey, and goose) requiring the entire bird (Simms 1967:36-91) However, Weaver noted that for Pennsylvania's Germans, roast was always the centerpiece of the meal; "the meal differed from colonial English customs in that the roast was usually pork rather than beef, and rarely ever mutton" (1983:18). It is not known whether this is true at both the household and restaurant level, but Weaver made it clear that pork was the favored meat both in Germany and among the Pennsylvania-Germans until the 1840s, when the railroad made them less able to compete with cattle producers, eventually causing them to consume more beef and adopt Anglo-American beef dishes (Weaver 1983:20).

Although Scharfenberg's book is an analysis of Germany's regional cuisine, he too stated that roast pork (usually shank) was especially significant. For example, Bavarians are described as being so fond of roast pork that they preferred to save it for Sundays, whereas beef "was for every day" (1989:23). This is important to keep in mind, for it indicates that a high-frequency meat cut in the archaeological record cannot necessarily be equated with food preferences.

What is particularly interesting to note in these cookbooks is the almost complete lack of recipes or dishes calling for lamb or mutton. This perhaps suggests a dietary preference that includes very limited quantities of lamb/mutton. A preliminary

examination of the cookbooks indicates that several expectations can be made for the type of patterns that may be identified within the Philadelphia House faunal assemblage. These include a high frequency of beef chuck roast, round steak, round roast, pork loin chops, leg cuts, pig's feet, suckling pig, chicken and rabbit specimens representing all skeletal elements from each animal type, and a very small quantity of specimens identified as sheep.

These cookbooks are reflections of culinary preferences. At a general level they can work to reveal how German-Americans came to adapt their regional foodways to the resources available in the United States. Cookbooks are suggestions: we cannot presume that recipes were used literally as printed. However, cookbooks *do* indicate a search for a culinary identity, and thus become a valuable tool for archaeologists attempting to study ethnicity through faunal remains.

Summary

For so many immigrant groups in the United States, the transition to a new American homeland presented them with economic and social hardships that were difficult to overcome, though their hardships may have worked towards strengthening old ethnic ties and new social identities. In comparison to those groups who were met with few opportunities for advancement, the German immigrants who settled in Sacramento encountered a fairly unique situation, one in which they fluctuated between social outcasts and the leaders of the city's earliest planning committees and professional endeavors. They often straddled the line between social minorities and respected members of the community.

Many arrived in Sacramento already possessing both money and knowledge of the English language. In certain respects, this would have helped them more readily establish jobs, homes, and businesses, though by no means does this imply that they assimilated to the Anglo-Saxon majority. Their situation affords us a significant avenue for examining the social processes explored by Sacramento's early German population, and how they utilized these processes to adapt to a new social and cultural environment.

CHAPTER IV

ZOOARCHAEOLOGICAL THEORY

Introduction

In historical sites archaeology, an important distinction is made between sites in rural locations and those in urban settings. This distinction is significant because it can help the zooarchaeologist better define the units of analysis that best suit the study of a faunal assemblage. Rural sites typically were occupied by individuals or family units who butchered their own animals, and thus the expectation would be for the skeletal elements identified to represent the whole animal—likely butchered in large butchering units—otherwise known as primary or wholesale cuts. In contrast, wholesale cuts were not readily available to people living in urban settings, who often purchased smaller, secondary retail cuts from butchers or markets. In urban sites, the expectation would be for the skeletal elements identified to represent availability of select portions of the animal, and thus an assemblage containing all faunal elements from a single animal is highly unlikely. With this in mind, it appears that the Philadelphia House faunal assemblage, as part of the urban setting of early Sacramento, is more likely to have patterns exhibiting smaller, retail purchases (units of acquisition), rather than the large wholesale cuts (butchering units) found in rural assemblages. This distinction is significant, because it is the kind of information that must be kept in mind when deciding how to approach the analysis of a faunal assemblage. Factors affecting consumer choice

such as rural/urban settings, and availability and cost of resources, are necessary considerations for any faunal analysis that seeks to examine social, economic, and ethnic status. The methods for analyzing these factors are as complex as the factors themselves, and thus the following discussion will focus on exploring the following: the types of variables utilized in zooarchaeological studies such as units of analysis (MNE, NISP, MNI, butchering units and acquisition units); problems identified with these units; the impact of cooking and butchering techniques on faunal remains and; examples of past studies that have explored aspects of socio-economic status and ethnicity using faunal assemblages.

Units of Analysis: Taxonomic and Skeletal Abundance

Ever since the publication of Theodore White's article *A Method of Calculating the Dietary Percentage of Various Food Animals Utilized by Various Aboriginal Peoples* (1953), zooarchaeologists have become increasingly concerned with the various methods (and subsequent problems) with determining the number of faunal species represented at an archaeological site, as well as with assessing their dietary significance. These methods require both qualitative and quantitative approaches, and utilize terminology that has become increasingly ambiguous. So ambiguous have these methods become that Lyman (1994) described no fewer than 110 quantitative zooarchaeological units of analysis. Many of these units have overlapping qualities and approaches for analyzing faunal remains, but are often study-specific and so only the three most widely used will be discussed here: MNE (minimum number of elements), NISP (number of identified specimens), and MNI (minimum number of individuals).

What follows may appear as a lengthy discussion of these units of analysis, but the problems, strengths, and history behind each are important to understand, for the issues involved with deciding which method to use can have significant implications for the data analysis that results from faunal-based studies.

Lyman noted that for any zooarchaeological study, it is important to distinguish between three concepts: measurements, terms, and units (1994:37). *Measurement* is defined as "the application of a set of procedural rules for comparing sense impressions with a scale and for assigning symbols to observations" (Gibbon 1984:40; Lyman 1994:39). A *term* is defined as the name or label given to a quantitative unit, and the *quantitative unit* is either observational ("empirical manifestations that are easily observed general properties of phenomena," such as the weight of a faunal fragment) or analytical (observational units that have been modified in such a way as to reflect properties of the phenomena that are not directly observable) (Lyman 1994:37). The analytical units can be either derived or interpretive. Derived units tend to be defined by mathematical relationships between fundamental measurements; these relations however, often produce unclear or weakly established correlations to theoretical or interpretive concepts (Lyman 1994:37). Derived units produce derived measurements, which in Lyman's view are often mathematically generated "in the hopes that some hidden pattern within the units measured will be functionally, or causally related to the property we wish to measure" (1994:38).

Interpretive units, while equally complex, tend to produce measurements of abstract or theoretical concepts, measurements which have been called *fiat* or *proxy measurements* (Gibbon 1984:55). Like derived measurements, proxy measurements are

also mathematically generated, but unlike derived measurements, they tend to have theoretically founded reasons (such as measures of socio-economic status), for hypothesizing that the interpretive units will have causal or functional relationships with the property we wish to measure (Lyman 1994:38).

Although it is important to recognize the differences between the types of quantitative units, for the purposes of this study, the following discussion may only make distinctions between derived and analytical units at a very general level. These quantitative units include MNE, NISP, and MNI.

MNE (minimum number of [skeletal] elements) is an analytical unit that, among other things, measures frequencies of portions of skeletons of individual taxa, and is often used in zooarchaeological studies focusing on taphonomic issues (Lyman 1994:52). MNE values may be derived in a number of ways. Marean and Spencer (1991) for example, described deriving MNE values by “measuring the percent of the complete circumference represented by a long bone shaft fragment, and then summing those percentages for each measured portion of a skeletal element” (Lyman 1994:53). In their 2001 *American Antiquity* article, Marean et al. described the MNE as an analytical unit derived from the manipulation or modification of NISP (number of individual specimens), an observational unit, into a measurement of skeletal element abundance. In this article they described a number of the ways zooarchaeologists have attempted to estimate the MNE (and from there the MNI) of faunal collections. These include the fraction-summation approach, the overlap approach, and the image-analysis GIS approach.

The fraction-summation approach is a combination of Watson's (1979) "diagnostic zones" and Klein and Cruz-Uribe's (1984) zooarchaeological recording system. Watson described diagnostic zones as "areas on bones that were species specific in morphology, present in both fused and unfused specimens, free of age biases, and rarely broken" (Marean et al. 2001:335). His goal was to avoid having the same bone with a particular zone counted twice, which could drastically skew the derived MNE. There are two problems with his approach. First, long bone shaft fragments are often found at archaeology sites that have been split through areas Watson called "diagnostic zones," such as through the nutrient foramina. Second, his MNE procedures call for counting only those fragments containing more than half a diagnostic zone, which leaves any specimens with less than half rejected from analysis. This could result in a large assemblage having very small MNE counts, even when large numbers of skeletal elements are easily observed.

One way to resolve some of these issues in Watson's approach can be found in Klein and Cruz-Uribe's (1984) zooarchaeological recording system. Although their goal was to establish MNI estimates, their recording system calculated the MNE first, which was then manipulated to generate an MNI. Using their approach, each bone fragment in a faunal assemblage (or sample thereof) is assigned a skeletal element and a taxonomic group. They identify a series of zones (most of which are whole epiphyses or unfused metaphyses areas) for each skeletal element, and the analyst assigns a fractional estimate for how much of that zone is still observable on the bone fragment. Calculating the MNE or MNI then just becomes a matter of adding all fractions of similar skeletal elements, side (which is optional), and taxon (Marean et al. 2001:335).

The benefit of the fraction-summation approach is that the assignment of a fraction estimate is intuitive, and the process for reaching the MNE is mathematically simple and relatively straight forward. Marean et al. however, pointed out several weaknesses to this approach. First, “the accuracy of the MNE estimate is dependent on there being homogeneity in survival within a zone. In other words, if one part of a zone regularly preserves better than another [such as occurs in zones where bone is denser], then all MNE estimates will be biased downward” (2001:336). Second, the MNE counts depend heavily on which zones the analyst chooses to analyze. Third, their recording system does not allow for the analysis of long-bone shaft fragments without epiphyseal surfaces (Marean et al. 2001:336). Fourth, because the only information recorded is that related to the specified zone, the completeness of a fragment remains unknown, and those fragments not exhibiting any of the zones are treated as insignificant. And finally, the fraction-summation approach does not work well with studies of surface modification (such as cut marks, gnaw marks, and butchery marks), especially if the analyst uses the MNE to “compensate for the adverse effects of fragmentation on estimates of surface modification abundance” (Marean et al. 2001:338).

Another means for estimating skeletal element abundance is through the overlap approach, described by Marean et al. (2001:338) as a “hand-on” approach by which the analyst manually counts overlapping zones and features. This literally entails doing a specimen-by-specimen comparison of like elements by taxon and/or animal size category, paying careful attention to areas of overlap of homologous parts.

One of the greatest strengths of the overlap approach is that it allows for all fragments to be analyzed, regardless of whether or not each fragment has any of the

defined zones or features. Its greatest weakness, however, is that not only can the counting be confusing and hard to accomplish, but these problems become amplified as the sample size increases. Marean et al. noted that for large assemblages, these weaknesses make the approach nearly fatal, and this is only compounded by the subjectivity of an analyst's decision of what constitutes an overlap (2001:338). They do not specify just how large a faunal sample needs to be before the overlap approach becomes unwieldy.

A solution to the subjective nature of determining overlap may be found in Münzel's (1988) approach, which uses a grid system to divide each bone element into a series of arbitrary zones that are then divided into planes and quadrants. This approach calls for each fragment to be placed on the grid, with the analyst recording the grid areas touched by the fragment, thus leaving less room for inter-analyst variation, and allowing for the analysis of greater sample sizes (Marean et al. 2001:338). This approach is not only cumbersome, but the grid on which each fragment is placed has large quadrants, and thus "fragments that project into a quadrant or segment can be counted as overlapping when they do not" (Marean et al. 2001:339).

Marean et al. (2001) discussed one system for deriving estimates of skeletal abundance that could help resolve the weakness found in the fraction-summation approach and the overlap approach–their image-analysis GIS approach. Simply stated, this system records each bone fragment as a pixel image; using ArcView GIS software, these images can be layered over images of complete bone elements concerted into a grid theme, and these layers can then be sorted for overlapping fragments. This approach has a number of advantages: it allows for a large number of images to be overlapped at one

time, it allows for other data types to be added to the image, such as cut marks or gnaw marks, and it allows for easily manageable coding into a database that utilizes more modern software. However it is time consuming to produce both the images of full elements for comparison (i.e. left and right femurs for all taxa) and those images from the faunal assemblage. It would become even more cumbersome if one more variable–that of size variation within specific taxa–was also factored in.

Bunn and Kroll (1986, 1988) described three ways to derive MNI values: "1) the minimum number of *complete* limb-bone skeletal elements necessary to account for only the specimens with one or both articular ends, 2) the minimum number of *complete* limb-bone skeletal elements necessary to account for only the specimens of limb-bone shafts (without an articular end), and 3) the minimum number of *complete* skeletal elements necessary to account for both the specimens with one or both articular ends and the shaft specimens" (Lyman 1994:53; emphasis in original). The end result for all three methods tends to be fairly subjective MNE values.

The measurement of the relative abundance of different taxa within an archaeological site (or perhaps between sites) has typically been the major goal of quantifying faunal remains (Grayson 1984). The two most common quantitative units used for this purpose are NISP (the observational unit defined as the number of identified specimens per taxon) and MNI (the analytically derived unit defined as the "minimum number of individual animals necessary to account for some set of identified faunal remains" which may or may not take individual variation such as age, sex, or size into account (Lyman 1994:38). The term "identified" here is typically meant to refer to taxonomic identifications, rather than identification of skeletal elements.

White (1953) is generally credited with the creation of MNI, though the concept was used in the faunal analysis of Russian sites during the 1880s, as well as by paleontologists since at least the 1930s (Casteel 1977:125; Jolley 1983:64). White calculated MNI from the greatest number of paired right and left elements from any given species. Krantz (1968) however, calculated MNI by "pairing off the right and left bones from the same species and adding all the remaining left and right elements" (Jolley 1983:64). Bokonyi (1970) proposed calculating MNI on the basis of age and animal size. All three of these methods however, are time consuming and impractical, because they fail to account for age, sex, and size (in the case of White and Krantz), species variation and taphonomic processes.

Although the terms NISP and MNI generally have agreed-upon meanings (Lyman 1994:31), there appears to be no consensus on their proper calculation. Casteel (1977) examined this problem and found that there is no best way to calculate MNI, concluding that new approaches are still needed (Jolley 1983:65). The lack of consensus creates great problems, especially in those cases where historic sites zooarchaeologists fail to indicate which MNI technique they have used.

Not only is the calculation of MNI a problem, but the concept itself has been criticized because it "cannot provide a valid measure of taxonomic abundance that is greater than ordinal in scale because the relationship between MNI and the actual number of individuals in a faunal assemblage is never known. Thus, all that can be known is that the actual number of individuals lies somewhere between the MNI and the total number of elements identified for that species" (Jolley 1983:65).

Quantitative units such as NISP and MNI have increasingly come under fire as our knowledge of taphonomic processes expands. For example, NISP is criticized because it often does not account for inter-taxonomic variation in the fragmentation of skeletal elements, thus producing a biased and potentially inaccurate measure of the relative abundance of taxa (Gilbert and Singer 1982; Holzman 1979; Klein and Cruz-Uribe 1984; Lyman 1994).

Recently, Cannon (2005) presented experimental data on establishing a formal model for determining whether variability in NISP-based indices of taxonomic relative abundance is an indication of past human subsistence variability, or whether it is due to variability in fragmentation rates. Cannon noted that foremost among the problems with NISP is how dependent it is on the degree to which skeletal remains are fragmented. For example, the disarticulated skeleton of a single mammal "would be counted as roughly 200 identified specimens if all of the bones within it were unbroken, but shattering each of those bones into a number of pieces could result in an NISP value several times that size" (2005:2).

Marshall and Pilgrim (1993) discussed a model that describes the relationship between NISP and fragmentation rate: with relatively low fragmentation rates, the NISP should increase as the fragmentation rate increases. At a certain point in the fragmentation rate however, the NISP should begin to decline because as fragmentation increases, the average size of each specimen decreases, thus hindering the identifiability of each specimen. Cannon noted other reasons why this relationship may occur, including differential specimen recovery from the archaeological site (such as screen size), as well as taphonomic processes such as chemical weathering that can remove bone from the

record before it is ever excavated (2005:3). Using the ratio of MNI to NISP to determine fragmentation, Cannon found that the effects of fragmentation on NISP may not be as severe as expected, at least for small mammals.

Marshall and Pilgrim (1993:262) noted that commonly perceived weaknesses of NISP include the aforementioned "variation in counts of taxa with variously fragmented bone assemblages, and non-independence of specimens" as well as how inflated an NISP can become for taxa with many bones (such as pigs), or for those taxa with easily identifiable bones. MNI was introduced in part to help counteract these issues, but it has weaknesses of its own, including its sensitivity to sample size "and to the uneven distribution of body parts across sites," as well as with the difficulty of calculating MNI (Marshall and Pilgrim 1993:262).

In their study of the faunal assemblage from Ngamuriak, a Kenyan pastoral Neolithic site, Marshall and Pilgrim found that MNI and NISP are equally sensitive to the effects of fragmentation, just in different ways. They suggested that while MNI decreases as the fragmentation rate increases, NISP increases at low levels of fragmentation and decreases at high levels of fragmentation.

MNI and NISP are also affected by differential ease of identification of body parts. Due to factors such as size, number, landmarks, and density (affecting preservability), some skeletal elements are inherently easier to identify than others. "This means that different body parts will not be counted evenly, and the problem will be greater for MNI than NISP because of the former's reliance on preservation of identical landmarks" (Marshall and Pilgrim 1993:266). These problems with calculating MNI and NISP are further compounded by the effects of carcass processing, such as butchering

and cooking techniques. NISP becomes an inflated estimate of the actual number of body parts in a faunal assemblage, which is not a problem for descriptive comparisons of body-part representation; it does become a problem if NISP is "used as sample size when calculating inferential statistics, because the level of statistical significance will be overestimated" (Marshall and Pilgrim 1993:267). For calculating inferential statistics, Marshall and Pilgrim suggested using MNI instead. Despite the strengths and weaknesses in their argument, Marshall and Pilgrim seem to suggest that perhaps it would be beneficial for zooarchaeological analyses of faunal assemblages to include counts for both NISP and MNI.

Of course as Lyman noted, the ultimate concern is that "the analyst must make clear what is being counted, how it is being counted, and why the specimens are counted the way they are" (1994:54). If the quantitative units used are not explicitly defined, and if the methods used to calculate the quantitative data are not specified, any attempt to compare faunal data from zooarchaeological studies would not only be misleading, but would result in unnecessarily inaccurate findings. By making sure that we specify "how the quantitative units we use to measure the sample population relates to the qualitative properties of the target population we wish to infer," we not only help avoid future problems with comparative analysis, but we will also establish a justification for having chosen the (hopefully) appropriate quantitative unit in the first place (Lyman 1982:361; Lyman 1994:55).

Units of Analysis: Beef Meat Cuts and Value Ranking

Beef, it appears, is and has been king in California above all other sources of meat. It is for this reason that beef is the most widely studied form of meat; so much so that the number of studies on beef parallels its presumed importance in the American diet. Compared to beef, relatively little has been written on the identification, value ranking, and role of other meat sources such as pork, lamb/mutton, poultry, wild game, and fish. This being said, it is important to know just what happens to a cattle carcass before it can become "king" of the dinner plate.

Unfortunately for us, the methods utilized for breaking down beef carcasses, as well as the names given to different primary and secondary cuts, have varied through time and in different regions of the United States. For example, Schulz and Gust noted that in the 1850s, the cut known as the "rump" in New York was not the same as the one indicated by "rump" today. The following is meant to be a general discussion of late nineteenth and early twentieth century American and Euro-American butchering methods and the values assigned to specific beef cuts.

When cattle are taken to slaughter, the head and feet are removed first. The carcass is then cut through the backbone, laying it open into left and right halves or "sides." Each half is then divided into quarters by cutting along the natural curvature between the 12th and 13th ribs, producing an upper and lower forequarter and an upper and lower hindquarter. The muscles of the forequarter run very irregularly; they are coarser than the muscles of the hindquarter because, generally speaking, the front half of a cow receives more exercise than the back half. More exercise to the forequarters tends

to toughen the muscle fibers, rendering the meat from the forequarters less tender and juicy, and therefore less desirable and monetarily cheaper (Dennis Dalton, personal communication, January 28, 2011).

The quarters are then carved down further into primary (or primal) large, wholesale cuts. The number of primary cuts produced is dependent on the source, the butchers' (and sometimes the consumers') butchering preferences and needs, as well as how the cuts are defined, but in general, the primary cuts reflect where on the animal they came from (Bayham et al. 1982:16). For American butchering methods, these tend to include the following: chuck and neck (portions of the cervical vertebra, ribs, scapula, and thoracic vertebra), rib, shoulder or arm, fore shank and hind shank (sometimes just referred to as "shank"), brisket, loin, round, and rump. These eight primal beef cuts are fairly consistent, although some sources break down the loin into more specific primary cuts such as top loin, strip loin, and tenderloin. The National Live Stock and Meat Board however, breaks the primal into ten wholesale cuts: chuck, rib, short loin, sirloin, round, fore shank, brisket, short plate, flank, and tip. These are perhaps reflections of more modern-day definitions of cuts, though they are useful for the sake of comparison and for defining more specific cuts of meat.

The primal cuts may then be reduced into smaller, subprimal or secondary cuts. The chuck may be broken down into a large variety of secondary cuts, including: arm pot roast, cross rib pot roast, knuckle soup bones, arm steak, short ribs, shoulder steak and roast, neck bones for stew, 7-bone steak and roast, top and under blade steak and roast, and chuck eye steak and roast. The fore shank and hind shank secondary cuts mostly include shank cross cuts and beef for stew; the brisket, though an important aspect

of the primary, wholesale cuts, generally is boneless, and therefore represents a cut of beef that would be difficult, if not impossible to recognize in the archaeological record. The rib produces a variety of roasts and steaks, as well as short ribs and back ribs. The loin subprimal cuts include top loin, t-bone, porterhouse, sirloin, and tenderloin steaks, and tend to produce beef cuts preferred for their tenderness and palatability. The round and rump are often lumped together under the generic name “round,” and both can be divided into a number of round and rump roasts and steaks (top round, bottom round, eye round, and tip), though the quality varies depending on where along the long bone the cut is made. Cuts made closer to the epiphyses are often tougher, whereas those along the diaphyses are more tender. It should be noted however, that virtually all secondary cuts can be retailed as boneless, thus increasing the number of subprimal beef cuts, as well as the difficulty of recognizing them in a faunal assemblage. Regardless, the best way to identify primary cuts of meat archaeologically is through the faunal remains, and more specifically, through the identification of skeletal elements that can represent specific cuts of meat. This is no easy task, and it is often the case that the faunal remains can only be identified at the general level of the wholesale cut. Table 1 presents the skeletal elements that are most often associated with the primal cuts (butchering units) discussed above, as well as their most common secondary cuts (acquisition units).

It is generally agreed upon that for Western Europeans, Americans, and Euro-Americans, the finest and most desirable cuts of beef come from the middle of the animal, which tend to be the most protected, least exercised areas and thus produce more palatable and tender meat. High-quality cuts are often recognized as the primal short loin and sirloin, (signified by the lumbar vertebrae), and the round cuts produced from the

TABLE 1
BEEF BUTCHERING AND ACQUISITION UNITS AND THEIR SKELETAL INDICATORS

Primary Cuts (Butchering Units)	Skeletal Indicator	Secondary Cuts (Acquisition Units)
Neck	Atlas, axis, cervical vertebrae 3-7, proximal humerus, distal scapula	Soup/stew bone
Chuck	Thoracic vertebrae 1-5, dorsal ribs 1-5, humerus shaft, scapula blade	Chuck roast, 7-bone steak, T-bone steak, ground chuck
Shoulder	Proximal scapula, proximal humerus	Shoulder roast, blade steak, soup/stew bone
Arm	Proximal humerus and diaphysis	Bone-in steak, pot roast
Fore shank	Distal humerus, radius, ulna	Shank for soup/stew
Brisket	Ventral ribs 1-5 with sterna end and shaft, sternum	Point of brisket
Rib	Thoracic vertebrae 6-13, dorsal ribs 6-13, distal humerus, radius, ulna	Rib-eye steak, rib-eye roast
Short Plate	Costal vertebrae 6-13	Short ribs, skirt steak, beef for stew
Short Loin	Lumbar vertebrae, dorsal rib 13	Loin, tenderloin, top loin steak, T-bone steak, filet mignon
Sirloin	Ilium, sacrum	Sirloin steak (pin, flat, wedge, and boneless)
Cross/Short Rib	Ventral ribs 1-13	Ribs
Round Buttock	Femur shaft, distal femur and diaphysis	Round steak, round roast
Rump	Ischium, pubis, acetabulum, proximal femur, caudal vertebrae	Rump roast
Flank	Ventral ribs	Flank steak
Hind shank	Tibia, distal femur, fibula, patella, astragalus, calcaneus, naviculo-cuboid	Shank for soup/stew
Feet and Head	Metapodials, phalanges, cranial elements (mandible, hyoid)	Soup/stew bone

Source: Data compiled from Bayham, Frank E., Pamela C. Hatch, and Janet Balsom, 1982, *Interpretation of Faunal Remains from the Original Phoenix Townsite, Blocks 1 and 2*. Tempe, Arizona: Department of Anthropology, Arizona State University, p.18; Huelsbeck, David R., 1991, Faunal Remains and Consumer Behavior: What is Being Measured? *Historical Archaeology* 25(2):67; Lyman, Lee R., 1979, Available Meat from Faunal Remains: A Consideration of Techniques. *American Antiquity* 44(3):541; The Meat Buyer's Guide: Beef, Lamb, Veal, Pork, and Poultry. John Wiley & Sons, Hoboken, New Jersey, pp.1-4; Sanchez, Rhea Maricar, 2009, Zooarchaeology and Historical Archaeology of Historic Shasta County Hospital 1855-1900: A Case Study. Master's Thesis, California State University, Chico; Schulz, Peter D., and Sherri M. Gust, 1983, Relative Beef Cut Prices in the Late Nineteenth Century: A Note for Historic Sites Faunal Analysts. *Pacific Coast Archaeological Society Quarterly* 19(1):13; Szuter, Christine R., 1996, A Faunal Analysis of Home Butchering and Meat Consumption at the Hubbell Trading Post, Ganado, Arizona. In *Images of the Past: Readings in Historical Archaeology*, edited by Charles E. Orser, Jr., pp. 345. AltaMira Press, Walnut Creek.

innominate (Lyman 1979; Schulz 1979:59). Cuts such as the shank, neck, and chuck, decrease in value as they trend toward either extremity where the muscles are more greatly exercised.

Differences in the monetary cost of beef cuts are equated with differences in their value or quality; these values are defined by the palatability of each cut. The most important attribute of palatability is tenderness, which is impacted by fat content and intramuscular tenderness (Searls et al. 2005:2835). Beef cuts have been ranked according to these values as they have been compared against historical data. Bayham et al. (1982) and Schulz and Gust (1983b) have shown that the relative ranks for beef cuts in the United States have remained consistent throughout the nineteenth and twentieth centuries. However, as Huelsbeck noted, though the relative price for different cuts of beef may have remained consistent, "the prices of beef, pork, and possible mutton relative to each other probably have changed" (1991:64). In fact, he showed that increases in the relative price of beef were often accompanied by an increase in the amount of pork consumed.

"To avoid inconsistencies resulting from the effects of economic fluctuations on monetary values, and to allow the inclusion of sources which list only relative prices," Schulz and Gust assigned the cuts an ordinal rank, "valid only for the time and locality specified" (Schulz and Gust 1983b:13). Fortunately their price-rank model was created primarily for nineteenth and early twentieth century Sacramento, which lends itself well to the current thesis questions. Table 2 lists the relative status rankings and cost

TABLE 2
PRIMARY BEEF CUTS: RELATIVE STATUS RANKING AND COST EFFICIENCY RANKING

General Economic Rank	Butchering Unit	Relative Status Ranking	Relative Cost Efficiency Ranking
	Short loin	1	10
High	Rib	2	1
(1-3)	Sirloin	2	1
	Round	3	2
	Rump	4	3
Medium	Chuck	5	5
(4-6)	Arm	6	4
	Cross/Short rib	6	4
	Short Plate	7	6
Low	Brisket	7	6
(7-10)	Neck	8	8
	Fore shank	9	7
	Hind shank	9	7
	Feet and Head	10	9

Source: Data compiled from Huelsbeck, David R., 1991, Faunal Remains and Consumer Behavior: What is Being Measured? *Historical Archaeology* 25(2):67; Sanchez, Rhea Maricar, 2009, Zooarchaeology and Historical Archaeology of Historic Shasta County Hospital 1855-1900: A Case Study. Master's Thesis, California State University, Chico; Schmitt, Dave N., and Charles D. Zeier, 1993, Not by Bones Alone: Exploring Household Composition and Socioeconomic Status in an Isolated Historic Mining Community. *Historical Archaeology* 27(4):32; Schulz, Peter D., and Sherri M. Gust, 1983, Relative Beef Cut Prices in the Late Nineteenth Century: A Note for Historic Sites Faunal Analysts. *Pacific Coast Archaeological Society Quarterly* 19(1):13.

efficiency rankings for primary beef cuts. The cost efficiency rankings are based on the research of Lyman (1987) and Huelsbeck (1991) regarding problems with the price-rank approach.

For the relative status rankings, the lower the ranking number assigned (such as the relative ranking of "1" for the short loin butchering unit), the higher the presumed quality and cost. The higher the number (as with the "10" assigned to the feet and head),

the lower the quality and cost. For the cost efficiency rankings, the trend is similar however, the numbers correspond to meat yield and purchasing efficiency. The lower the ranking number, the more meat the cut yields and thus the more cost efficient for those people with limited purchasing abilities.

Bayham et al. (1982) created a similar ordinal ranking for relative beef, pork, and sheep/goat meat values. Basing their values on price per pound, (then using mean values for the retail cut price found within each primary cut) they devised an economic profile for each butchering unit. Although they had difficulties establishing relative ranking values from mathematical formulas, they devised a general scheme for ranking beef cuts that parallels that of Schulz and Gust (1983b). These values will be utilized (along with values from other studies, as listed below Table 2) for the Philadelphia House collection in order to provide a general economic value for the meat cuts represented in the assemblage, particularly those identified as pork and sheep/goat cuts, for which similar studies are somewhat lacking. Although this thesis is focused primarily on using faunal remains to indicate ethnicity, a social and economic-based analysis of status is necessary to either help account for or eliminate socio-economic status as the primary factor in the assemblage's meat-cut patterns.

Units of Analysis: Pork Meat Cuts and Value Ranking

As with cattle, the butchering of hogs begins with removal of the head. They are often butchered before they reach one year old, which generally helps the meat retain a delicate flavor. The body is then generally split down the backbone, dividing the carcass into bilateral halves. Each side is then broken down into primal cuts, including

the removed jowl and head, shoulder butt/Boston shoulder, picnic shoulder, rough back/loin, rib belly (including spareribs and bacon), the short cut ham/leg, and the feet. Unlike beef, veal, and lamb, pork is unique in that the ribs and loin make up a single primal unit. Pork butchering units can be further divided into subprimal or secondary cuts. For example, the "shoulder butt" can be broken down into blade roasts and steaks, and the loin can be butchered into blade chops, rib chops, loin chops, loin roasts, and tenderloin. The loin is considered to have the highest quality, most expensive cuts of pork, and as with beef loin this is due to the tenderness and palatability that comes from the least exercised region of the animal.

In early urban Sacramento, pork was available for purchase as retail cuts. Secondary cuts were virtually the only kind of meat available in an urban setting, as raising large domestic livestock such as cattle, hogs, and sheep or goats was often prohibited within the city limits (Huelsbeck 1991:63). Huelsbeck noted that "from early in the Colonial period until well into the 19th century, swine apparently outnumbered cattle"–at least on the East coast, although the faunal remains often represented larger amounts of beef than pork (1991:63). Huelsbeck suggested though that methods for processing pork such as salting which involves removing the bones, along with variability in bone density between cattle and swine bones may skew bone counts and meat yield quantities in favor of beef. Relative species frequency may also have been impacted by seasonality: some kinds of meat–especially pork–may have been more readily available, or more commonly consumed during the winter when it was less likely to spoil.

Regardless of the factors affecting choice and availability, pork butchering units have their skeletal signatures in ways similar to beef, and these can be utilized for recognizing wholesale pork cuts from faunal remains. Table 3 presents the primary pork cuts, their skeletal indicators, and the secondary cuts that may result from the larger units.

TABLE 3
PORK BUTCHERING AND ACQUISITION UNITS AND THEIR SKELETAL INDICATORS

Primary Cuts (Butchering Units)	Skeletal Indicator	Secondary Cuts (Acquisition Units)
Jowl/Head	Mandible (cranial?)	Smoked jowl
Shoulder Butt/Boston Shoulder	Cervical vertebrae, scapula blade	Blade roast, blade steak, smoked shoulder
Picnic Shoulder	Distal scapula, humerus, radius-ulna	Fresh arm, smoked arm, arm roast, arm steak, hock, neck bones
Rough Back/Loin	Scapula(dorsal), thoracic vertebrae, lumbar vertebrae, dorsal ribs, ilium, sacrum	Blade chop, rib chop, loin chop, sirloin chop, back ribs, loin roast, tenderloin
Rib Belly/Spareribs/Bacon	Mid and ventral ribs	Spareribs, bacon, salt pork
Short Cut Ham/Leg	Acetabulum, pubis, ischium, femur, proximal tibia and shaft	Ham (rump portion), ham (shank portion)
Feet	Carpals, tarsals, metapodials, phalanges	Pig's feet

Source: Data compiled from Lyman, Lee R., 1979, Available Meat from Faunal Remains: A Consideration of Techniques. *American Antiquity* 44(3):541; The Meat Buyer's Guide: Beef, Lamb, Veal, Pork, and Poultry. John Wiley & Sons, Hoboken, New Jersey.

As with all meat cuts, it becomes particularly difficult to distinguish more specific acquisition units from the kind of skeletal fragments generally recovered from historic sites. As stated previously, beef was "king," leaving pork to have a not-so-well

understood role in nineteenth and early twentieth century meat consumption. Few zooarchaeological studies have focused on pork, but those that have, have attempted to establish a system for analyzing the socio-economic implications of the various pork cuts and their economic rankings. Table 4 presents a composite listing for pork butchering

TABLE 4
PRIMARY PORK CUTS: RELATIVE STATUS RANKING

General Economic Rank	Butchering Unit	Relative Status Ranking
High	Rough Back/Loin	1
(1-2)	Short Cut Ham/Leg	2
Medium	Rib Belly/Spareribs/Bacon	3
(3-4)	Shoulder Butt/Boston Shoulder	4
Low	Picnic Shoulder	5
(5-7)	Feet	6
	Jowl/Head	7

Source: Data compiled from: Bayham, Frank E., Pamela C. Hatch, and Janet Balsom, 1982, *Interpretation of Faunal Remains from the Original Phoenix Townsite, Blocks 1 and 2*. Tempe, Arizona: Department of Anthropology, Arizona State University, p.28; Diehl, Michael, Jennifer A. Waters, and J. Homer Thiel, 1998, Acculturation and the Composition of the Diet of Tucson's Overseas Chinese Gardeners at the Turn of the Century. *Historical Archaeology* 32(4):27.

units and their relative status ranking based on the work of Bayham et al. (1982) and Diehl et al. (1998).

Pork wholesale cuts are ranked on an ordinal scale from one to seven, with one representing the highest quality, most expensive cut (rough back/loin), and seven representing the lowest quality, least expensive cut (head and jowl). The feet and jowl/head are often linked together as equally low in quality. They are, however, distinctive units within the Philadelphia House faunal assemblage. Their skeletal

identifiability, combined with the large number of skeletal elements possible from each, is likely to create a misleading analysis of the faunal assemblage, and thus for the purposes of this thesis, they are listed separately.

Units of Analysis: Sheep/Goat Meat Cuts and Value Ranking

The butchering of sheep and goats begins with the removal of head, feet, skin and viscera. Using a hand saw, the carcass can either be cut into bilateral halves, split through the center of the backbone or it can be divided into the foresaddle (the front half which includes the ribs, shoulder, breast and fore shank) and the hindsaddle (the back half which includes the loin, flank and leg) by cutting through the 12th and 13th ribs. The butchering process results in 11 possible butchering units: chuck/shoulder and neck, fore shank, brisket/breast, short or hotel rack/rib, loin, sirloin, flank, leg, hind shank, head, and feet. The forward-slash symbol "/" is used to provide more inclusive terminology for wholesale sheep/goat meat cuts, and are a reflection of multiple meat-cut guides. The chuck/shoulder and neck unit is sometimes listed as two units, the neck and the chuck/shoulder, whereas the loin and sirloin are often grouped together as one unit–the loin. The feet and head are often grouped together as well, however this seems to suggest an economic utility relationship, rather than a relationship of like skeletal elements.

The eleven butchering units listed in Table 5 were chosen for their ability to be recognized in the faunal assemblage, and for the differences in their relative status ranking. As with pork cuts, the head and feet are listed separately, despite their similar ranking, because lumping together two butchering units that are each composed of many skeletal elements, is likely to generate a misleading faunal analysis. Table 5 presents the

TABLE 5
SHEEP/GOAT BUTCHERING AND ACQUISITION UNITS AND THEIR SKELETAL INDICATORS

Primary Cuts (Butchering Units)	Skeletal Indicator	Secondary Cuts (Acquisition Units)
Chuck/Shoulder and Neck	Atlas, axis, cervical vertebrae, scapula, thoracic vertebrae 1-5, ribs 1-5, proximal humerus and shaft	Blade chop, arm chop, square shoulder, neck, boneless shoulder
Fore shank	Distal humerus, radius-ulna, metacarpals, carpals	Fore shank, trotter
Brisket/Breast	Sternum, ribs 1-12 with sternal end and shaft	Riblets, spareribs, breast
Short or hotel rack/Rib	Thoracic vertebrae 6-12, dorsal ribs 6-12	Rib chops, crown roast, rib roast
Loin	Lumbar vertebrae	Loin chop, loin roast
Sirloin	Ilium	Sirloin chop, sirloin roast
Flank	No bones	Flank
Leg	Acetabulum, pubis, ischium, sacrum, femur, patella	Leg chop, center leg, leg sirloin chop, leg roast
Hind shank	Tibia, fibula	Hind shank, shank of leg
Head	Cranium, mandible	Head
Feet	Metapodials, tarsals, carpals, phalanges	Feet

Source: Data compiled from Lyman, Lee R., 1979, Available Meat from Faunal Remains: A Consideration of Techniques. *American Antiquity* 44(3):541; The Meat Buyer's Guide: Beef, Lamb, Veal, Pork, and Poultry. John Wiley & Sons, Hoboken, New Jersey; Szuter, Christine R., 1996, A Faunal Analysis of Home Butchering and Meat Consumption at the Hubbell Trading Post, Ganado, Arizona. In *Images of the Past: Readings in Historical Archaeology*, edited by Charles E. Orser, Jr., pp.345. AltaMira Press, Walnut Creek.

butchering units for sheep/goat, their skeletal indicators, and the secondary cuts (acquisition units) that can be produced from the wholesale cuts. For example the loin, recognizable faunally from the lumbar vertebrae, can produce loin chops and loin roasts

whereas the hind shank, represented skeletally by the tibia and fibula, can be fabricated into hind shank and shank of leg secondary cuts.

Sheep/goat wholesale cuts can be ranked on an ordinal scale from one to seven with one representing the highest quality, most expensive cuts (loin and sirloin), and seven representing the lowest quality, least expensive cuts (head and feet). Table 6

TABLE 6
PRIMARY SHEEP/GOAT CUTS: RELATIVE STATUS RANKING

General Economic Rank	Butchering Unit	Relative Status Ranking
	Loin	1
High	Sirloin	1
(1-2)	Flank	2
	Short or hotel rack/Rib	2
	Chuck/Shoulder and Neck	3
Medium	Chuck/Rib	3
(3-5)	Chuck/Breast/Rib	4
	Leg	4
	Hind Shank	4
	Brisket/Breast	5
	Fore Shank	6
Low	Head	7
(6-7)	Feet	7

Source: Data compiled from Bayham, Frank E., Pamela C. Hatch, and Janet Balsom, 1982, *Interpretation of Faunal Remains from the Original Phoenix Townsite, Blocks 1 and 2*. Tempe, Arizona: Department of Anthropology, Arizona State University, p. 27.

presents the general economic rank and the relative status ranking for the eleven butchering units, and is comparable to Tables 2 and 4 for beef and pork, respectively. At this time, it appears that no obvious studies have been conducted for analyzing the cost efficiency ranking for pork and sheep/goat meat cuts.

Units of Analysis: Wild and Domestic Fowl and Rabbit Meat Cuts

Perhaps because of their relatively small size (compared to cattle, hogs, sheep, and goats), and because of their delicate, and easily butchered bones, most zooarchaeological studies involving avifaunal remains have rarely focused on poultry butchering or acquisition units, their relative status ranking, or the cost efficiency of poultry meat cuts. Those working with prehistoric collections have often focused on issues relating to subsistence strategies and using avifaunal remains as indicators of seasonality. These studies do not tend to lend themselves well to historic sites studies, particularly those from urban environments from which acquisition of poultry was often a matter of market purchases rather than hunting activities. Those working with historic sites avifaunal remains have focused instead on issues relating to their use as indicators of ethnicity, and in a general way as indicators of social and economic status.

For example, Simons' (1980) analysis of the avifaunal remains from Sacramento's historic Golden Eagle site resulted in the development of an historical-archaeological model for late nineteenth and early twentieth century wild and domestic poultry utilization for central California. He showed that prior to the 1880s, most of the poultry consumed and available for market purchase came from wild birds such as ducks, geese, quail, and wild pigeons. At this time domestic fowl such as chicken and turkey were not as easily acquired, and thus they were more expensive.

During the last two decades of the 19th century, large-scale chicken and turkey production created a new competitive force in the market, though they were still more expensive than their wild counterparts. Reversal in the prices and dietary contributions of

wild versus domestic poultry however, began with a drastic decrease in the game bird population. So great were their declining populations that in 1901 the California legislature began enacting laws for the protection and conservation of wild migratory birds, thus virtually eliminating their availability in the market place (Simons 1980:1-5). This, combined with the greater availability of domestic fowl meant that by the end of the 1800s, chickens and turkeys had become the dominant, cheapest, and most readily available form of consumable poultry. Simons showed that using this data, analyses of wild versus domestic fowl ratios across time may be used as indicators of social and economic status. One assumption here is that assemblages dating prior to 1880 which exhibit a greater ratio of domestic-to-wild fowl remains may reflect a household or business with a high social status and a greater purchasing power than those with the means to purchase primarily wild poultry. In this case (and very generally speaking) it may be said that the butchering unit can be represented by the entire bird, with the relative status ranking of these units based on species, rather than meat cut qualities, as with beef, pork, and sheep/goat.

Simons' (1984) paper on the Woodland Opera House site presents a different application of avifaunal studies: an application based on using bird remains as indicators of Chinese ethnicity. Using faunal spectrum analysis ("the identification and calculation of the number of remains derived from different animals, with particular attention to species unique to, or especially characteristic of, the diet or medicine of relevant ethnic groups" (168)) and the study of butchering patterns, Simons showed that the site's avifaunal assemblage exhibited patterns that could be strongly linked to American Chinese communities.

Simons' quantitative comparison of assemblages from Woodland, Ventura, Sacramento, and Lovelock revealed that bones of domestic poultry–particularly chicken–dominated the bird remains of all the sites (1984:169). This was at a time when wild game birds were cheaper than chickens, which indicated that these Chinese communities went to considerable lengths to secure a food source favored above the more readily available and cheaper choices.

Not only was there an obvious preference for chicken, but the methods used for butchering them were comparable to modern techniques as described in Cantonese cookbooks and still utilized in Cantonese restaurants. Chicken-butchering by cleaver into smaller, chopped portions paralleled Chinese techniques, and was quite distinctive from Simons' (1980) earlier analysis of the Golden Eagle Hotel's avifaunal remains which were represented by the major body parts of chickens prepared and served in a French/Franco-American style.

Simons' analyses provide the data used to compile the poultry butchering and acquisition units and their skeletal markers, as listed in Table 7. Owing to the generally small size and small meat yield of domestic and wild birds, there are considerably fewer categories for butchering units than there are for cattle, pigs, sheep, and goats. It may have been the case that in the late 19th and early 20th century, poultry was acquired as wholesale units, but it is just as likely that, as it is today, they could be purchased whole as well. And unlike the larger domestic livestock, prices for poultry cuts do not correlate as well to producing an economic ranking or relative status ranking scale. For these reasons, a table presenting status rankings will not be provided in this thesis.

TABLE 7
POULTRY BUTCHERING AND ACQUISITION UNITS AND THEIR SKELETAL INDICATORS

Primary Cuts (Butchering Units)	Skeletal Indicator	Secondary Cuts (Acquisition Units)
Breast-Upper Wing	Sternum, furcula, scapula, coracoid, proximal humerus	Breast, upper wing
Thigh-Drumstick	Femur, tibiotarsus	Thigh, drumstick
Outer Wing-Lower Leg, and Giblets	Distal humerus, ulna, carpometacarpus, wing phalanges, tarsometatarsus	Outer wing, lower leg

Source: Data compiled from Simons, Dwight D., 1980, Bird Remains. In *Historical Archaeology at the Golden Eagle Site*, edited by Mary Praetzellis, Adrian Praetzellis, and Marley R. Brown, III, pp.1-1 to 1-12. Anthropological Studies Center, Sonoma State University, Rohnert Park, California; Simons, Dwight D., 1984, Avifaunal Remains at the Woodland Opera House Site. In Avifaunal Remains at the Woodland Opera House Site. In The Chinese Laundry on Second Street: Papers on Archaeology at the Woodland Opera House Site. *California Archaeological Reports* No. 24:167-180. Cultural Resource Management Unit, Department of Parks and Recreation.

The same is true for rabbit (the term “rabbit” used here to refer to true rabbits and hares), though as a small game mammal, it might be assumed that the middle-body portions may be of higher quality and more desirable than the head, feet, fore, and hind limbs. Gust and Schulz (1980) noted that animals in this size range tend to be butchered in a similar manner, though the methods vary depending on the recipe and the intended meal. Some recipes call for merely quartering the body, though most involve cutting the rabbit carcass into serving pieces (Gust and Schulz 1980:3-6). These serving pieces are dependent on the size and degree of musculature of each animal: domestic rabbits that are kept penned may be bred for size and tenderness, whereas wild rabbits such as jackrabbits have regularly exercised muscles and thus are less tender with a smaller meat

yield. Table 8 presents the very basic butchering units for a rabbit (forequarter, hindquarter, and saddle) and their associated skeletal indicators.

TABLE 8
RABBIT BUTCHERING AND ACQUISITION UNITS AND THEIR SKELETAL INDICATORS

Primary Cuts (Butchering Units)	Skeletal Indicator	Secondary Cuts (Acquisition Units)
Forequarter	Scapula, humerus, radius, ulna, metacarpals, carpals, fore phalanges	---
Saddle	Thoracic vertebrae, lumbar vertebrae, ribs, sacrum, innominate	---
Hindquarter	Femur, patella, tibia, fibula, metatarsals, tarsals	---

Gust and Schulz noted that in the case of the faunal assemblage from Sacramento's Golden Eagle Hotel and associated Cronin's Oyster Saloon, cottontail rabbit remains outnumbered jackrabbits by more than two-to-one, and no specimens of domestic rabbit were identified (1980:3-6). This is likely due to the "countless heaps" of hares and rabbits that marked their steady abundance and availability in the marketplace. Although the types of serving pieces were variable, producing differences in the exact placement of cuts, Gust and Schulz found that clear butchering patterns could be identified. Figure 5 shows the cutting patterns they identified for the rabbit and squirrel bones recovered from Cronin's Oyster Saloon, which is possibly a reflection of French/Franco-American foodways (such as jackrabbit stew) and butchering techniques.

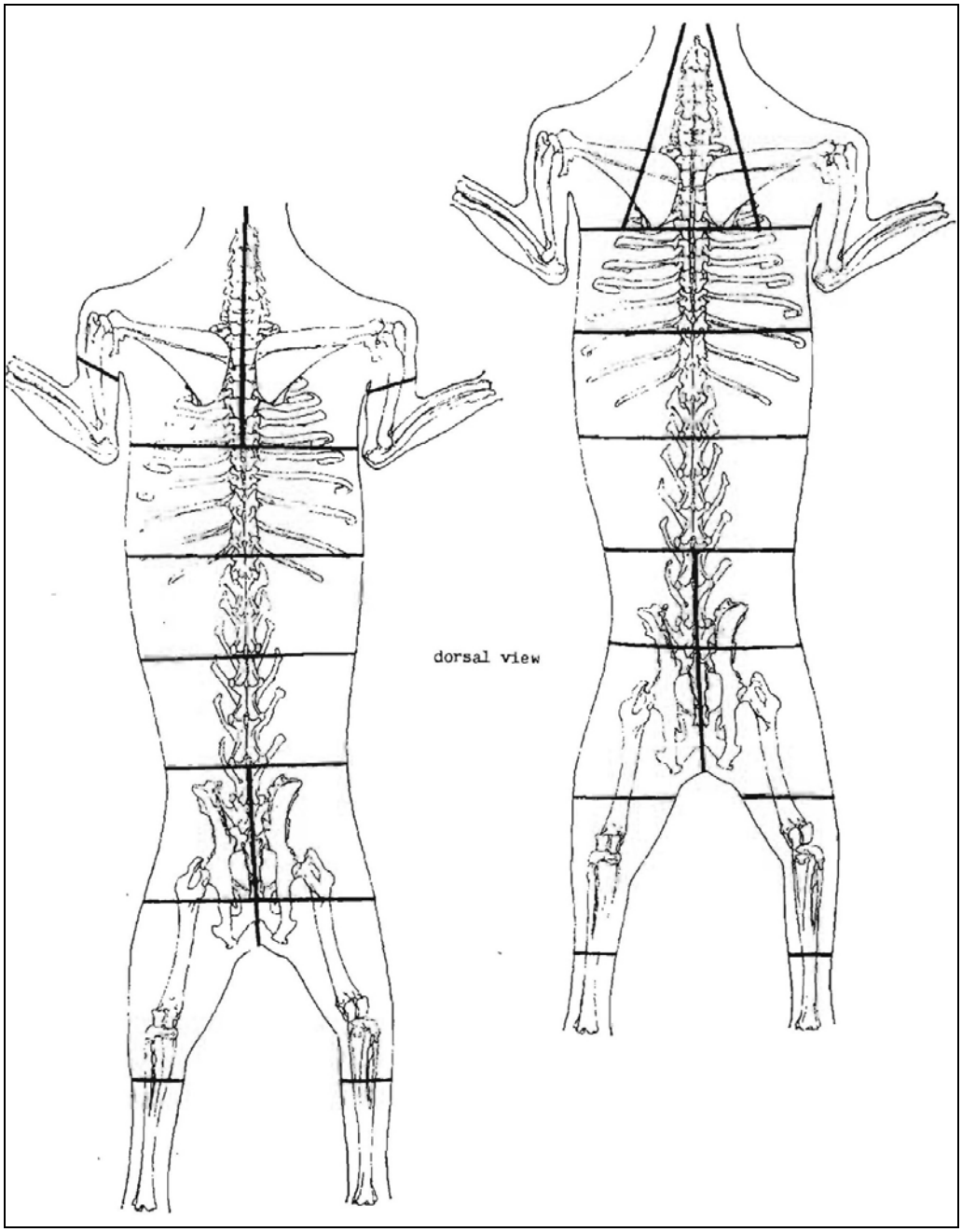


FIGURE 5. Small Game Butchering Patterns from Cronin's Oyster Saloon (Gust and Schulz 1980). These patterns are thought to reflect French/Franco-American Butchering Techniques.

Source: Gust, Sherri M., and Peter D. Schulz, 1980, Mammalian Remains. In *Historical Archaeology at the Golden Eagle Site*, edited by Mary Praetzellis, Adrian Praetzellis, and Marley R. Brown III, pp. 3-1 to 3-19. Anthropological Studies Center, Sonoma State University, Rohnert Park, California.Reprinted with permission.

It should be noted however, that this is just one method for butchering a rabbit into serving pieces, and should not be taken to represent a universal technique.

Problems with Meat Cut Rankings

These values are meant to provide evidence for the economic status of those people who produced each faunal assemblage. It is assumed that those with more means for purchasing higher-quality meat cuts will do so, and those without will more likely consume cuts of a lower quality. Following identification of the meat cuts from a faunal collection, a pattern such a high frequency of low-quality cuts may indicate the lower social and economic status of those who consumed them. The problem often encountered with meat-cut ordinal scales is that the ranks are based on large butchering units, and as mentioned previously, those groups who lived in urban environments often had limited access to wholesale cuts, purchasing instead smaller retail portions. Because smaller cuts were more readily available, ranking based on butchering units rather than what was actually acquired, may present an inaccurate picture of a group of individuals' social and economic status. Even so, butchering units are the most often utilized units of analysis, and this is likely due to the difficulties inherent in attempting to identify more specific retail cuts from fragmentary faunal remains

Huelsbeck (1991) pointed out a number of significant issues to keep in mind when utilizing meat-cut rankings to infer status. To begin with, he noted that inferring socio-economic status from the archaeological record is quite complicated, and perhaps these inferences could be better supported by using multiple measures such as meat cuts and ceramics, rather than relying on one alone. He noted also that foodways are likely to

impact the analytical perception of status. For example, food that is prepared and served communally in the form of soups or stews–such as in a restaurant or saloon setting–will exhibit lower-quality meat cut frequencies, and thus a lower status may be inferred in place of a more likely functional explanation. Ethnicity too, is an important factor to consider, for it should not be presumed that high or low quality rankings are universal.

Lyman (1987) introduced the concept of cost efficiency to help combat some of the problems he noted with the price-rank model–namely, that it does not explicitly define socio-economic status. He suggested that the most rational behavior for those with limited purchasing power would be to "purchase those cuts that yield the most meat for the least amount of money, that is, to purchase cost efficiently" (Huelsbeck 1991:68). Cost efficiency measures the net cost of edible meat (price per pound) divided by the proportion of edible meat. A side-by-side comparison of Lyman's cost-efficiency model and Schulz and Gust's price-rank model can be seen in Table 2, with the most significant difference being that the short loin, ranked as a high-quality cut, yields little edible meat and thus is not cost efficient. In addition, the highest yielding cuts include both those considered to be high and low "status" cuts. Huelsbeck (1991) noted that none of the data sets that had been used to explore cost efficiency correlated well with Lyman's rankings for beef cuts. This may suggest that those with limited purchasing power do not or possibly cannot, (depending on market availability) purchase efficiently. Or perhaps it is due to the noticeable difference between quantifying represented meat from butchering units and quantifying those from acquisition units.

In their study of the faunal assemblage from 47 spatial and temporal contexts from Charleston, South Carolina, Reitz et al. noted that a household may purchase

expensive cuts it cannot afford in order to maintain or acquire higher social status. Or perhaps high quality cuts are a reflection of the limited resources and options for food acquisition faced by poor households: in other words, poor households may not have any other choice than to purchase more costly meat cuts (Reitz et al. 2006:105). In theory then, a household's financial wealth may be indicated by its members' ability to purchase expensive cuts of meat, but in practice "the relationship between purchasing power and meat consumption is neither direct nor simple" (2006:105).

Effects of Cooking and Butchering Techniques on Bone

One not-too-well explored area of zooarchaeology is the effect of cooking and butchering techniques on faunal remains. This is unfortunate because there is much that the marks they leave behind can tell us about food preference, preparation, and availability. Butchery marks, along with fracture patterns and evidence of cooking techniques such as burned and unburned bone can yield information about how animals have been processed for consumption as food and possibly as other forms of cultural material.

In her study of slave diet from the Monticello faunal assemblage, Crader (1984, 1990) identified five types of butchery marks prevalent among faunal-based food remains. These marks include cuts, chops, scrapes, shears, and saws. Cuts are those marks likely made with a metal knife that leave behind straight, narrow, incised lines on the bone surface. They are likely the result of meat being stripped from the bone during secondary butchery, but may also result from the separation of joints during primary butchery (Crader 1990:706). Chops are similar although they are often created by

cleavers or ax-like tools, and leave wider marks that appear as small wedges removed from the bone. Scrapes appear as irregular striations where a shallow layer of the bone's surface has been removed.

Shears are those marks produced by the blow of a cleaver or ax-like tool, splitting the bone apart and leaving straight-walled, planar surfaces across the split area. Chops and shears are often the product of the butchery process, of joint separation, or possibly reducing the size of the bones and meat for cooking in a pot or removing marrow (Crader 1984:547). Crader and Boor et al. both noted that the practice of breaking up bones into pieces that could fit in a pot could partially account for high degrees of fragmentation in a faunal assemblage. Evidence for meat preparation in a pot rather than on an open fire may also exist from the absence of damage by burning. Crader discussed how damage by burning "occurs when bone is in direct contact with fire and can thus be expected to result from activities other than roasting meat, such as housekeeping chores when discarded bones [may be] swept into a hearth" (1984:548).

Saw marks, which are likely the mark most familiar to modern-day people, are created when a metal saw is drawn back and forth repeatedly through the bone. Saw marks appear as regular, parallel striations across a flat, planar surface of bone (Crader 1990:706). Chop, shear and saw marks are likely due to carcass dismemberment during primary butchery, but bones intentionally broken to obtain marrow or for use in stews may result in secondary butchery chops and shears. Crader observed that the location of the butchery mark, such as either on the end or on the shaft of a long bone, can help to identify the action that produced the mark.

In *Problems and Prospects in Nineteenth Century California Zooarchaeology,* Gust (1983) discussed the various patterns that may appear on faunal remains as a result of specific butchery tools. These tools include cleavers and axes, handsaws and bandsaws, and circular saws. Cleavers and axes leave V-shaped scores at the point of impact, breaking through the remaining bone, as well as faint striations perpendicular to the edge of the blade, producing marks similar to what Crader called chops and shears. During the nineteenth century, cleavers were used to cut through the bone of pork and mutton, which was relatively softer than beef bones. In fact, Gust pointed out that the difference between the terms “chop” and “steak” originated because “pork and mutton could be cleaved while beef bone had to be sawn” (1983:344).

Handsaws and band saws “leave scores that are flat bottomed and have parallel sides. Complete cuts with handsaws have a flat face showing multiple and irregular heavy striations with finer striations between, all parallel to the cutting edge” (Gust 1983:343). Band saw marks tend to be more regular in depth and spacing than handsaw marks, though these differences are often difficult to distinguish.

Handsaws were in use in America by early settlers as woodcutting tools, but it appears that they were not used for butchering until the early 1800s; in California, the use of saws for butchering is thought to have begun sometime in the 1840s as a consequence of both the gold rush, and techniques learned by settlers from other areas of the United States (Gust 1983:344). Band saws (used by most butchers today) were invented in 1808 but were not a very successful butchering tool until the 1850s when more durable steel bands became more widely available (Gust 1983:344).

Circular saws produce marks that tend to appear as subtle, arcing striations that are more widely spaced than those produced from band saws. Circular saws were available as early as the late 1700s, and were powered first by water, then by steam. In Sacramento, it appears that power saws were not in use by butchers until the late 1930s (Gust 1983:344). This is important to note because it means that the most likely tools utilized for butchering the Philadelphia House faunal remains can be narrowed down to cleavers, axes, knives, and handsaws.

Application of Zooarchaeological Studies to Historic Sites: Case Studies

As a subfield of archaeology, zooarchaeology has been used quite successfully to tackle a number of research questions in historic sites archaeology. Jolley's 1983 article *North American Historic Sites Zooarchaeology* discussed a number of these research themes, including dietary practices, husbandry practices, butchering patterns and techniques, site interpretation, the role of historic documentation in aiding zooarchaeological interpretations, the inference of cultural practices such as food taboos and dietary restrictions, and the links that can be made between faunal remains and socio-economic and ethnic status. The latter two are of particular interest for the current study on the formation of ethnic identity within 19th century Sacramento, California. The following review will help illuminate a few of the issues encountered by zooarchaeologists who have focused on the use of faunal remains as indicators of socio-economic and ethnic identity.

Boor et al.'s (2001) study of the faunal remains from the Trimborn Farm site in Milwaukee, for example, provided preliminary insights into how immigrants adapt to

changing cultural and physical environments, especially when living in a town in the process of shifting from a rural to an urban landscape. Established in 1850, the Trimborn Farm played a significant role in Milwaukee's early lime industry until the farm was sold in 1911.

Excavations of the farm's remaining structures (four kilns, a threshing barn, a stone stable, a granary, and a Greek revival-style farm house) began in 1998. From a total of 32,601 artifacts recovered, only 523 were faunal remains. Of these, the majority were located in a unit near the farmhouse thought to have served as a domestic waste area. Although limited in quantity, the faunal remains recovered indicated a high frequency of high-utility bones, (coincident with the Trimborn family's upper class status) primarily from large mammals such as cow and pig (Boor et al. 2001:139). The low frequency of wild animals such as deer and rabbit suggested their role as occasional or seasonal dietary supplements, a type of subsistence strategy noted by Boor et al. as "not unusual for Euroamerican farmsteads" (2001:139).

They also noted that the small number of crania and foot bones within the Trimborn farm faunal assemblage may indicate that mammals were not butchered regularly on site, but rather purchased from local butcher shops. Boor et al. compared the Trimborn site's faunal assemblage to that from the Seneca site in Illinois, from which a large number of pig foot bones were recovered. Occupied by a poor Irish family, the Seneca site findings suggest that "socioeconomic differences in food consumption [are] shown by the differences in meat parts eaten and in the proportion of bones showing evidence for home butchering" (Boor et al. 2001:139). Further excavations and analyses were necessary, although Boor et al.'s preliminary work indicated that such faunal data

could be used as a springboard to “develop testable hypotheses about the influence of ethnicity, socioeconomic status, and growing urbanization on the kinds of foods eaten and the manner in which these foods were eaten” (2001:140).

Gust and Schulz’s (1980) study of the faunal remains from Sacramento’s Golden Eagle Hotel and the Golden Eagle Oyster Saloon addressed similar concerns. Established in Sacramento in 1851, the Golden Eagle was one of the city’s finest hotels, and maintained its upper-class status for nearly all of its 100-plus years in business. The Oyster Saloon, which operated next door, was founded in 1874, although it was only in business for some six years.

Excavations of both revealed that beef was the dominant meat, with mutton and pork present, but in small amounts. They noted that almost 60 percent of the meat represented by the faunal remains was from highly desirable cuts, including loin, rib, leg, and ham (Gust and Schulz 1980:3-2). Cuts ranked with a middle-range value made up 30 percent of the meat represented, whereas inexpensive cuts made up less than ten percent. “The fact that these percentages are virtually equal for both the Golden Eagle Hotel and Cronin’s Oyster Saloon is a significant indication of their equivalent status” (Gust and Schulz 1980:3-2).

Rabbits and squirrels were also present in the faunal collection, the majority of which were butchered, the methods for which Gust and Schulz noted, depended on the recipe being used (1980:3-6). Rabbit and squirrel remains were more prevalent from deposits associated with Cronin’s oyster saloon, though Gust and Schulz postulated that the presence of squirrel was likely a food gimmick, rather than something that was offered regularly.

Comparisons of bills of fare from restaurants catering to working-class and middle-class clientele were similar in that they offered primarily beef, mutton, and pork entrees, with few listing such items as chicken or rabbit stew (Gust and Schulz 1980:3-10). The Golden Eagle Hotel's menus, however, contrasted greatly: it offered a large number of turkey and chicken dishes, more elegant cuts of meat, and expensive *pate de foie gras* from Strasbourg. The wine list as well indicated that the Golden Eagle Hotel served some of the finest wines and champagnes for the time. Combined with the patterns from the faunal remains, there is strong evidence archaeologically to support the notion that the Golden Eagle was a high-status hotel.

Similar conclusions were made by Simons (1980), who analyzed the avifaunal remains from the Golden Eagle Hotel and Cronin's Oyster Saloon in more depth. His analysis indicated that bird remains can be strong indicators of the "importance of cultural variables in the utilization of wild and domestic poultry products by mid/late 19th-century Californians" (1980:1-5). Prior to the 1880s, wild birds such as ducks and geese provided residents of California with most of the fowl consumed; at this time, chicken were the more expensive poultry food choice. After the 1880s, large-scale chicken and turkey production began competing with the wild bird market, and though domestic fowl were still more expensive, they began dominating the marketplace. In 1901, with the passage of laws protecting migratory birds, game birds declined drastically in the marketplace, and domestic fowl became the inexpensive fowl choice.

Simons' discussion on the transitions that occurred in poultry utilization is important because it can be utilized as a possible indicator of social status. For example, he showed that avian remains from Sacramento's Front Street and K/4th streets cultural

deposits (from restaurants, saloons, and oyster bars that catered to lower-/lower-middle class clientele) revealed a ratio of wild ducks, geese, and swans to domestic chickens and turkeys of 3:2 (Simons 1980:1-5). This is in contrast to the Golden Eagle Hotel's overall "duck:chicken" ratio of 1:1, indicating the status differentiation, and the fact that the Golden Eagle's clientele could afford the more expensive domestic poultry.

Although it would be easy to make the quick suggestion that patterns in the avifaunal remains are indicators of socio-economics alone, Simons was careful to mention the implications these patterns have for a discussion on ethnicity. He showed that menus from the Golden Eagle Hotel, combined with the archaeological and historical data suggested that "its chefs practiced an Americanized version of 'contintental' (i.e., French) cuisine" (1980:1-6). Many of the dishes listed are ones that can be found primarily in French and Franco-American cooking guides. In addition, the presence of bones from many passerine birds (such as larks, robins, house-finches and goldfinches), sparrows, and blackbirds is an indication that French-style cooking was practiced at the hotel (Gust and Schulz 1980:3-10; Simons 1980:1-6).

"The ethnicity of the cuisine served by the restaurant and oyster saloon of the Golden Eagle hotel site [was] also reflected in representation of the major body parts of chickens and wild ducks found in the deposits" (Simons 1980:1-7). Simons noted that all major body parts of chickens were well represented, especially the "breast-upper wing" (represented by the sternum, furculum, scapula, coracoid, and proximal humerus), which is not surprising given that these portions are important in French/Franco-American cooking. For wild ducks in the assemblage, bones representing "giblets" (distal humerus, ulna, carpometacarpus, wing phalanges, and tarsometatarsus) were overrepresented

compared to the “breast-upper wing” and “thigh-drumstick” portions, and this, Simon’s noted, is likely due to duck processing techniques common in French cooking (1980:1-7).

Another zooarchaeological study that looks at the relationship between faunal remains and socio-economic and ethnic status is Szuter’s (1996) analysis of the faunal assemblage from the Hubbell Trading Post in Ganado, Arizona. Although Szuter looked at a number of issues that could be addressed through faunal remains such as butchering methods, and seasonality of occupation, it is her discussion on ethnic affiliation and socio-economic status of the site’s inhabitants that is of interest here.

Past studies have argued that inhabitants’ choice in the purchase of different cuts of meat can be linked to either their socio-economic status or their ethnic affiliation. These studies have utilized faunal assemblages that were derived from marketplace purchases in urban settings. In contrast, the Hubbell Trading Post, run by members of the Hubbell family, was in a rural area of Arizona, and rather than purchasing meat from a local butcher, they butchered, sold, and consumed their own animals. Archaeologically, this would mean the potential for all portions of the animal to be present in their refuse deposits.

Szuter’s analysis of the Hubbell site’s faunal assemblage revealed that domestic animals–namely cattle, horse, sheep/goat, and chickens–made up the majority of the identified animals. Sheep/goat dominated the collection in every level of every test unit, making them the most frequently butchered and consumed domestic animals, followed by cattle. The most common meat cuts observed were those associated with ribs (the chuck, rib, brisket, and short plate), though it needs to be remembered that ribs are the most common element in an animal carcass. Szuter’s analysis, however, does not

delve into what these patterns may indicate about the socio-economic status and ethnic identity of the Hubbell Trading Post's customers and inhabitants.

Perhaps one of the strongest applications of zooarchaeology towards the study of ethnic identity is Langenwalter's (1980) study of the archaeological assemblage from the nineteenth century Lower China Store site in Madera County, California. Established during the Gold Rush, such stores were able to exist "due to the wish of Chinese to maintain their traditional lifestyle" (Langenwalter 1980:103). In fact, considerable effort was made towards maintaining a traditional diet. This was made possible in part because wherever groups of Chinese worked, "they normally had both a store with traditional provisions and a Chinese cook included in the contractual arrangements" (Langenwalter 1980:103).

With this focus on cultural maintenance in mind, the traditional Chinese subsistence pattern that may be suggested would be one with an emphasis on plant foods supplemented primarily by seafood and fowl with lesser amounts of pork, and with the slight possibility of alterations due to the introduction of Anglo foods. However, the faunal assemblage from the Lower China Store (which represents deposits from the store's operation and from the resident's activities) reveals a different subsistence pattern. Of the 1,063 faunal specimens recovered, 1,000 of these were from pigs, with the remainder composed of western pond turtle, domestic cat, cuttlefish, Sacramento perch, chicken, cattle, and sheep (Langenwalter 1980:105).

This would seem to contrast with the expected pattern of Chinese subsistence, however, Langenwalter showed that the butchery patterns evident from the pig, sheep, and cattle remains reflect the ethnicity of the butchers. The pig remains were butchered

using a cleaver (distinguishable from European cleavers), and using techniques usually identified with Chinese, whereas the cattle and sheep remains were sawn, indicating that they were traded to the store from local Anglos (Langenwalter 1980:106-107). The emphasis on pork, Langenwalter noted, is compatible with traditional Chinese food preferences, and may be interpreted as a reflection of local Chinese preferences (1980:109).

Another zooarchaeology study that focused on the relationship between Chinese ethnic identity and faunal remains is Simon's (1984) analysis of the avifaunal remains from the Woodland Opera House site in Woodland, California. One particular feature on the site represented a Chinese laundry that operated from 1870 to 1880. Through the use of faunal spectrum analysis and the study of butchering patterns, Simons showed distinctive foodway patterns from the Chinese laundry that could be identified among Chinese immigrants; patterns that reflected socio-economic as well as ethnic diet and food preparation choices (1984:167-172). These patterns include a preference for chicken, primarily adult chickens, with all parts of the chicken utilized, and all major body parts represented in the faunal assemblage. These remains also revealed a distinctive butchery technique noted by Langenwalter as well: the use of cleavers to dismember the animal into desired segments.

Nettles and Hamilton's (2005) evaluation of the faunal remains from three privy features excavated in Sacramento reveals some of the limitations of faunal-based studies on ethnicity. These three privies were excavated within a two block area known historically to have been one of the most heterogeneous neighborhoods in the city. The area was home to immigrants from at least ten different countries, as well American-born

residents, thus providing “an opportunity to explore group dynamics in a diverse ethnic environment and to determine if ethnic markers are visible in individual artifact assemblages, in an effort to examine changing cultural values and the degree of acculturation” (Nettles and Hamilton 2005:27).

The three privies represented deposits from three families: the Lombardis from Italy, the Martins from Portugal, and the Henderson family, with Henderson, an American, living in the neighborhood with his Mexican wife. All three families had approximately the same social and economic status, allowing for an interpretation of the faunal remains that could perhaps reflect patterns more directly linked to ethnicity.

Although beef was the primary meat consumed by all three families (followed by chicken and fish), differences did appear in minor meat constituents. The Lombardis consumed rabbit and deer, the Henderson’s quail and a much higher proportion of pork, whereas the Martins and Lombardis consumed more mutton than the Hendersons (Nettles and Hamilton 2005:28). There were also differences in their botanical-based food preferences: the Lombardis’ privy contained more fig, tomato, and grape seeds; the Martin’s privy contained a greater variety of fruits and vegetables; the Martin and Lombardi privies were the only ones in the neighborhood that contained chili-pepper seeds, though the majority of the Martin’s chili seeds were fragmented, whereas the Lombardis’ seeds were whole.

Nettles and Hamilton noted that “although these families were mainly consuming what their American neighbors ate - including large proportions of beef - cultural preferences may be reflected in alternate meat choices and selection of spices and fruits” (2005:28). Despite the fact that no particular culture dominated the neighborhood,

and the homogenization that may have occurred as a consequence of intermarriages, it still appeared that ethnic markers may have been visible in the archaeological record.

In contrast, Schulz and Gust's (1983a) investigations of the faunal remains from four deposits of Old Sacramento revealed patterns more directly related to social status than to ethnic identity. These deposits, dating from the 1860s to the 1880s, included the City Jail, Hannan's Saloon, Klebitz and Green's Saloon, and the Golden Eagle Hotel. By analyzing the butchering units within the faunal assemblages in terms of 19th century price relationships, they found that the collections replicated "the relative positions determined from the depositing populations" (Schulz and Gust 1983a:44).

The City Jail's trash deposit—likely representing the remains of prisoners' meals—was dominated by soup bones, particularly from the shoulder and neck. These are ranked as low-cost meat cuts, and thus reflect the lower social and economic status of the prisoners. Hannan's Saloon was owned by Irish immigrant Owen Hannan, and Klebitz and Green's Saloon, located around the corner from Hannan's, was operated by two German immigrants. The faunal assemblages from both of their privies contained a small number of high quality cuts, however the Klebitz and Green deposit included higher percentages of middle value cuts, whereas the Hannan privy yielded more of low quality or value (Schulz and Gust 1983a:46-49). In contrast, over 50 percent of the Golden Eagle Hotel assemblage consisted of high quality steaks, such as from the short loin, which represents the most costly portion of the beef carcass.

Schulz and Gust noted that the use of faunal remains as markers of ethnicity "seems to be an important variable only when Chinese, Hispanic, or Native American populations are involved" (1983a:51). They found that the patterns revealed by the four

Old Sacramento deposits are due primarily to socio-economic factors, rather than to cultural or ethnic preferences.

Summary

It is evident from the above discussions on the various units of analysis and the examples of the kinds of studies produced in zooarchaeology, that an analysis of faunal remains geared towards revealing patterns of ethnic-based food preferences is no easy task. Ethnicity is an ever-changing construct, as are the ethnic groups themselves (Little and Kassner 2001:63), and as Staski concluded in his article *Studies of Ethnicity in North American Historical Archaeology*, "the acquisition of certain forms and styles of materials, and not others, occurs because of complex interaction of numerous variables besides ethnicity" (1990:132). These include such factors as economic and social status, the availability of goods, the family size and structure, religious and political affiliations, as well as individual preferences. All must be considered when evaluating a faunal assemblage (or any cultural material assemblage) for markers of ethnicity.

CHAPTER V

METHODOLOGY: SAMPLING, FAUNAL AND MEAT-CUT IDENTIFICATIONS, AND ESTABLISHING TRADITIONAL GERMAN CUISINE

Introduction

The Philadelphia House site assemblage is more than just the sum of its parts: the information provided by the artifacts, and by the history of the building and its former occupants, lends itself easily to the study of boarding house and immigrant life in early Sacramento. Rarely are assemblages from sites with such tight time frames and provenience available, and when one comes along, every avenue of inquiry should be explored to its full extent. This assemblage challenges the archaeologist to form a more comprehensive understanding of the ways in which California's early immigrants negotiated social and economic challenges while maintaining cultural and ethnic traditions. Not all avenues can be explored here, but those included are directed towards investigating the ways in which faunal remains can be utilized as markers of ethnicity–in this case, German-American ethnicity. Doing so requires an understanding of the methodology chosen and conducted.

This chapter presents the methods used for generating a representative sample for analysis, as well as those used for identifying individual specimens and turning the

resulting information into meaningful data. The current chapter begins by discussing the various excavation procedures that occurred at CA-SHA-692H, (the official site designation given to the Philadelphia House) and the influence that excavation decisions had on sampling strategies. This is followed by an in-depth examination of procedures used for identifying the chosen sample, all of which are founded in the field of zooarchaeology. They include such identification variables as taxonomy, element representation, butchering techniques, aging, cultural and natural modifications, and how all of this primary data is recorded. The discussion on generating primary data is followed by an analysis of the techniques used for gathering secondary data. These include identifying butchering units and acquisition units for those specimens thought to have been food items, assigning NISP and MNI values, and establishing a framework for interpreting recipes from German-American cookbooks.

Excavation Procedures and Sampling Decisions

The Philadelphia House faunal assemblage currently housed in CSU, Chico's Archaeology Laboratory, is the product of excavations conducted by Tremaine and Associates, Inc. (TREMAINE) in 2004. TREMAINE was contracted by the CIM Group and the City of Sacramento Economic Development Department to conduct archaeological testing and monitoring for the Plaza Lofts Project. This project proposed the construction of an apartment and retail complex to be built along the northern half of the JK89 block in downtown Sacramento, California, as well as a below-grade (below the current street level) parking structure that would result in subsurface disturbances. TREMAINE's work was meant to primarily include testing and monitoring of the project

area. However, during this phase of the project they encountered a portion of a brick cellar wall known to be associated with the historic Philadelphia House boarding house, saloon, and restaurant (CA-SAC-692H). Following this discovery, TREMAINE conducted data recovery excavations within and outside of the Philadelphia House area in order to recover any cultural material that could be impacted by the proposed construction.

These excavations were conducted primarily between April 27th and July 21st of 2004, and resulted in two testing phases (Phase I and II), and a more intensive data recovery phase encompassed within Phase II. Phase I and II used geophysical survey, mechanical trenching, and construction monitoring in order to better understand the stratigraphic structure, temporal characteristics, and the range of assemblage constituents (Nelson 2005:58-59). (See Nelson 2005 for a more thorough discussion of Phase I testing.)

Phase II testing and the data recovery phase focused on identifying and sampling loci and/or artifact concentrations that had the potential for providing more specific temporal or behavioral data. These phases resulted in the identification of four distinct loci (named Locus 1, 2, 3, and 4) and the hand excavation of ten units and two shovel probes within these loci. Test units ranged in size from 1.5 x 1.5-meter to 2 x 3-meter, in part dictated by the location and orientation of the brick foundations. At first the units were excavated in arbitrary ten centimeter levels, but as architectural features were discovered, TREMAINE found it necessary to remove layers by natural levels (such as “above plank floor” and “below plank floor”). Units were then either expanded or contracted depending on the features and material encountered. The matrix recovered

from each level was then screened through ¼–inch dry mesh screens, as is standard in historic sites archaeology. The cultural material collected was roughly sorted and bagged by provenience and then later analyzed in the laboratory.

TREMAINE identified three stratigraphic levels recognized as portions of what remained of the Philadelphia House. Generally, these consisted of three one-meter deep layers. The top meter contained most of the historic artifact deposit, and was marked by a clay and sand matrix that varied from brown to a mottled, ashy soil; brick, charcoal, and historic debris was found throughout (Nelson 2005:84). The wood floor to the original first floor (which became the basement after the streets were raised), was found intact in some portions of Locus 1 and 2 (See Nelson 2005). The second meter level contained fewer artifacts and was characterized by a "yellowish brown silt alluvial deposit" beneath which was a compact dark band identified as the dirt floor of the original basement/cellar (Nelson 2005:84). The third and lowest meter level was characterized as sterile native soil (Nelson 2005:84).

The original cellar sat approximately six feet above sea level; given the fact that Sacramento sits on a floodplain, it is likely that the original cellar was often inundated with water, and thus rarely used other than as a place to dump refuse. This refuse, however, represents the Philadelphia House artifact assemblage. "The artifacts collected represent many aspects of boarding house life, from personal accoutrements and adornment, grooming and health care, writing and game playing to a substantial quantity of items used for food service and barroom drinking" (Nelson 2005:87). Artifact classes included glass, ceramics, personal items such as smoking pipes and toys, coins and gaming pieces, items associated with hotel furnishings, and faunal remains.

It is the latter type that is the primary focus of this thesis. The faunal assemblage recovered consisted of over 13,500 bone fragments, nearly 6,000 of which were analyzed by TREMAINE for taxon and for general meat-cut types. Those analyzed were from Locus 1, Unit 1, and included remains recovered from the initial Phase II testing and the extension of the unit during data recovery. Those that were identifiable to the genus level included primarily cattle, sheep/goat, jackrabbit, and rat, with smaller quantities of duck, goose, domestic cat, pig, turkey, deer, cottontail, and several crab claws. Of those cattle remains that exhibited butchering marks, it was found that meat-cut types included rib steaks, short ribs, chuck cuts, and round steaks (Nelson 2005:104). Although the faunal assemblage from this unit was given only a cursory examination, TREMAINE concluded that the remains had the potential for yielding data about the ethnicity and consumer behavior of those who lived at and provided patronage for the Philadelphia House. Despite their potential, no plans had been made for their future storage; recognizing the possibility that the faunal assemblage would be disposed of, then CSU Chico Graduate student and former field crew member of the Philadelphia House excavation Melanie Beasley, convinced TREMAINE to donate the collection to Chico State's archaeology and zooarchaeology laboratory where they have been housed ever since. Regardless, TREMAINE's discussion of potential research questions provided the stepping-off point for this thesis, which seeks to examine the use of faunal remains as markers of ethnicity.

Once this was decided, it became important to plan a sampling strategy for examining the remainder of the faunal assemblage. Table 9 shows the break-down for the number of bone specimens recovered from each unit excavated during the data recovery

TABLE 9
FAUNAL SPECIMEN COUNTS FROM UNITS EXCAVATED DURING DATA RECOVERY*

Locus	Unit	Qty	Wt (g)	LxWxD(m)	m³	Qty/m³	Wt/m³
1	1	2931	7963.80	2.30x2.70x0.45 and 1.00x1.00x0.75	3.54	827.96	2173.40
1	2	2550	9688.60	2.70x2.70x0.43	3.13	814.70	3095.40
2	1	2615	8375.10	2.00x3.00x0.70	4.20	622.62	1994.10
2	2	776	6369.60	1.50x2.00x0.60	1.80	431.11	3538.70
2	3	822	4699.90	1.50x3.00x0.60	2.70	304.44	1740.70
2	4	862	3522.00	2.00x1.50x0.70	2.10	410.50	1691.40
3	2	1496	13244.70	1.50x2.00x0.60	1.80	831.11	7358.17
4	2	85	631.40	1.50x2.00x0.40	1.20	70.83	526.17
Data Set Totals:		12137	54225.10	----------	20.47	592.92	2649.00

* All quantities listed above were compiled from the artifact tags bagged by TREMAINE with the faunal specimens.

phase. At first I decided to generate a fifty-percent sample from every level of every unit, and then to analyze this sample. As can be seen from Table 9, however, the quantity of bone fragments is quite variable, as are the levels themselves which range from arbitrary ten centimeter levels to natural ones based on the structural features encountered during excavation. This, combined with the fact that the specimens were bagged loosely in large quantities (for example, many bags had over 500 bone fragments, all assigned the same catalog number when they were recovered from the same level of the same unit) made the task of generating a truly random sample virtually impossible.

It was decided that sampling from every unit was unnecessary because it was unlikely that separate refuse-depositing events would be identifiable from an assemblage that was likely the result of random, co-mingled disposals. With this in mind (and with time constraints in mind), I decided to analyze the faunal remains from two units in their

entirety. I felt it was necessary to choose units from two different loci, one excavated in arbitrary levels and one excavated in natural/structural levels, and from which large numbers of faunal specimens were recovered. This would mean that not only would I have a decent sample size, but I could better handle some of the biases that could occur from decisions made during excavation.

The two units that fit this profile the best were Unit 2 from Locus 1, and Unit 2 from Locus 3. Locus 1 Unit 2 was excavated in natural/structural levels within the portion of the site where remnants of the original first floor's wooden floor was identified; faunal remains were listed as numbering 2,550. Locus 3 Unit 2 was excavated in arbitrary levels within a portion of the site away from the wooden floor and brick-filled deposits; faunal remains were listed as numbering 1,496. Combined, these two units would provide 4,046 specimens for analysis, which was a little over fifty-percent of those remains not analyzed by TREMAINE. I use the phrase "would provide" because, as will be discussed, there were substantially more than 4,046 specimens collected from the units, though the difference is likely due to fragmentation that may have occurred during transportation, or to differences in what was considered a "countable" specimen.

Faunal Identification Procedures

Once the two units to be analyzed were designated, the faunal identification process could begin. Faunal identification involves a number of types of analysis, some standard and others dictated by the specific research questions chosen. The standard procedures involve taxonomic identification, identification of element, aspect of element, and percentage of element present (such as "femur-distal end-50 percent), measurement

of size (length, width, and thickness) and weight, and analysis of fusion and both natural and cultural modifications. For the purposes of this study, the additional analysis included noting butchering marks and types, and determining (when possible) both butchering unit and acquisition unit for each specimen.

The analysis was conducted within CSU, Chico's archaeology laboratory between November 2010 and May 2011, and proceeded as follows. Due in part to slight obsessive compulsive tendencies, I opted for working with the specimens level-by-level, in the order of their excavation, and only proceeding to the next level once all specimens within one had been examined. For example beginning with Locus 1 Unit 2, I pulled from their storage boxes all faunal bags from the first level excavated during data recovery: in this case, "-cm above plank floor." The remains from each level had often been given a single catalog number by TREMAINE, though at times multiple numbers were assigned. Careful to maintain their original catalog numbers, I emptied all specimens belonging to a single level and a single catalog number onto a large sheet of acid-free paper. These were then roughly sorted into size and element categories (i.e. all small mammal and bird bones were grouped together, whereas long bones from medium and large mammals were grouped apart from vertebrae and rib fragments that were also from medium and large mammals). This was done so that like-elements from similar animal size groups could be examined in procession, and thus hopefully reduce the amount of time needed for identification.

After sorting there was usually a small pile of loose sediment and tiny, clearly unidentifiable bone fragments left over. "Unidentifiable" in zooarchaeology generally refers to those specimens that cannot be identified to at least taxonomic order. These tiny

fragments were then separated from the sediment, counted, weighed, placed in a clean archival-quality 4mm zipped bag, and assigned a new, unique catalog number. If it could be manually picked up, it was considered quantifiable. All data including their original catalog number and provenience information was then recorded on both a handwritten form and a new faunal identification tag made especially for this thesis. The loose sediment was weighed, re-bagged and given a new tag as well, though only its original information was recorded, as it was felt that assigning it a new catalog number was unnecessary for data analysis.

Using a soft, dry toothbrush and thin wooden skewers, each faunal specimen within each "group" of like-elements and sizes was cleaned of the sediments that had accumulated prior to excavation. One-by-one, each specimen was then compared against the faunal specimens within CSU, Chico's zooarchaeology comparative collection for taxonomic identification. It was often difficult to decide between very similar taxa such as *Ovis aries* (sheep) and *Capra hircus* (goat). Comparative studies such as Boessneck's (1970) "Osteological Differences Between Sheep (Ovis aries Linné) and Goat (Capra hircus Linné)," Olsen's (1960) "Post-Cranial Skeletal Characters of Bison and Bos," Hildebrand's (1955) "Skeletal Differences Between Deer, Sheep, and Goats," and Lawrence's (1968) "Post-Cranial Skeletal Characteristics of Deer, Pronghorn, and Sheep-Goat, with Notes on Bos and Bison" were referenced to try to filter out their similarities, but when this could not be done it was necessary to assign them more general categories such as "Sheep/Goat, "Pig/Cow," or, in the case of birds, "Chicken/Turkey" and "Chicken/Duck."

It would have been an impossible, unnecessary, and time-consuming task to compare each Philadelphia House specimen against every specimen in the comparative collection; rather, the approach taken was to compare them against specimens of similar size (dependent of course on whether the bone is fused, unfused, or partially fused, which could alter the size-range).

All efforts were directed at identification to the level of species, but when this was not possible, identification was made to genus, then family, and then order. If a specimen could not be identified to the taxonomic level of order, it was considered to be either unidentifiable or indeterminate. “Unidentifiable” refers to not only those fragments that could not be identified to order, but also to those for which any specific identification appeared unlikely. When possible, these were assigned a general size and class, such as “medium mammal” or “small bird.” For the sake of consistency, the same was done for identifiable specimens as well. These terms can be subjective, though every attempt was made to be as consistent as possible when assigning size and class designations. Table 10 presents the categories used, and examples of the kinds of animals represented by those categories. “Indeterminate” was used for those specimens exhibiting features that could potentially be used to identify it, but for which no comparative specimen was available. These were specimens for which not even size or class designations could be made.

Once a decision was made as to the identifiability of the specimen, it was assigned a new, unique catalog number. These catalog numbers each began with the designation “JMM”–representing my initials–followed by a numeric value such as “-00001.” The specimen assigned the catalog number “JMM-00001” was the first one analyzed, and all subsequent specimens were numbered sequentially. Following number

TABLE 10
CLASS AND SIZE-RANGE CATEGORIES ASSIGNED TO FAUNAL SPECIMENS

Size and Class	Common Examples
Large Mammal	Cattle, horse, large pig, elk, bison, and larger
Medium/Large Mammal	Medium-sized pig, juvenile cow, mountain lion
Medium Mammal	Sheep, goat, deer
Small/Medium Mammal	Coyote, small deer
Small Mammal	Domestic cat, jackrabbit, rats, and smaller
Large Bird	Goose, turkey, and larger
Medium/Large Bird	Young turkey, young goose, large chicken
Medium Bird	Chicken, duck
Small Bird	Smaller than a chicken or duck

assignment, the specimen was weighed, examined for evidence of fusion, natural modifications such as root etching or rodent gnawing, cultural modifications such as burning, saw marks, or cut marks, and degree of fragmentation. It was often found that many of the faunal specimens had been broken either during or after excavation, as determined by color differences between the broken bone surfaces. In general, those that looked to be “fresh” or recent breaks were much paler in color than those broken surfaces thought to have occurred prior to excavation. They also had a more powdery and fragile texture. These types of breaks were noted because it is likely that they have affected specimen identifiability as well as quantifiability.

Fragmentation also affected the ability to recognize element type, which was a necessary component for determining taxon, butchering unit, and acquisition unit, as well as for measuring general length, width, and thickness. “Element” refers to the specific cranial or post-cranial bone type, such as the femur, humerus, vertebrae, ribs, teeth, mandible, and phalanges. As a general rule-of-thumb, if the skeletal element could not be identified, then neither could the taxon, though it was sometimes the case that the element

could not be identified until it was compared against multiple known elements within the comparative collection. Guides such as Gilbert's (1980) *Mammalian Osteology* and *Avian Osteology*, Elbroch's (2006) *Animal Skulls: A Guide to North American Species*, France's (2009) *Human and Non-Human Bone Identification*, and the osteology reference manual used in CSU Chico's zooarchaeology laboratory proved to be extremely helpful references for identifying elements, siding elements, and identifying the specific aspects of each, though nothing compared to hands-on examinations.

Upon element identification, I would try to side the bone (left or right) using the guides mentioned above as well as elements with known sides from the comparative collection. Siding plays an important role in being able to determine minimum number of individuals (MNI), though it may not be possible to identify from which side of the animal's body the bone came from. Siding often occurred simultaneously with identifying aspect. "Aspect" here refers to the anatomical location of the bone specimen or fragment. For example, a long bone such as a femur has two epiphyseal ends–one proximal and one distal- and a diaphysis or shaft. The aspect may be identified even more specifically if its medial versus lateral location is known, and if a particular feature is present, such as the greater trochanter of the femur.

Siding and aspect identification was followed by weighing (in grams) the specimen with a digital scale, and measuring the length, width, and thickness with digital calipers. Measurements were only taken for those elements that could be identified because without knowing the element type, the anatomical position of the bone within a particular animal's body is unknown, thus rendering the measurements meaningless. All measurements were taken in millimeters and followed the procedures described by

Clutton-Brock (1975): length is measured as the dimension along the longitudinal axis of the skull for cranial elements, or the proximo-distal axis of axial elements such as long bones; width is measured across the medio-lateral axis, and; depth or thickness is measured across the bone's antero-posterior axis. For flat bones such as the scapula where dimensions are difficult to establish, measurements were taken as maximum length, width, and thickness.

Once an element was known, the task of identifying taxa was much simpler. The specimen was examined against elements from known taxa within the comparative collection. The collection itself is unique in that the majority of the specimens were collected from within Northern California, thus making it a fairly accurate representation of the types of animals likely to be observed in archaeological assemblages from this region. Even so, a species checklist compiled from those provided in CSU, Chico's zooarchaeology class and from the Audubon Society field guides was kept on hand to ensure that all possible taxa were considered. Once a positive identification was made, the Philadelphia House specimen would be compared against at least three other comparative specimens of the same taxa; this was done to lessen the chance of anomalies of individual variation and to ensure that the identification was a strong one.

Following taxonomic identification, the Philadelphia House specimen was compared against whole elements, and a percentage of the element estimated. For example, a proximal, unfused femur fragment from the Philadelphia House collection identified as *Ovis aries* (sheep), would be examined against a whole, unfused sheep femur from the comparative collection, and an estimate made for how much of the whole element the fragment represented (i.e. 25, 50, 75 percent, etc.). This is a fairly intuitive

process, but as with siding and aspect, percent-of-element can help establish a more accurate MNI.

All of these variables—taxon, class and size-range, weight, fusion, element, element side, aspect, percentage, length, width, and thickness, modifications, and fragmentation, along with original and new catalog numbers and all provenience data—were recorded on level-specific handwritten forms and, with the exception of length, width, and thickness, on the specimen's faunal identification tag. Figure 6 is an example of the identification tag I created for the Philadelphia House assemblage.

CA-SAC-692H
Philadelphia House
Original Cat.# 2004-073-_____
Temp Cat.# _____
Locus: _____ **Unit:** _____
Level: _____
Additional Info: _____
_____
Material: Faunal
ID: _____
_____
Qty: _____ **Wt (g):** _____
Date: _____
Phase: _____
Comments: _____
_____

FIGURE 6. Philadelphia House Faunal Identification Tag

Aging Identification Procedures

One variable that was examined during faunal analysis was aging of each specimen. Aging could only be attempted if the specimen was complete enough to still

retain observable centers of bone ossification. For example, long bones generally have an epiphysis at each end of the shaft; if the Philadelphia House specimen analyzed had either or both epiphyses, then it was fairly simple to note whether they were completely fused, partially fused, or unfused. This data was then recorded on both the level analysis sheet and on the specimen's faunal identification tag. If the specimen did not still retain evidence of fusion, then the aging variable was marked as "unknown." It should be noted that "fusion" refers here only to mammals, as birds have no true epiphyses. In the case of birds then, rather than "fusion," "ossification" was the variable observed and recorded: a bird faunal specimen was either ossified, unossified, or unknown.

Once these observations were made and recorded, an attempt was made to identify a more specific age range for known domestic mammal and poultry specimens with observable levels of fusion or ossification. Silver (1970) noted that truly accurate estimates of age can only be made if the faunal specimen belongs to a species with well-documented age characteristics, if its diet is known, if most of a single individual's teeth and representative bones are available, and if the individual was not yet fully an adult (283). Faunal assemblages from archaeological contexts are very unlikely to meet all of these criteria; this is especially true for historic urban sites assemblages which as noted previously in the discussion on problems with MNI, will rarely contain specimens from the same individual.

Regardless, for the purposes of this thesis, I found it important to provide general age range estimates for cattle, pig, and sheep/goat, for this kind of data may provide clues regarding meat-type preferences. For example, establishing a frequency pattern for sheep age ranges may indicate whether lamb or mutton was preferred. Table

11 provides a general age-range for sheep and the most common meat-type associated with those ages.

TABLE 11
SHEEP/GOAT MEAT-TYPE AND AGE ASSOCIATION

Meat Type	Age Association	General Faunal Association
Lamb	0-13 months	---
Yearling Mutton	13-24 months	Unfused distal metapodials (a.k.a. "spool joints"
Mutton	24+ months	Fused distal metapodials

Source: Data compiled from Szuter, Christine R., 1996, A Faunal Analysis of Home Butchering and Meat Consumption at the Hubbell Trading Post, Ganado, Arizona. In *Images of the Past: Readings in Historical Archaeology*, edited by Charles E. Orser, Jr., pp.345. Walnut Creek: AltaMira Press.

Using data provided by Silver (1970) and Szuter (1996), I compiled a list of known general age ranges for ox, swine, sheep, and domestic fowl. Tables 12 and 13 present age ranges based on faunal elements and their ossification centers for domestic mammals and domestic fowl, respectively. Ox was used as a proxy for cattle, and, due to the osteological similarities between sheep and goats, sheep was used as a proxy for the category "sheep/goat." Owing to the very short time period during which growth takes place in birds, however, it is often not practical to age avifaunal remains except as "young" or "old." Whenever possible, a general age range is provided.

Following the tables as guidelines, a general age range for an identifiable element could be established. For example, a specimen that was identified as the fused distal femur belonging to the genus *Bos* (cattle) was given the age identification of equal to or greater than three-and-a-half years. This data was recorded on the level form, but due to limited space, was not recorded on the specimen's faunal identification tag.

TABLE 12
AGING DOMESTIC MAMMALS: CATTLE, PIG, AND SHEEP/GOAT

Bone	Ossification Centers	Fusion		
		Cattle/Ox	Pig	Sheep/Goat
Vertebrae	Body 1, Arch 2 + Spine 1, Epiphysis 2	Body and arch at or just after birth; bodies to epiphysis at 5 yrs	Body and arch fuse at 3-6 mo.	Body and arch fuse at 3-6 mo
Atlas	4	Wings at 6 mo.	---	---
Axis	7	---	---	---
Sacrum		Body epiphyses may not fuse	Body epiphyses may not fuse	Body epiphyses may not fuse
Costal Cartilages		Usually ossify in old age	Usually ossify in old age	Usually ossify in old age
Sternum	Manubrium 1, Sternebrae, 2 each	Last sternebra fuses in old age	Last sternebra fuses in old age	Last sternebra fuses in old age
Scapula	Bicipital tuberosity Tuber spinae	7-10 mo. ---	1 yr. ---	6-8 mo. ---
Humerus	Proximal epiphysis Distal epiphysis	3.5-4 yrs 12-18 mo.	3.5 yrs 1 yr.	3-3.5 yrs 10 mo.
Radius	Proximal epiphysis Distal epiphysis	12-18 mo. 3.5-4 yrs	1 yr. 3.5 yrs	10 mo. 3 yrs
Ulna	Olecranon Distal End	All at 3.5-4 yrs	All at 3-3.5 yrs	All at 2.5 yrs
Metacarpus	Proximal epiphysis Distal epiphysis	Before birth 2-2.5 yrs	Before birth 2 yrs	Before birth 18-24 mo.
1st Phalanx	Proximal epiphysis Distal epiphysis	Before birth 1.5 yrs	2 yrs Before birth	Before birth 13-16 mo.
2nd Phalanx	Proximal epiphysis Distal epiphysis	Before birth 1.5 yrs	1 yr. Before birth	Before birth 13-16 mo.
3rd Phalanx	No true epiphyses	Partly ossified at birth	Partly ossified at birth	Partly ossified at birth
Pelvis	Fusion of main bones	7-10 mo.	1 yr.	6-10 mo.
	Ilium Ischium Pubis	All fused by 4.5 yrs	All fused by 6-7 yrs	All fused by 3.5 yrs
Femur	Proximal end Distal end	3.5 yrs 3.5-4 yrs	3.5 yrs 3.5 yrs	2.5-3 yrs 3-3.5 yrs
Tibia	Proximal epiphysis Distal epiphysis	3.5-4 yrs 2-2.5 yrs	3.5 yrs 2 yrs	3-3.5 yrs 1.5-2 yrs

Table 12 (Continued)

Bone	Ossification Centers	Fusion		
		Cattle/Ox	Pig	Sheep/Goat
Fibula	Proximal epiphysis Distal epiphysis	w/tibia 2-3yrs Separate bone	3.5 yrs 2.5 yrs	--- Separate bone
Fibular Tarsal (Calcaneum)	Tuber calcis	3-3.5 yrs	2-2.5 yrs	2.5-3 yrs
Metatarsal	Proximal epiphysis Distal epiphysis	Before birth 2.25-3 yrs	Before birth 2.25 yrs	Before birth 20-28 mo.

Source: Data compiled from Silver I.A., 1970, The Ageing of Domestic Animals. In Science in Archaeology: A Survey of Progress and Research, Don Brothwell and Eric Higgs (eds), pp.283-302. New York: Praeger Publishers; Szuter, Christine R., 1996, A Faunal Analysis of Home Butchering and Meat Consumption at the Hubbell Trading Post, Ganado, Arizona. In Images of the Past: Readings in Historical Archaeology, Charles E. Orser, Jr. (ed), pp.345. Walnut Creek: Altamira Press.

Table 13
Aging Domestic Fowl

Bone	Ossification Center	Ossification
Long Bones	---	Ossify by 6 mo.
Sternum	Keel	Gradually ossifies; complete by 5-8 mo.
Tarsometatarsus	Spur	Length may indicate age in males; old females may develop spurs as well

Source: Data compiled from Silver I.A., 1970, The Ageing of Domestic Animals. In Science in Archaeology: A Survey of Progress and Research, Don Brothwell and Eric Higgs (eds), pp.300. New York: Praeger Publishers.

Meat Cut Identification Procedures

One of the most vital variables to be identified is that of the meat cuts represented by each faunal specimen. Generally, this involved the identification of first the wholesale butchering unit, and then, whenever possible, the secondary or retail unit.

Modern-day guides to identifying primal and secondary cuts are plentiful, but because most are meant to guide either the butcher or the consumer, few are meant to supply specific osteological indicators of meat-cut types. In today's increasingly health-conscious world, they are also not necessarily accurate guides to historical American meat cuts and their various quality rankings. They are however, excellent places to begin developing a basic understanding of how animals are butchered and processed.

With these difficulties in mind, and without a well-developed collection of previously identified butchered bone from which to compare the Philadelphia House remains, my early attempts at identifying butchering and acquisition units proceeded slowly and tentatively. This was especially true for distinguishing between butchered beef and pork bones, because it was often difficult to tell the difference between bones that may have come from either medium-sized cattle or large pigs. I found it necessary to create my own butchered-bone comparative collection, and towards this goal I purchased, cleaned, and labeled beef and pork cuts from local grocery stores, as well as both whole and butchered cattle and pig bones from pet supply stores that were sold as chew toys for dogs. Along the way my collection was supplemented by dinner bones saved and identified by Dennis Dalton, a recently retired butcher.

These provided a small, but extraordinarily useful collection of known meat cuts from known taxa and osteological elements. The bones purchased from local pet stores included namely whole femurs and humeri from cattle and pigs; because these elements are rarely observed whole archaeologically, those purchased were then butchered by my significant other using a hand saw into smaller portions that mimicked

the steaks, chops, and roasts likely produced from these same elements in a market-place setting.

The process of sawing through dry, fairly clean bones provided significant information. The bones from cattle were extremely difficult to saw through, whereas the bones from swine–despite being from large, adult pigs–were easy to saw, and often shattered before the saw could pass entirely through the long bone shaft. The most important detail observed, however, was the variation in cortical bone thickness between cattle and swine. The cortical bone from cattle was extremely thick, in contrast to pig cortical bone, which was thin and brittle. This information was used to help distinguish steak and chop cuts from fore limbs and hind limbs of cattle and pigs.

Despite the comparative butchering collection, identification of meat cuts from the Philadelphia House assemblage continued slowly, and often resulted in specimens being marked as “unknown” and circled in the hand written level form for future identification. It was not until then graduate student and archaeology laboratory supervisor Kevin Dalton set up a meeting for me with his father Dennis Dalton, a recently retired butcher that meat-cut identification began in earnest. Mr. Dalton met with me on several occasions, a few hours at a time. During these meetings he explained basic butchering techniques and examined representative examples of those specimens for which I could not determine specific meat cut types. He was able to identify many of these, and provided insights for identifying them on my own.

Due to traveling distance between Mr. Dalton and myself, these meetings were few in number, however Dalton was kind enough to offer his assistance long-distance. We continued communicating via e-mail, with me sending him photographs of

specimens for which I needed verification of meat-cut types, and with him responding with his own observations. He also provided me with a copy of an extremely helpful butchering guide published by the National Live Stock and Meat Board for beef, pork, and lamb/mutton. This guide provided pictorial representations of the animal carcass, the butchering units derived from the carcass, and their osteological representations. Figures 7 and 8 provide similar skeletal guides for beef cuts as those given by Dalton. Similar guides are also available for lamb and pork, but are not provided here.

With these guides and the insights generously provided by Mr. Dalton, meat-cut identification progressed much more rapidly. Assigning wholesale unit identification to the known element of known taxa became a simpler process, though at times acquisition units were still difficult to distinguish. For example, a femur shaft fragment identified as belonging to the genus *Bos* (cattle) could be easily distinguished as coming from the wholesale cut known as “round.” Depending on the thickness of the cut, (in the case of the femur, the cut “thickness” is equivalent to the femur fragment’s “length”) it was not always known whether the specimen was from a steak or a roast.

Those femur fragments with a length measurement of 25 millimeters or less were generally recognized as belonging to a “steak” acquisition unit; those with a length between 25 millimeters and 65 millimeters could have been from either a thick steak or a roast; those greater than 65 millimeters in length were recognized as a “roast.” These general lengths are only meaningful if the sawed ends were still definable. If a long bone fragment exhibited butchering saw marks at both ends, then the measurement could be made easily, and those smaller than 25 millimeters or greater than 65 millimeters in length could be assigned the cut “steak” or “roast” respectively. If the long bone fragment

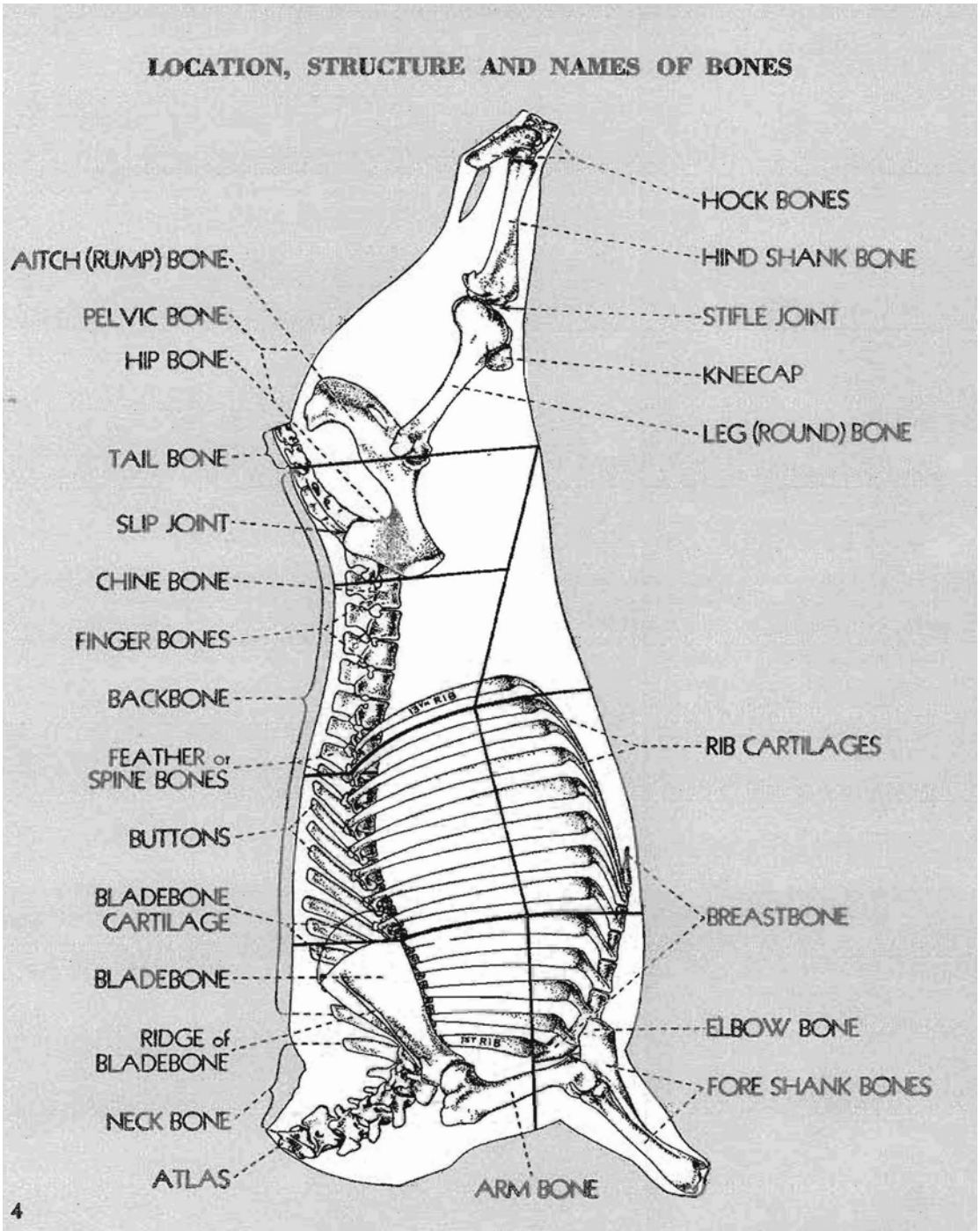


FIGURE 7. National Live Stock and Meat Board: Skeletal Indicators for Beef Cuts.

Source: No Author, n.d.,*Meat Manual: Identification, Buying, Cooking. National Live Stock and Meat Board, 5th edition*. National Live Stock and Meat Board, Chicago, Illinois. Reprinted with permission. Courtesy of The Beef Checkoff.

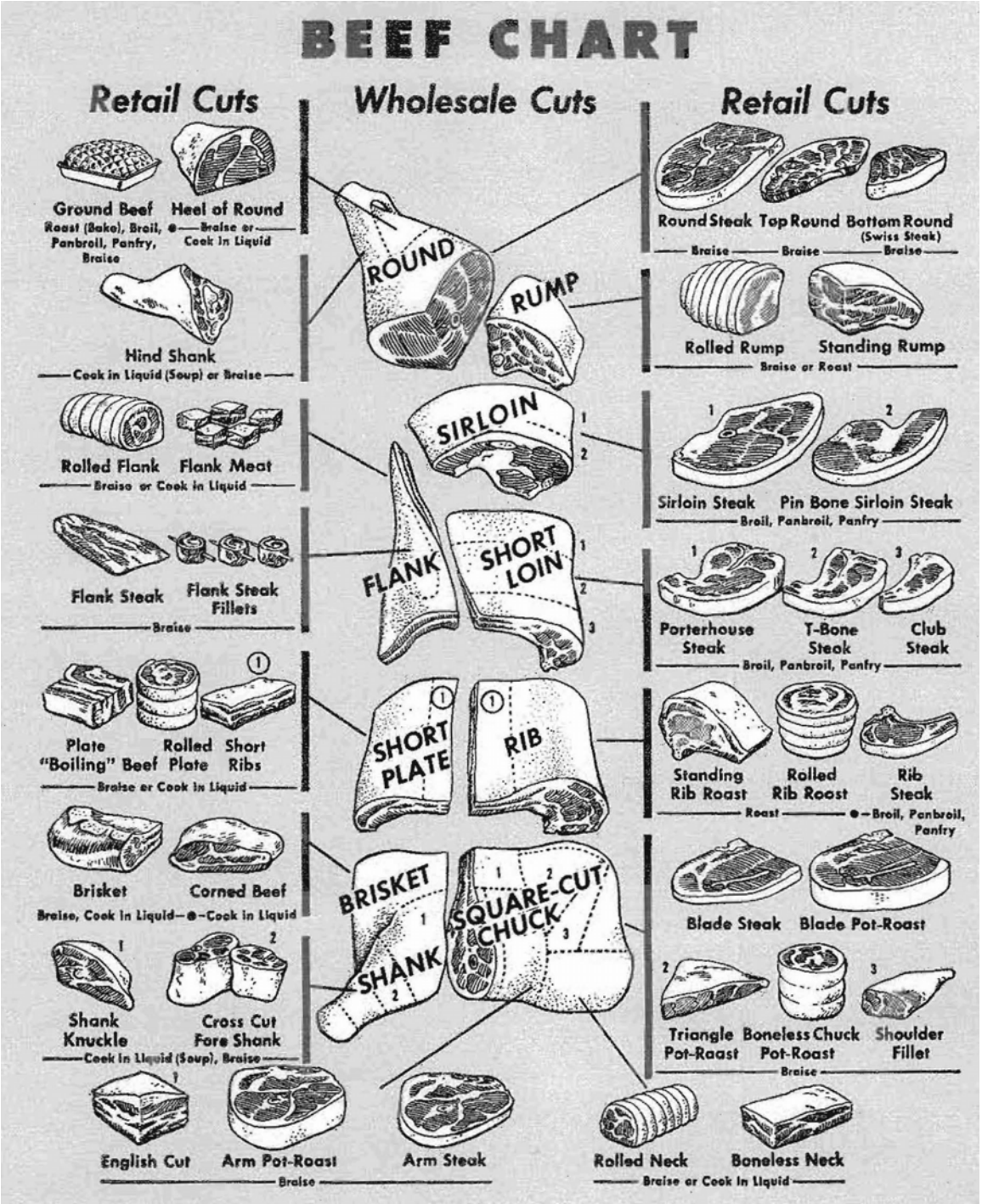


FIGURE 8. National Live Stock and Meat Board: Beef Butchering and Acquisition Units.

Source: No Author, n.d.,*Meat Manual: Identification, Buying, Cooking. National Live Stock and Meat Board, 5th edition*. National Live Stock and Meat Board, Chicago, Illinois. Reprinted with permission. Courtesy of The Beef Checkoff.

measured between 25 millimeters and 65 millimeters in length with only one end exhibiting saw marks, then it could only be categorized as “roast/steak.” Whenever possible, an attempt was made to identify the specific retail cut of steak or roast as well, such as top round steak and bottom round steak, although it was often the case that only a general assignment of “round steak,” “round roast,” or “round roast/steak” could be made.

The process of meat-cut identification was relatively straightforward for long bone fragments, and fragments from the innominate and scapula. It was much more difficult to distinguish meat cuts from rib and vertebra fragments. This is due in part to the fact that there are many more ribs and vertebra in an animal’s body than there are long and flat bones, and they tend to extend across multiple butchering units. If a rib’s or vertebra’s number is known (i.e., rib one, or thoracic vertebra three), the task is much simpler. In the case of the Philadelphia House assemblage, a number of factors made this task very challenging. These factors included: the fragmentation of the faunal remains and the unlikelihood that the assemblage contained the bones from an entire individual; and the lack of complete and numbered element representations within the zooarchaeology comparative collection. Because of these difficulties, it was often the case that only general meat-cut identifications could be made. This resulted in a number of beef rib and vertebra fragments identified as belonging to the “cross rib/chuck/brisket” butchering units, and sheep/goat rib and vertebra fragments identified as “chuck/breast/short or hotel rack rib.”

Whenever a positive meat-cut identification could be made for a beef, pork, or sheep/goat specimen, the identification was compared against the tables compiled for

butchering and acquisition units (see Tables 1, 3, and 5) for verification. This information was then recorded on the hand written level form and the specimen's faunal identification tag. If an identification could not be made, the meat-cut variable was recorded as "unknown."

Identifying Cultural Modifications

Identification of cultural modification often occurred at the same time as meat-cut identification, and included noting butchering marks, evidence and degree of burning and fragmentation, and miscellaneous modifications such as polishing or staining that could be related to human activity.

Analysis of modifications related to butchering or meat consumption was kept relatively simple, and utilized the tool mark descriptions discussed in Chapter IV. When saw marks were evident, the surface striations were examined for patterns that could help distinguish between marks left behind by hand saws, band saws, and circular saws. Cut marks and chop marks were evident as well, and were either attributed to knives or cleaver/ax-like tools, respectively.

Fragmentation was discussed earlier (i.e. "fresh" versus "old" breaks) but also included noting whether the "old" breaks were likely naturally produced post-deposition, or the product of human behavior, such as breaking bones to better fit them into a pot or to extract marrow. Burning as a form of cultural modification was also noted, and either recorded as "black" (the result of intense, short-term burning), "calcined" (white to bluish-white and the result of intense, prolonged burning), unknown, or not burned.

“Miscellaneous” modifications were those that could have been naturally or culturally produced, such as staining and polishing. Many of the specimens exhibited rust staining and accumulation, green staining, and in rare cases pink staining. Those associated with rust are thought to have resulted from close proximity to rusting metal debris during deposition, whereas those with green stains may have been near materials composed of copper or brass. The pink stains have an unknown origin.

Polishing often occurs because of intentional behavior that modifies the appearance of a bone fragment, and possibly its function as well. For example, buttons or gaming pieces made from bone will exhibit a polished appearance that resulted from shaping the bone fragment. However, it should be noted that polishing can also occur from prolonged contact with surfaces such as the curved interior of a cooking pot (pot polish), and thus while not necessarily intentional, may still be considered a cultural modification. Whenever polishing or staining was observed, they were recorded on the hand written level forms, along with details as to their location, extent, and coloration.

Once all of these variables - taxon, class and size-range, weight, fusion, element, element side, aspect, percentage, length, width, and thickness, cultural and natural modifications, fragmentation, butchering unit and acquisition unit, along with original and new catalog numbers and all provenience data were identified for each specimen (or noted as “unknown”) and recorded on level-specific handwritten forms, I entered these data into an Access database. Access was chosen over Excel for a number of reasons: first, Access can be used to generate formal identification tags and box inventories to be placed with the assemblage, and; second, the Access database acts as an artifact catalog that will belong to the Philadelphia House collection outside of this thesis.

Column variables utilized in the database included original catalog number, new catalog number, excavation phase, locus, unit, level, level descriptors (i.e., “above plank floor”), identifiability, size range, taxonomic order, family, genus and species, common name, element, element aspect, percentage and side, level of ossification, age range, quantity, weight, length, width, thickness, butchering unit, acquisition unit, burning, butchering tool marks, date identified, and commentary (on fragmentation, staining, and anything notable about the specimen(s)).

NISP and MNI Procedures

One of the goals of this thesis was to engage in a traditional zooarchaeological analysis of the faunal assemblage from the Philadelphia House, and to compare the results of this analysis to similar studies that have focused on ethnicity and socio-economic status. As noted in Chapter IV, comparison of faunal-based studies can often be difficult due to differences that likely exist between each study’s chosen units of analysis. Despite the type of unit of analysis chosen and the methodology used for defining it, most studies provide information on the NISP and MNI values derived from their faunal assemblage.

NISP (number of identified specimens) is the simplest measure of taxonomic abundance available, and its derivation is related to the number of identifiable elements in each animal, as well as processes related to site formation, cultural material recovery techniques, and laboratory procedures. MNI (minimum number of individuals) is impacted by the same factors, although unlike NISP, MNI is solely an analytical product.

Only the first and the last of these factors can be controlled here, with laboratory procedures affecting to some degree the number of identifiable elements in each animal.

NISP values were generated using the Access database I created for the Philadelphia House faunal assemblage. The database was sorted by identifiability, common name, and quantity, which allowed for each identifiable specimen to be tallied by the kind of animal each came from.

MNI values were a bit more challenging to generate, especially considering how unlikely it is that an historical urban assemblage will contain multiple elements from a single individual. As discussed in Chapter IV, there are have been many suggestions for how to derive MNI values, however, keeping the challenges of each in mind, I chose to combine the methods proposed by White (1953), Krantz (1968), and Bökönyi (1970). White suggested separating the most abundant element identified per species into right and left sides, and whichever side occurred more often would be used as the MNI. Krantz maintained that MNI should be calculated by pairing off, or “matching” the right and left bones from the same species, and then adding all the remaining left and right elements that could not be paired. Bökönyi recommended adding evidence for age, size, and sex as variables to separate out elements that could have potentially belonged to the same individual.

Combining these three methods involved first sorting the Access database by identifiability, species, common name, element, element side, aspect and percentage, ossification level, and quantity. Sorting made it fairly easy to analyze one species at a time across the entire analyzed assemblage, then to scroll through the specimens for the most commonly identified element of that particular species.

Without having any way to “pair” or “match” elements that likely belonged to the same individual, I decided instead to look first at only the most commonly occurring side (left or right) for the most commonly occurring element per species. The most frequently identified side was then compared against their identified aspects, such as the proximal and distal ends of long bones. The most common aspect of the most common side was then compared against identified ossification levels, age ranges, and element percentage. Each of these steps would inevitably reduce the number of possible specimens, thus generating a minimum number of individuals. Although MNI could have been determined for each level and for each unit, it could not be assumed that there was a pattern to the disposal methods, or that the units excavated represent unique disposal events. These circumstances led me to generate MNI values for both units analyzed combined, recognizing of course that these represent only a percentage of the entire faunal assemblage.

Take the following hypothetical situation as an example. Presume that 100 specimens from a faunal assemblage were identified taxonomically as *Ovis aries* (sheep). Of these 100, the most frequently identified element was the femur, represented by 20 specimens. Of these 20, 15 were from the left side of the body, and of these 15, five were complete, seven were complete, fused distal ends, and three were shaft fragments. It can be assumed right away from the complete specimens that there is an MNI of at least five. The shaft fragments may be discounted as possibly belonging to the distal end fragments, unless the element percentage identified for each exceeds the percentages assigned for the distal ends. For example, a left shaft fragment identified as 80 percent and a left distal end fragment identified as 30 percent of a complete femur are likely to represent two

separate femurs. In this hypothetical situation, presume that the shaft fragments each only represent 10 percent of a complete femur, and thus can be discounted. Because the seven distal fragments were identified as representing the complete distal end, it can be assumed that the seven belong to seven different femurs. Adding these to the five complete femurs gives us an MNI of twelve. Although this may sound a bit complex, in reality deriving MNI is more complicated than this; the above hypothetical situation is only meant to provide a synopsis for how one might go about determining MNI using a method that combines those proposed by White, Krantz, and Bökönyi.

Establishing “Traditional” German Cuisine

In addition to analyzing the Philadelphia House assemblage against comparable studies, I thought it necessary to establish an understanding of what is meant by “traditional German” foodways and “German-American” cuisine. This would function as both a line of evidence for the use of faunal remains as markers of German ethnicity, as well as an avenue for establishing what types of meat cuts and species ratios could be expected from the assemblage.

Studies relating German ethnicity and cuisine to faunal remains are lacking, so determining expectations had to come from elsewhere. I decided one avenue for deriving expectations was through an examination of meat-cut types and species ratios from German cookbooks, old and new. Cookbooks provide an excellent way to analyze trends in specific cuisines that could potentially be related to ethnicity and ethnic-based food preferences.

Towards this goal I read four different German or German-American cookbooks, including *The Cuisines of Germany: Regional Specialties and Traditional Home Cooking* (Scharfenberg 1989), *German-American Cookery: A Bilingual Guide* (Simms 1967), *The Frugal Gourmet: On Our Immigrant Ancestors* (Smith 1990) and *Sauerkraut Yankees: Pennsylvania-German Foods and Foodways* (Weaver 1983). Scharfenberg's *The Cuisines of Germany* provides an excellent discussion of the differences in Germany's traditional regional cuisine, the recipes that define each, and invaluable depictions of German beef, veal, pork, deer, and lamb meat cuts. Simms' *German-American Cookery* consists of detailed popular German-American recipes and their traditional German names, as does Smith's *The Frugal Gourmet;* together they provide a baseline for examining modern-day perspectives on traditional German cuisine. Weaver's *Sauerkraut Yankees* on the other hand, is a translation of *Die geschikte Hausfrau (The Handy Housewife),* first published in Harrisburg Pennsylvania as a pocket guide to Pennsylvania-German cookery. It is thought to be one of the first truly ethnic cookbooks to appear in the United States, and thus provides an opportunity to examine the beginnings of a German-American culinary identity.

Each of these cookbooks was first examined for the overall number of recipes included, then for the number of recipes per specific recipe grouping (i.e. beef, pork, poultry, mutton, soups/stews, desserts, etc.). They were then examined for content relating to recipes that included meat-based ingredients (with and without bones), all of which were recorded by recipe type and meat type. Whenever possible, region of origin (within Germany) of a particular recipe was also noted, as it was thought that differences in regional cuisine may be identifiable aspects of German-American food preferences

within late 19th century Sacramento. For example, if the majority of Sacramento's German neighborhood emigrated from Bavaria, then perhaps the expectation would be for the Philadelphia House collection to reflect Bavarian foodways, rather than more general German food preferences.

Recognizing that recipes involving boneless meat-based ingredients would not be visible archaeologically, I chose to tally those that *would* be visible, organizing these counts by meat-cut type. The results of my quantification of German meat-cut preferences are provided in Chapter VI and discussed more thoroughly in Chapter VII, where they are compared against the Philadelphia House assemblage meat-cut frequencies and species ratios.

Summary

The descriptions throughout this chapter of the methods used for analyzing the Philadelphia House faunal assemblage provide important information regarding the types of decisions made for generating a workable faunal-based data set. Knowing how the assemblage was sampled, analyzed and organized can reveal both the strengths and potential biases for subsequent data interpretation. Many of the procedures are standard in zooarchaeology; others such as the formulation of a German-American cuisine "baseline" are new, and required some creative thinking that will perhaps prove to be an essential line of evidence for correlating faunal remains to German foodways. The reader may find that the descriptions are fairly detailed; these details are intentional, for I found that rarely do analysts provide such specific information on their methodology. My hope in presenting a point-by-point methodological design is to allow for future analysts to

accept, reject, or modify my approach, without having to wonder in frustration why certain analytical decisions were made and others discarded.

CHAPTER VI

RESULTS: FAUNAL IDENTIFICATIONS, MEAT CUTS, AND GERMAN CUISINE

Introduction

The Philadelphia House faunal assemblage represents food remains from the associated boardinghouse, saloon, and restaurant. Deposited in the building's basement for 47 years, the assemblage spans the entire length of its existence as the Philadelphia House, including a number of years when the function of the building was unknown. The Philadelphia House was located in a portion of Sacramento thought to have been occupied by a large German population; during much of its existence, it was run by German immigrants and was advertised in such a way as to draw blue-collar German immigrant workers. The two units chosen for analysis comprise only a sample of the entire excavated faunal assemblage, which itself is but a sample of what remained of the former Philadelphia House basement during the 2004 data recovery.

The faunal remains from Locus 1 Unit 2 and Locus 3 Unit 2 were analyzed using the methodology discussed in Chapter VI, the results of which are the focus of this current chapter. This chapter presents first the taxa represented in the two units, and then the element frequencies for each identifiable taxon thought to represent food remains. Whenever possible, the results are also compared to the preliminary identifications made by TREMAINE for the faunal remains from Locus 1 Unit 1. It should be noted that the

identifications made for this thesis and presented here do not include the NISP values reported by TREMAINE. This is followed by a breakdown of the cultural modifications identified, the beef, pork, and sheep/goat butchering and acquisition unit frequencies, and a discussion of German butchering units. The results are then compared against socio-economic ranking systems for beef, pork and sheep/goat, and the results of Simons, Schulz, and Gust's analyses of historic sites in Sacramento. This is followed by a discussion of the food preference patterns obtained from the analysis of German cookbooks. These results provide the basis for analyzing the Philadelphia House faunal assemblage as the product of ethnic-based food preferences and foodways.

The Philadelphia House Assemblage

The Faunal Assemblage

Analysis of the Philadelphia House site's (CA-SHA-692H) faunal assemblage is derived from a sample of the approximately 13,500 specimens recovered by TREMAINE in 2004. For their final report, they provided preliminary identifications for the faunal remains recovered from Locus 1 Unit 1. As discussed in Chapter V, the remains from Locus 1 Unit 2 and Locus 3 Unit 2 were chosen as the sample for this thesis. The remains from these two units were listed by TREMAINE as numbering 2,550 and 1,496 specimens, respectively. Due to either fragmentation that occurred post-excavation, or to differences in what was considered to be a quantifiable specimen, these numbers differed in my tallies, with 3,746 representing the count for Locus 1 Unit 2, and 1,623 representing those from Locus 3 Unit 2. In total, 5,369 faunal specimens were analyzed; 2,350 (or approximately 43.8 percent) were identifiable to at least taxonomic

order. Table 14 provides a listing of the identified taxa and their common names. Table 15 shows the number of specimens identified for each taxa, those that could only be

TABLE 14
PHILADELPHIA HOUSE IDENTIFIED TAXA AND THEIR COMMON NAMES

Identification	Common Name(s)
Anseriformes (Med/Large Bird)	Duck, Goose, Swan
Anser/Chen	Goose
Chen caerulescens	Snow Goose
Chen sp.	Goose
Chen/Branta	Goose
Branta canadensis	Canada Goose
Anas sp.	Duck
Aix sp.	Wood Duck
Anas/Aix	Duck/Wood Duck
Anas/Gallus	Duck/Chicken
Galliformes (Med/Large Bird)	Chicken, Turkey, Quail, Pheasant
Meleagris gallopavo	Domestic Turkey
Meleagris/Gallus	Turkey/Chicken
Gallus gallus	Chicken
Picidae	Woodpecker
Leporidae	Rabbit/Hare Family
Sylvilagus sp.	Cottontail
Lepus sp.	Rabbit
Rodentia	Rodent
Neotoma fuscipes	Dusky-Footed Woodrat
Rattus sp.	Rat
Felis domesticus	Domestic Cat
Artiodactyla (Large)	Even-toed Ungulate (i.e., Cattle)
Artiodactyla (Med/Large)	Even-toed Ungulate (i.e., large Pig)
Artiodactyla (Medium)	Even-toed Ungulate (i.e., Sheep, Goat, Deer)
Sus scrofa	Pig
Bos/Sus	Cattle/Pig
Bos taurus	Domestic Cattle
Bos sp.	Cattle
Ovis aries	Domestic Sheep
Ovis/Capra	Sheep/Goat
Cervus sp.	Elk
Decapodia	Crab

TABLE 15
PHILADELPHIA HOUSE TAXONOMIC NISP, WEIGHT (G), MNI, AND FREQUENCY VALUES

	Identification	NISP(*n*)	(n)% total ID'd*	(n)% total**	MNI	Wt (g)
Identifiable	Anseriformes (Med/Large Bird)	3	0.130	0.056	1	0.700
	Anser/Chen	1	0.040	0.019	1	0.500
	Chen caerulescens	2	0.090	0.037	1	6.300
	Chen sp.	10	0.430	0.186	3	14.200
	Chen/Branta	7	0.298	0.130	2	8.400
	Branta canadensis	4	0.170	0.075	1	4.500
	Anas sp.	20	0.850	0.373	3	11.200
	Aix sp.	6	0.255	0.112	3	2.000
	Anas/Aix	3	0.130	0.056	1	1.000
	Anas/Gallus	1	0.040	0.019	1	0.600
	Galliformes (Med/Large Bird)	13	0.553	0.242	1	5.480
	Meleagris gallopavo	31	1.320	0.577	4	63.100
	Meleagris/Gallus	1	0.040	0.019	1	1.100
	Gallus gallus	257	10.940	4.787	12	285.240
	Picidae	2	0.090	0.037	1	0.600
	Leporidae	1	0.040	0.019	1	1.100
	Sylvilagus sp.	1	0.040	0.019	1	0.700
	Lepus sp.	102	4.340	1.900	3	105.580
	Rodentia	3	0.130	0.056	1	0.780
	Neotoma fuscipes	3	0.130	0.056	2	1.800
	Rattus sp.	87	3.702	1.620	12	20.060
	Felis domesticus	1	0.040	0.019	1	1.000
	Artiodactyla (Large)	18	0.766	0.335	1	108.300
	Artiodactyla (Med/Large)	17	0.723	0.317	1	44.200
	Artiodactyla (Medium)	260	11.060	4.843	6	499.800
	Sus scrofa	228	9.702	4.247	6	1319.700
	Bos/Sus	6	0.255	0.112	1	26.200
	Bos Taurus	605	25.750	11.268	10	11445.670
	Bos sp.	185	7.872	3.446	5	2354.300
	Ovis aries	105	4.470	1.956	5	882.700
	Ovis/Capra	362	15.400	6.742	6	1646.320
	Cervus sp.	3	0.130	0.056	1	19.500
	Decapodia	2	0.090	0.037	1	1.900
	Identifiable Subtotal	2350	~100.000	43.77	100	18884.530
Unidentifiable	Aves	66	---	1.229	6	17.910
	Mammal	1267	---	23.600	1	171.760
	Mammal (Large)	411	---	7.655	5	1730.800
	Mammal (Med/Large)	686	---	12.780	2	882.800

Table 15 (Continued)

	Identification	NISP(*n*)	(n)% total ID'd*	(n)% total**	MNI	Wt (g)
	Mammal (Medium)	170	---	3.166	3	215.800
	Mammal (Small/Medium)	23	---	0.428	1	12.490
	Mammal (Small)	17	---	0.317	1	2.290
	Fish	2	---	0.037	2	0.390
	Unknown	346	---	6.444	2	47.380
	Unidentifiable Subtotal	2988	---	55.65	23	3081.620
Indeterminate	Unknown	31	---	0.577	1	16.960
	Assemblage Totals	5369	---	~100.000	124	21983.110

* Values derived by dividing each NISP by the total number of identifiable specimens.
** Value derived by dividing each NISP by the total number of assemblage specimen. Assemblage here refers to the faunal remains from Locus 1 Unit 2 and Locus 3 Unit 2 combined.

distinguished by class and size, their weight, MNI values, and their percentage-based frequencies. This is followed by a brief description of the identifiable and the unidentifiable specimens represented in the assemblage. It should be noted that all tables presented in this chapter for the Philadelphia House assemblage combine the data from both units; they are not treated as separate events.

Descriptions of the Identifiable Faunal Remains

Bird

Avifaunal remains numbered 427, comprising approximately eight percent of the entire analyzed assemblage. Of these remains, 361 were identifiable to at least the level of order, comprising approximately 18 percent of the identifiable assemblage. Considering that bird bones are rather delicate and small, and considering that the Philadelphia House assemblage was screened through ¼" mesh, it is somewhat surprising

that such a large number of them should have been identifiable. This may be due to a number of factors, including that a higher rate of preservation existed than may be expected from an often-flooded context, or perhaps they were prepared whole, thus decreasing the possible fragmentation rate. These issues will be discussed in the following chapter.

As can be seen from Table 15, the majority (71 percent) of the avifaunal remains were identified as *Gallus gallus* (chicken), followed by turkey, duck, goose, and woodpecker. The woodpecker is represented by two ulna fragments—one right and one left—and it is unknown whether these reflect human consumption choices. Owing to osteological similarities between certain elements of chickens, turkeys, ducks, and geese, it was sometimes not possible to identify beyond the level of genus, family, and order. For example, the single specimen identified as "*Meleagris/Gallus*" could have been from either a turkey or a chicken; when compared against other species within the same family (Phasianidae), it was clear that the specimen belonged to either a turkey or a chicken, but because no definite identification could be made, it was given an "either/or" designation.

Cranial and vertebral elements were identified among the bird remains, however, as can be seen from Table 16, the majority of the elements identified came from the "breast/upper wing" region (sternum, furcula, scapula, coracoids, and proximal humerus), and the "thigh/drumstick" region (femur and tibiotarsus). The counts provided in Table 16 for chicken and turkey were from those identifiable to species, whereas those for duck and goose combined those generically identified as "duck" or "goose" respectively, and excluded any "either/or" identifications.

TABLE 16
PHILADELPHIA HOUSE: ELEMENTS FROM BIRDS

	Element	Chicken	Duck	Goose	Turkey	Totals
Identifiable						
Cranial Skeleton	Cranial	5	0	2	0	7
Post-Cranial Skeleton	Vertebrae (general)	0	0	0	0	0
	Atlas	0	0	0	0	0
	Axis	0	0	0	0	0
	Cervical Vertebra	18	0	0	2	20
	Thoracic Vertebra	1	0	0	0	1
	Synsacral Vertebra	1	0	0	0	1
	Synsacrum	8	0	0	0	8
	Rib	4	0	0	2	6
	Sternum	13	1	2	2	18
	Furculum	2	0	0	0	2
Appendicular Skeleton	Scapula	4	4	0	0	8
	Coracoid	9	3	1	4	17
	Humerus	36	6	7	7	56
	Radius	5	2	0	2	9
	Ulna	17	2	5	1	25
	Carpometacarpus	11	7	1	0	19
	Phalanx #1 (of digit #2)	0	0	0	0	0
	Pelvis	11	0	0	0	11
	Femur	30	2	0	1	33
	Tibiotarsus	54	2	3	5	64
	Fibula	1	0	0	2	3
	Tarsometatarsus	27	0	1	2	30
	Phalanges	0	0	2	1	3
Unidentifiable	Long Bone (Unknown)	0	0	0	0	0
	Totals	257	29	24	31	341

Figure 9 provides a graph of the avifaunal remains by poultry meat-cut type for chicken, duck, goose, and turkey. As can be seen, not only does the frequency of

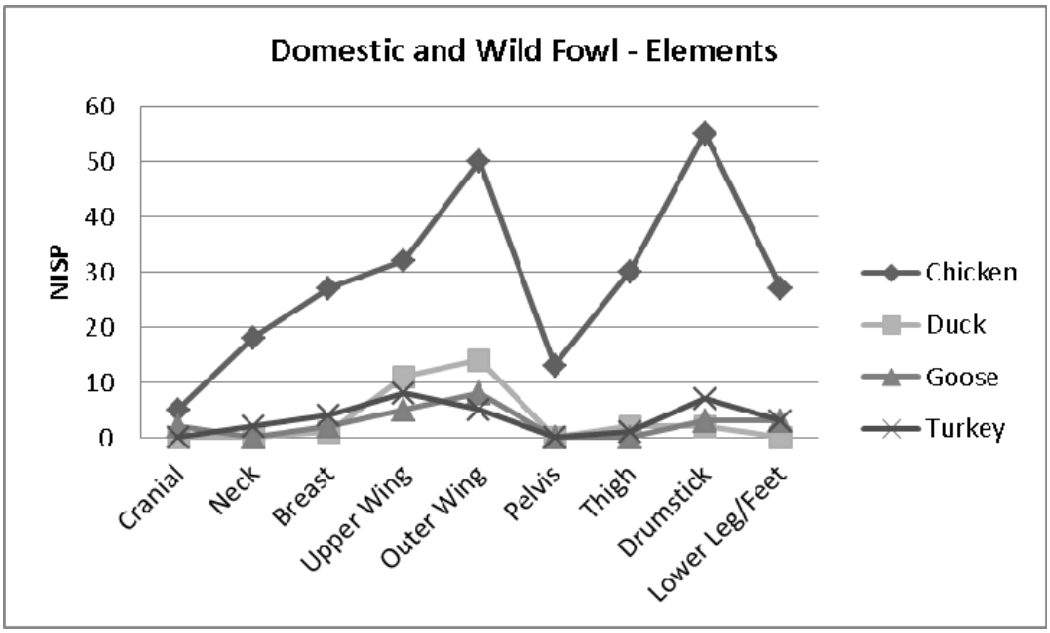


FIGURE 9. Domestic and Wild Fowl Element Counts by Poultry Meat-Cut Type.

chicken specimens far outnumber any other avifaunal type, so do elements from the outer wing and drumstick.

Crab

Crab (taxonomic order Decapodia) is represented in the assemblage by two claw fragments, neither of which could be sided. Both appeared calcined, and chalky to the touch. Although they represent only a small percentage of the collection, their numbers are consistent with the faunal analysis conducted by TREMAINE for Locus 1 Unit 1: they identified only one crab fragment (also a claw) out of 5,798 specimens examined (Nelson 2005:106).

Cats and Rats

Remains from cats and rats were also identified from the Philadelphia House assemblage, though the rats by far outnumbered the cats. A single domestic cat fibula was

identified from the two units examined, and this is consistent with the two cat bones identified by TREMAINE (Nelson 2005:106).

There are many osteological similarities between the members of the Cricetidae (New World) family and those of the Muridae (Old World) family. In fact, these two have posed many challenges for those who study taxonomy, and at times they have been lumped together as a single family. The dusky-footed woodrat is quite similar to the brown rat and roof rat, with the most distinguishable feature being their teeth: woodrats are herbivores whereas brown and roof rats are omnivores, and each has teeth unique to their diet. Despite their similarities, three fragments were identified as belonging to the dusky-footed woodrat, and 87 belonged to the genus *Rattus*. A single specimen, an incisor fragment, could only be identified as Rodentia, though it likely belonged to a rat.

Together the cat and rat bones, while members of the identifiable assemblage, are thought to have been intrusive. None of them exhibit any evidence of burning or butchering, and thus it is unlikely that they represent Philadelphia House food remains.

Rabbit

The term “rabbit” is used here to refer to both true rabbits and to hares, which are often referred to as jackrabbits in the western United States. Those specimens identified as belonging to the family Leporidae comprised a little over 4% of the identifiable assemblage. One fragment could not be identified beyond the family level, while one other was recognized as belonging to a cottontail. The majority of those identified were to the genus *Lepus*, which includes jackrabbits and a number of domestic rabbits. There are many osteological similarities between the members of the genus

Lepus, and because the comparative collection lacked domestic specimens, it was felt that positive identifications to the level of species could not be made. All of the rabbit specimens examined by TREMAINE were identified as *Lepus californicus* (jackrabbit), and although it is possible that those I identified belong to the same species, it is also possible that the Philadelphia House occupants or proprietors raised their own rabbits for food. Regardless, rabbit remains are represented by cranial and post-cranial elements, suggesting that they were obtained whole.

The rabbit elements identified are listed in Table 17 alongside the element representations for cattle, pig, and sheep/goat. The most common element identified for rabbits was the tibia, represented by a total of 18 fragments. Many of these were unfused, and when compared against the unfused tibia of known *Lepus californicus* specimens, it was noted that the Philadelphia House *Lepus* tibias were at least 50 percent larger than those in the comparative collection. The reasons for this are unclear, although perhaps the differences reflect changes in the dietary patterns of wild rabbits since the late 19th century. It is also possible that the differences can be attributed to the consumption of domestic rather than wild rabbits by the Philadelphia House occupants and patrons.

Artiodactyla

Artiodactyla (even-toed ungulate) remains easily made up the majority of the identifiable faunal assemblage. A total of 1,789 specimens were identified as belonging to the order Artiodactyla, comprising 33 percent of the entire assemblage and 76 percent of the identifiable portion of the assemblage. Twelve-and-a-half percent of those (n = 295), however, could only be identified by order, to be further subdivided into size ranges (i.e., large, medium/large, and medium). It is likely that those recognized as large

TABLE 17
PHILADELPHIA HOUSE: ELEMENTS FROM CATTLE, PIG, SHEEP/GOAT, AND RABBIT

	Element	Cattle (*n*)	Pig (*n*)	Sheep/Goat (*n*)	Rabbit (*n*)	Totals
Identifiable						
Cranial Skeleton	Cranial	1	9	0	5	15
Post-Cranial Skeleton	Vertebrae (general)	16	3	0	0	19
	Atlas	0	0	1	1	2
	Axis	6	0	0	0	6
	Cervical Vertebra	34	3	17	0	54
	Thoracic Vertebra	69	8	30	0	107
	Lumbar Vertebra	110	23	37	4	174
	Sacrum	0	1	3	1	5
	Caudal Vertebra	2	0	4	0	6
	Rib	143	35	106	3	287
	Sternum	0	0	0	0	0
	Hyoid	1	0	1	0	2
Appendicular Skeleton	Scapula	60	46	46	8	160
	Humerus (Proximal)	7	0	4	1	12
	Humerus (Distal)	7	3	5	2	17
	Humerus (Shaft)	9	17	27	2	55
	Humerus (Complete)	0	0	0	0	0
	Radius (Proximal)	7	1	5	4	17
	Radius (Distal)	0	0	1	0	1
	Radius (Shaft)	15	0	9	4	28
	Radius (Complete)	0	0	0	0	0
	Ulna (Proximal)	2	4	5	1	12
	Ulna (Distal)	1	0	0	0	1
	Ulna (Shaft)	28	5	8	9	50
	Ulna (Complete)	0	0	0	0	0
	Carpals, Metacarpals	3	4	22	0	29
	Innominate	27	15	34	9	85
	Femur (Proximal)	10	0	6	2	18
	Femur (Distal)	11	1	5	7	24
	Femur (Shaft)	174	1	10	1	186
	Femur (Complete)	0	0	1	1	2
	Patella	3	1	0	0	4
	Tibia (Proximal)	6	3	6	0	15
	Tibia (Distal)	4	1	4	6	15
	Tibia (Shaft)	13	4	20	12	49
	Tibia (Complete)	0	0	0	0	0
	Fibula	0	8	0	0	8
	Astragalus	5	0	4	0	9
	Calcaneus	4	2	11	2	19
	Metatarsals	1	0	10	0	11
	Metapodials	2	14	4	16	36

Table 17 (Continued)

	Element	Cattle (*n*)	Pig (*n*)	Sheep/Goat (*n*)	Rabbit (*n*)	Totals
	Naviculo-Cuboid	2	1	1	0	4
	Phalanges	1	15	18	2	36
Unidentifiable	Long Bone (Unknown)	6	0	2	1	9
	Totals	790	228	467	104	1589

artiodactyls are cattle remains, while those identified as medium artiodactyls are either from sheep or goats, but because they did not possess traits or features specific to a particular genus or species, they were given the more general order-based designation.

Those that were identifiable beyond order consisted of cattle, sheep, sheep/goat, pig, and elk. Cattle (those identified as *Bos taurus* and *Bos* sp.) made up 33.6 percent of the identifiable remains; sheep/goat (those identified as *Ovis aries* and *Ovis/Capra*) made up almost 20 percent, whereas pigs (*Sus scrofa*) comprised 9.7 percent. Elk were represented by three bone fragments: two teeth and a portion of an atlas, none of which exhibited any form of cultural modification. Table 17 presents a break-down by element for cattle, pig, sheep/goat, and rabbit. As can be seen, both cranial and post-cranial elements are present, though cranial elements are noticeably absent for sheep/goat.

Descriptions of the Unidentifiable and Indeterminate Faunal Remains

Together, specimens that were deemed unidentifiable and indeterminate made up 56 percent of the analyzed faunal assemblage. As discussed in Chapter V, unidentifiable specimens were those that could not be identified to at least a taxonomic order, though they could often be organized into basic classes and sizes; indeterminate

remains on the other hand were those for which no identification other than “faunal” could be made, though they exhibited features that could potentially be identified by another analyst.

Unidentifiable specimens were mainly mammal, ranging in size from small, small/medium, medium, medium/large, and large, to mammal of an unknown size range. (See Table 15 for the NISP and MNI values of each size range.) Sixty-six of the 2,988 unidentifiable remains were recognizable as belonging to the class Aves (bird), though no size range could be determined. Only two specimens were identified as fish, though despite comparing them against every specimen in the comparative collection, they could not be identified more specifically. The small number of fish remains may be a reflection of dietary preferences that exclude large quantities of fish, but it is just as likely that screening methods during excavation did not allow for the recovery of the tiny bone fragments often associated with fish.

Cultural Modifications

Modifications to bone are generally divided into two taphonomic categories: natural and cultural. Natural modifications are those that occur as the result of natural, non-human related forces such as sun-bleaching, root etching, disintegration from acidic environments, and rodent or carnivore gnawing. Cultural modifications are those, both intentional and unintentional, that occur as the result of human activity. These include alterations to bones due to butchering and processing techniques (i.e., saw marks, cut marks, fragmentation for marrow extraction), burning, trampling, and polishing. Natural modifications—namely rodent gnaw marks—were observed throughout the Philadelphia

House assemblage. However, the cultural modifications are the focus of discussion here, for they are more likely than natural alterations to reveal patterns related to foodways.

The most common human-related modifications observed were burning, polishing, and those identified with butchering and processing meat products. Table 18 presents the cultural alterations noted throughout the assemblage for those specimens identified as chicken, duck, goose, and turkey. Table 19 presents those modifications observed on cattle, pig, sheep/goat, and rabbit bones.

TABLE 18
PHILADELPHIA HOUSE: BUTCHERING, BURNING, AND POLISH MARKS ON BIRD BONES

	Cultural Modification	Bird Type				
		Chicken	Duck	Goose	Turkey	Totals
Butchering Marks						
	Cut Marks (Knife)	-	-	-	-	-
	Saw Marks (Hand Saw)	2	-	-	-	2
	Chop Marks (Ax/Cleaver)	2	-	-	-	2
	Possibly Sawn	2	-	-	-	2
	Possibly Cut	-	-	-	1	1
	Butchering Mark Totals:	6	0	0	1	7
	No Marks:	252	29	24	30	335
Burning						
	Burned (black and gray)	2	-	-	2	4
	Calcined (white/blue)	-	-	-	-	-
	Unburned	255	29	24	29	337
	Burning Totals:	257	29	24	31	341
Polish						
	Polished	1	1	-	2	4
	Unpolished	256	28	-	29	313
	Polishing Totals:	257	29	24	31	341

The category “butchering marks” subsumes those marks such as cuts on the surface of the bone that could be related to the butchering process, cooking process, or consumption process (i.e., cutting cooked meat away from the bone). It should be noted

TABLE 19
PHILADELPHIA HOUSE: BUTCHERING, BURNING, AND POLISH MARKS ON MAMMAL BONES

	Cultural Modification	Mammal Type				
		Cattle	Pig	Sheep/ Goat	Rabbit	Totals
Butchering Marks						
	Cut Marks (Knife)	12	6	16	1	35
	Saw Marks (Hand Saw)	648	118	169	-	935
	Chop Marks (Ax/Cleaver)	30	6	6	-	42
	Possibly Sawn	8	4	8	-	20
	Possibly Cut	2	-	6	-	8
	Butchering Mark Totals:	700	134	205	1	1040
	No Marks:	122	103	271	103	599
Burning						
	Burned (black and gray)	176	41	43	1	261
	Calcined (white/blue)	-	1	1	-	2
	Unburned	614	186	423	103	1326
	Burning Totals:	790	228	467	104	1589
Polish						
	Polished	4	-	3	2	9
	Unpolished	786	228	464	102	1580
	Polishing Totals:	790	228	467	104	1589

that the overall totals for each type of butchering mark may exceed the total count of specimens identified for each species. This is due to bone specimens that exhibited more than one type of mark. For example, a rib fragment that shows handsaw marks at one end and a wedge-shaped chop mark on the dorsal surface would be counted twice.

It should be evident from Table 18 that very few avifaunal remains exhibited butchering marks, burning, or polishing. Only two percent showed butchering marks, while approximately one percent were burned and polished. The lack of cultural modifications on bird bones could be due to their small size and the fact that they can be prepared whole, thus not requiring the same level of butchering needed to process cattle, pigs, and sheep/goats. It could also be a reflection of preferences in preparation

techniques that may be associated with ethnic foodways. It is unknown whether the small numbers of burned and polished bird bones were incidental or intentional.

Table 19 shows a different kind of pattern for the mammal specimens identified as most likely representing food remains: cattle, pigs, sheep/goat, and rabbit. In the case of cattle, pig, and sheep/goat, the most common butchering marks were hand saw marks. Saw marks made up approximately 90 percent of the observed butchering marks. Cut marks and chop marks occurred for all three artiodactyl-types as well, although in much smaller frequencies. It should be noted, however, that for pig, almost an equal number of bones exhibited no signs of butchering marks. For sheep/goat, 43 percent showed one or more marks, though over 56 percent showed no marks at all. This could be due to factors involving fragmentation; for example, it is possible that pre-disposal, a single bone exhibited a single saw mark, and post-disposal the bone fragmented into several pieces. In this case, it is likely that only one of those fragments would still retain the saw mark, thus making it appear that the remaining fragments had not been sawn.

Of 104 rabbit bones, only one displayed any butchering marks—a single cut mark. This could perhaps be a reflection of acquisition and preparation of rabbits as whole units, although it is also possible that as with birds, whose bones are delicate and easily broken, preparation may not have required tools such as hand saws or cleavers.

These data on burn marks provide some interesting results as well. Of the 1,589 specimens examined for evidence of burning in Table 19, 83.3 percent were unburned. Those that were burned were primarily deeply blackened or charred, with the dark coloration existing across all surfaces of the bone. This suggests that they were

burned after they were broken, and not as the result of the direct application of fire during cooking. Although not evident in the data provided, during my examination of the assemblage I observed that the majority of the burned bones were from Locus 3, Unit 2; this may suggest a “disposal” event separate from the one that produced the Locus 1 Unit 2 remains, however there is no way to prove this. Considering the fact that refuse was disposed of directly below the living surface, it is also possible that the food refuse was burned post-consumption in order to eliminate the inevitable odors that arise from decomposing organic matter.

These data on polishing marks, while appearing to display how infrequently these modifications occurred, are a bit misleading. The nine bones (0.5 percent) listed as exhibiting polishing are ones for which the marks are minimal, occurring on small surface areas and do not appear to have been produced intentionally. These specimens were also ones that had heavy green or rust-colored staining, suggesting perhaps that both the staining and the polishing were the product of the specimen’s proximity to a metal object during deposition. What are not indicated in Table 19 are those bones that exhibited heavy polishing but could not be identified to either genus or species. In total, there were six specimens from the Philadelphia House faunal assemblage that were highly polished. All were long bone fragments, five of which were likely humeri shaft fragments from the order Artiodactyla, and the sixth was a shaft fragment from an unidentified small or medium mammal. All had the appearance of chop meat-cuts, with the polish distributed across the exterior cortical surfaces. This set of likely intentionally polished bone fragments—recognized as anomalies within the assemblage—are discussed more thoroughly in Appendix A.

Aging Results

As discussed in Chapter VI, two different types of aging studies were conducted for the Philadelphia House faunal assemblage: aging using general variables based on level of fusion or ossification (i.e., fused, unfused, partially unfused, and unknown), and then using these levels to identify a more specific age range for known domestic mammal and poultry specimens with observable levels of fusion or ossification. Despite the problems associated with aging the remains of animals based on incomplete skeletal elements, I found it important to provide general age range estimates for cattle, pig, and sheep/goat, for this kind of data may provide clues regarding meat-type preferences. For example, establishing a frequency pattern for sheep age ranges may indicate whether lamb or mutton was preferred. It is much more difficult to provide age ranges for ducks, geese, turkeys, and chickens, for which information regarding life profiles and breed is unknown.

Table 20 presents the general age identifications made using the variables “fused,” “unfused,” “partially fused,” and “unknown” for mammals, and “ossified,” “unossified,” and “unknown” for birds.

Figure 10 provides a depiction of the general age assignments made for those specimens identified as goose, duck, turkey, chicken, rabbit, pig, cattle, and sheep/goat. It is evident that those for whom general fusion and ossification levels could not be identified outnumbered those that could. It also reveals that most of the cattle remains that could be identified were from unfused elements, whereas sheep/goat tended to have a fairly even distribution of fused and unfused elements.

TABLE 20
PHILADELPHIA HOUSE: GENERAL FUSION AND OSSIFICATION IDENTIFICATIONS

Identification	Fused	Unfused	Partially Fused	Ossified	Unossified	Unknown	Totals
Goose	---	---	---	1	---	23	24
Duck	---	---	---	3	---	26	29
Turkey	---	---	---	5	2	24	31
Chicken	---	---	---	35	8	214	257
Rabbit	38	10	---	---	---	56	104
Pig	11	66	---	---	---	151	228
Cattle	25	133	1	---	---	631	790
Sheep/Goat	80	82	2	---	---	303	467
Totals	154	291	3	44	10	1428	1930

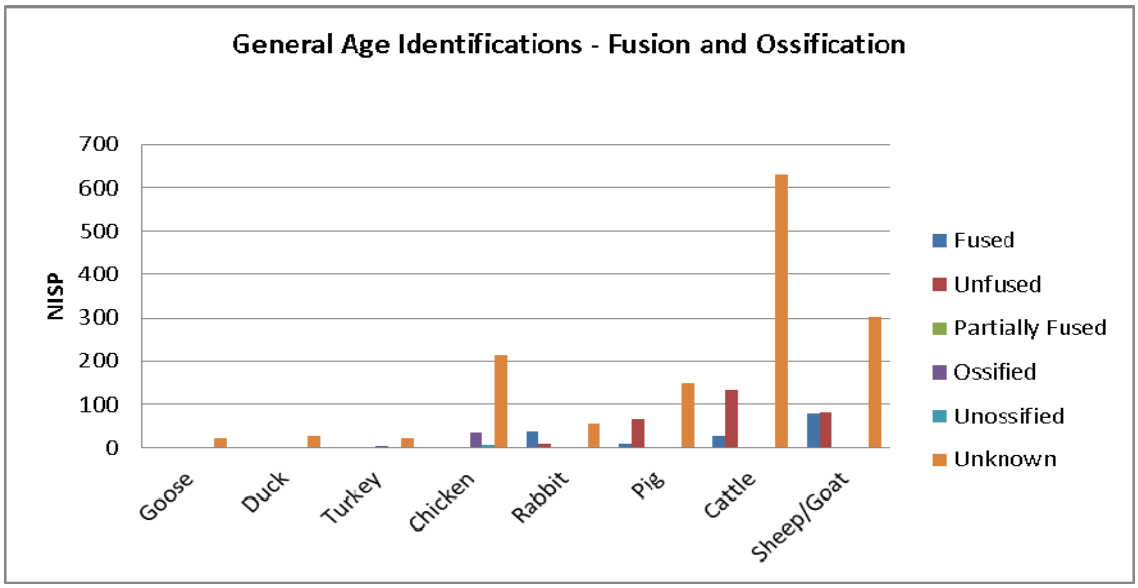


FIGURE 10. General Age Identifications Made for the Philadelphia House Assemblage.

Fusion or ossification levels could not be identified for approximately 74 percent of the specimens, and this is due primarily to taphonomic processes that either obliterated evidence of ossification or fragmented specimens that were originally deposited as more complete skeletal elements. Regardless, it is evident that domestic livestock, and domestic and wild fowl with unfused osteological elements were consumed by the Philadelphia House occupants. It should be remembered that fusion rates vary by species and by element; it could be incorrect to assume from the above table that the proportion of unfused faunal specimens reflects the consumption of juvenile or subadult species. In order to obtain a better understanding of dietary preferences as they relate to the aging of domestic livestock (namely cattle, pigs, and sheep/goats), I utilized the information in Table 12 (Chapter VI) to provide age ranges for those species with elements of known ages. The results of this inquiry for cattle, pig, and sheep/goat are summarized below in Tables 21, 22, and 23, respectively.

The information yielded by the age-range data for cattle, pig, and sheep/goat clearly shows the difficulties with trying to establish food preference patterns from age-related variables. The ranges are quite broad, and often times the only information that can be derived is that a certain number of specimens were from a set of individual animals that were less than five years old. For cattle, approximately two percent were identifiable as calves, and a little over one percent was identifiable as adults. This means that the remaining 96.8 percent, including those that could not be assigned an age-range, could have been from calves or adults, or anywhere in-between.

Aging swine provides its own set of problems, namely that pigs grow at an astonishingly fast pace. Depending on diet and breed, piglets born weighing one or two

TABLE 21
PHILADELPHIA HOUSE: AGE RANGE IDENTIFICATIONS FOR CATTLE

Age Range	(n)Identified in Range	Common Name for Age Range
>/=7-10 months	5	Calf
<12-18 months	7	Calf
>/=12-18 months	3	Calf
<2-2.5 yrs	4	Calf/Adult
>/=2-2.5 yrs	1	Adult
<3.5 yrs	7	Calf/Adult
<3-3.5 yrs	6	Calf/Adult
<3.5-4 yrs	16	Calf/Adult
>/=3-3.5 yrs	1	Adult
>/=3.5-4 yrs	3	Adult
<4.5 yrs	3	Calf/Adult
<5 yrs	82	Calf/Adult
>/=5 yrs	5	Adult
Unknown	647	Calf/Adult
Totals:	790	
Calves:	15(1.9%)	
Adults:	10(1.3%)	
Calves/Adults:	765(96.8%)	

pounds can easily weigh in at over 150 pounds at six months of age. They are not considered to be fully adult until they have reached approximately three-and-a-half years of age. Their bones tend to fuse slowly during this time, and it is not often that pigs raised for slaughter approach a fully-adult stage. These factors make aging faunal specimens from pigs particularly difficult, and it is often the case, as with cattle, that only a very broad age-range can be estimated.

A piglet is generally considered a suckling pig if it is less than six weeks old, although many prefer them to be less than four weeks old at the time of slaughter. None of the known osteologically-based age ranges for pigs use time increments small enough

TABLE 22
PHILADELPHIA HOUSE: AGE RANGE IDENTIFICATIONS FOR PIG

Age Range	(n)Identified in Range
<0	1
<3-6 months	17
>/=3-6 months	3
<15-18 months	1
>/=1 yr	3
<1 yr	8
<2 yrs	5
>/=2 yrs	1
<2-2.5 yrs	5
</=3-3.5 yrs	1
</=3.5 yrs	2
<3.5 yrs	4
>/=3.5 yrs	1
<3-3.5 yrs	1
Unknown	175
Total:	228

to account for piglets only a few weeks old, although the case could be made that any of the specimens counted with a “less than” symbol could have potentially been suckling pigs. Seventeen of the Philadelphia House pig specimens were identified within the “less than three-to-six months” age range. Although still fairly broad when considering that a suckling pig may weigh approximately 30 pounds, and a six-month old pig may weigh 150 pounds, this group of seventeen specimens provides the strongest support that the Philadelphia House occupants and patrons may have consumed suckling pigs. Based on the age-range assignments, the majority of the remains could have been from either young or adult pigs.

The age-range identifications for sheep are somewhat clearer, although they do run into many of the same problems as those for cattle and pigs, in that many of the specimens could only be assigned to a very broad, general age category. Table 23 shows

TABLE 23
PHILADELPHIA HOUSE: AGE RANGE IDENTIFICATIONS FOR SHEEP/GOAT

Age Range	(n)Identified in Range	Common Name for Age Range
>/=0	1	Lamb/Yearling/Mutton
<3-6 months	29	Lamb
>/=3-6 months	8	Lamb/Yearling/Mutton
<6-8 months	1	Lamb
>/=6-8 months	5	Lamb/Yearling/Mutton
<6-10 months	2	Lamb
>/=6-10 months	4	Lamb/Yearling/Mutton
<10 months	1	Lamb
>/=10 months	10	Lamb/Yearling/Mutton
>/=13-16 months	8	Yearling/Mutton
<18-24 months	1	Lamb/Yearling
>/=18-24 months	10	Yearling/Mutton
<20-28 months	2	Lamb/Yearling/Mutton
>/=20-28 months	3	Yearling/Mutton
<1.5 yrs	2	Lamb/Yearling
>/=1.5 yrs	2	Yearling/Mutton
>/=1.5-2 yrs	1	Yearling/Mutton
<2.5 yrs	1	Lamb/Yearling/Mutton
<2.5-3 yrs	8	Lamb/Yearling/Mutton
>/=2.5-3 yrs	11	Mutton
<3 yrs	3	Lamb/Yearling/Mutton
<3-3.5 yrs	16	Lamb/Yearling/Mutton
Unknown	338	Lamb/Yearling/Mutton
Totals:	467	
Lamb:	33(7%)	
Yearling Mutton:	0(0%)	
Mutton:	11(2.4%)	
Lamb/Yearling	3(0.6%)	
Yearling/Mutton	24(5.1%)	
Lamb/Yearling/Mutton:	396(84.9%)	

that the fusion rates for sheep provide a wide range of age groups. The column providing the corresponding common name for each age range is meant to help simplify the large number of age categories, by using terms more familiar for sheep: lamb, yearling mutton,

and mutton. Table 11 in Chapter VI summarizes the general age-range for lamb, yearling mutton, and mutton.

It should be noted that the specimens tallied within Table 23 include both those identified specifically as *Ovis aries* (sheep), and those identified as *Ovis/Capra* (sheep/goat). As with cattle and pigs, it is clear that the majority (84.9 percent) of the sheep/goat specimens could not be assigned to the common name categories specifically, although it is interesting that a small number could be assigned to lamb (seven percent), lamb/yearling (three percent), yearling/mutton (5.1 percent), and mutton (2.4 percent), indicating that a variety of sheep/goats were consumed.

Butchering Units and Acquisition Units

In zooarchaeology, there are essentially two units of analysis for examining butchered bone: butchering units and acquisition units. As discussed previously, butchering units are those wholesale cuts produced during the initial stage of butchering an animal. They are presumed to occur more often in prehistoric sites and rural historic sites, at which animals were butchered “on site” or close-by, thus making it more likely to observe faunal remains representing entire individuals. Due to the marketplace setting and the fact that butchering large domestic animals within city limits was often forbidden, the faunal remains observed from urban historic sites are more likely to represent smaller, retail portions than large wholesale cuts. Acquisition units are the units of meat *actually* acquired from the marketplace or butcher, and so are often regarded by zooarchaeologists as the proper unit of analysis for urban sites archaeology (Huelsbeck 1991).

Relying solely on the information derived from either butchering units or acquisition units can unnecessarily skew the data results and subsequent interpretations. Regardless of which is chosen, identification of the meat cuts represented by faunal remains often begins at the level of the larger, wholesale unit. The categories for wholesale units are much broader and more easily defined than those for acquisition units, thus making it much simpler (though by no means simple) to assign butchering unit identifications to fragmented bone specimens. One of the goals of this thesis was to potentially eliminate socio-economic status as a factor influencing the composition of the Philadelphia House assemblage, and thus highlight patterns related to ethnicity. Doing so required comparing the Philadelphia House assemblage against other, similar assemblages from Sacramento, a comparison that could only be meaningful if the units of analysis chosen in previous studies could be duplicated here. For the most part, these past studies primarily utilized the butchering unit, however, recognizing the potential information to be obtained from acquisition units, I set out to identify both.

Table 24 summarizes the beef butchering units identified for the Philadelphia House faunal assemblage. As discussed in Chapter V, one of the difficulties with assigning a butchering unit to a faunal specimen is that often the specimen is the fragment of a rib or vertebra, which is nearly impossible to identify to the level of rib or vertebra anatomical number. This number is essential for determining butchering unit; for example, a vertebra fragment that could be identified as thoracic vertebra seven (of thirteen) would be assigned to the “rib” butchering unit, whereas if it could only be identified as a thoracic vertebra, it could be from either a “chuck” or a “rib” unit. Increasing the number of possible butchering units a specimen might belong to greatly

TABLE 24
PHILADELPHIA HOUSE: BEEF BUTCHERING UNITS

Butchering Unit	NISP(n)	(n)% total beef*	(n)% total ID'd**
Short Loin	110	13.920	4.681
Rib	-	0.000	0.000
Sirloin	16	2.025	0.681
Round	178	22.532	7.574
Rump	20	2.532	0.851
Chuck	66	8.354	2.808
Arm	11	1.392	0.468
Cross/Short Rib	56	7.089	2.383
Short Plate	-	0.000	0.000
Brisket	-	0.000	0.000
Neck	41	5.190	1.745
Fore Shank	63	7.975	2.681
Hind Shank	45	5.696	1.915
Feet and Head	9	1.139	0.383
Rib/Chuck	19	2.405	0.808
Rib/Chuck/Brisket	132	16.709	5.617
Unknown	24	3.038	1.021
	790	~100.00	33.62

* Percentage derived by dividing NISP by the total number of cattle specimens.
**Percentage derived by dividing NISP by the total number of specimens identified for the entire assemblage.

increases the number of acquisition units it might belong to as well. The large number of specimens identified in Table 24 as "rib/chuck" and "rib/chuck/brisket" are testimony to the difficulties presented by rib and vertebra fragments, difficulties which, if not recognized, can greatly skew these data.

Putting these difficult categories aside for the moment, it appears that there is a much greater proportion of round cuts (22.5 percent) and short loin (13.9 percent) than any of the other butchering units. Only three percent of those bones identified as Bos

could not be assigned to a wholesale unit, a factor that is likely related to the large number of fairly complete cattle skeletal elements. Here, “fairly complete” is meant to indicate those specimens that still retained osteological features that made the element and species identification much simpler. Figure 11 presents a depiction of the beef

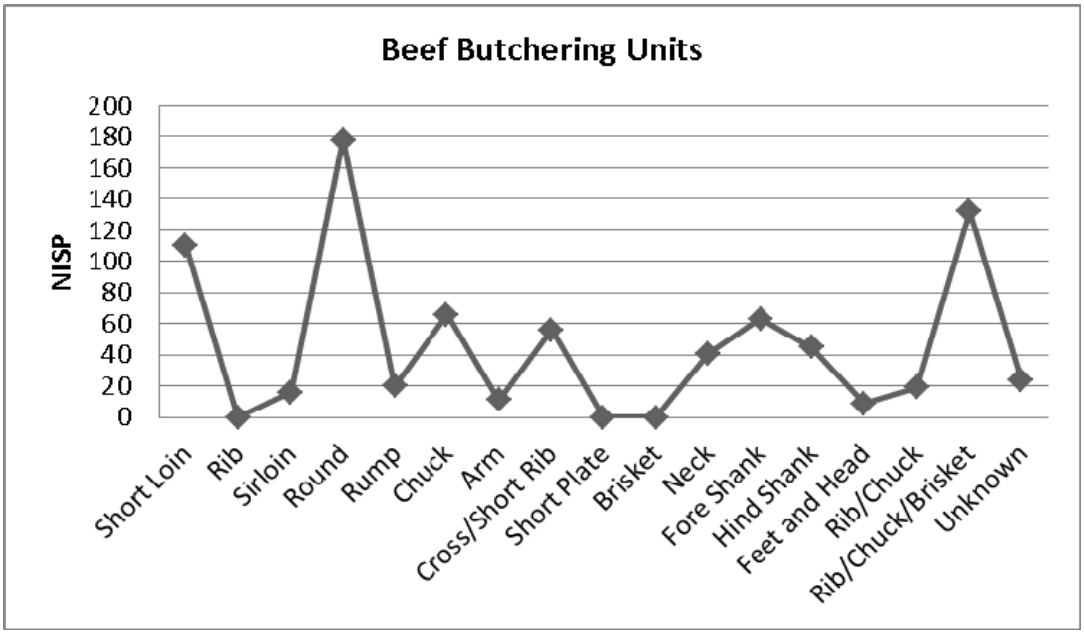


FIGURE 11. Philadelphia House Beef Butchering Unit Frequencies.

butchering unit frequencies. It should be noted that the apparent lack of specimens identified as rib, short plate, and brisket are due to difficulties with assigning exact skeletal positions for rib fragments (i.e., knowing which rib number the fragment came from), and should not be meant as a reflection of dietary preferences.

Identification of acquisition units, whenever possible, occurred at the same time as butchering units. Most of the studies that have utilized acquisition unit as the unit of analysis have focused more on the derivation of meat yield (i.e., in pounds)

represented by the retail cuts, rather than attempting to name them specifically. Later in this chapter I will include a similar analysis of the meat yield represented by the Philadelphia House remains. However, I felt that this thesis presented a unique opportunity to provide data regarding the more specific acquisition units identified as well. Table 25 presents the beef retail cuts that were identified for each butchering unit, and their frequency within the assemblage.

This data indicates that round steaks dominated the beef cuts (20.5 percent of the total cattle remains), followed by loin steaks (5.9 percent), which is consistent with the data represented in Table 24 for the butchering units. It also shows the wide variety of retail purchases made, the majority of which were identified as steaks (38 percent), and roast/steak (10.4 percent).

Butchering and acquisition units were assigned for pig and sheep/goat specimens as well. Table 26 presents the butchering units identified for the pig specimens, and Table 27 summarizes the more specifically defined acquisition units. Figure 12 depicts the distribution of pork specimens by butchering unit identifications.

Specimens identified as pork cuts make up approximately 9.7 percent of the identifiable assemblage. It is difficult to discern any patterns once this percentage is broken down by butchering unit, however, when examined within the category of pork itself, it is evident that in terms of NISP, rough back/loin (25 percent) and shoulder butt/boston shoulder (20 percent) cuts dominate, followed by feet (16 percent) and the picnic shoulder (14 percent). The relatively high proportion of specimens identified as “feet” could perhaps be an anomaly explained by the greater number of phalanges in a

TABLE 25
PHILADELPHIA HOUSE: BEEF ACQUISITION UNITS

Butchering Unit	Acquisition Unit	NISP(n)	(n)% total beef*
Short Loin	Loin Steak	47	5.90
	Loin Roast	1	0.13
	Loin Roast/Steak	13	1.60
	Rib Roast	1	0.13
	Steak	18	2.30
	T-Bone Steak	8	1.01
	Roast/Steak	14	1.77
	Unknown	8	1.01
Rib		-	0.00
Sirloin	Sirloin Steak	9	1.14
	Sirloin Roast	2	0.25
	Sirloin Roast/Steak	2	0.25
	Unknown	3	0.38
Round	Round Steak	162	20.50
	Round Roast	12	1.52
	Round Roast/Steak	3	0.38
	Unknown	1	0.13
Rump	Rump Steak	2	0.25
	Rump Roast	11	1.40
	Rump Roast/Steak	3	0.38
	Sirloin Steak	2	0.25
	Unknown	2	0.25
Chuck	Blade Steak	28	3.54
	Blade Roast	7	0.89
	Blade Roast/Steak	12	1.52
	Chuck Steak	2	0.25
	Chuck Roast	1	0.13
	Chuck Roast/Steak	1	0.13
	Rib Roast/Steak	1	0.13
	7-Bone Steak	1	0.13
	Unknown	13	1.60
Arm	Arm Steak	2	0.25
	Arm Roast	6	0.76
	Arm Roast/Steak	1	0.13
	Unknown	2	0.25

Table 25 (Continued)

Butchering Unit	Acquisition Unit	NISP(n)	(n)% total beef*
Cross/Short Rib	Prime Rib	1	0.13
	Rib Steak	2	0.25
	Rib Roast	10	1.27
	Rib Roast/Steak	2	0.25
	Short Rib	6	0.76
	Unknown	35	4.43
Short Plate		-	0.00
Brisket		-	0.00
Neck	Roast/Stew	36	4.56
	Unknown	5	0.63
Fore Shank	Shank/Stew	59	7.47
	Unknown	4	0.51
Hind Shank	Shank/Stew	6	0.76
	Roast	13	1.60
	Unknown	26	3.29
Feet and Head	Unknown	9	1.14
Rib/Chuck	Rib Steak	2	0.25
	Rib Roast	1	0.13
	Short Rib	2	0.25
	Unknown	14	1.77
Rib/Chuck/Brisket	Rib Steak	7	0.89
	Rib Roast	10	1.27
	Rib Roast/Steak	10	1.27
	Short Rib	12	1.52
	Sparerib	2	0.25
	Loin Steak	2	0.25
	Loin Roast/Steak	1	0.13
	Top Blade Steak	1	0.13
	Steak	6	0.76
	Roast	2	0.25
	Roast/Steak	19	2.41
	Unknown	60	7.60
Unknown	Unknown	24	3.04
		790	~100.00

* Percentage was derived by dividing each NISP by the total number of specimens identified as cattle.

TABLE 26
PHILADELPHIA HOUSE: PORK BUTCHERING UNITS

Butchering Unit	NISP(n)	(n)% total pork*	(n)% total ID'd**
Rough Back/Loin	57	25.000	2.426
Short Cut Ham/Leg	23	10.088	0.979
Rib Belly/Spareribs/Bacon	20	8.772	0.851
Shoulder Butt/Boston Shoulder	46	20.175	1.957
Picnic Shoulder	33	14.474	1.404
Feet	37	16.228	1.574
Jowl/Head	9	3.947	0.383
Shoulder Butt/Rough Back	3	1.316	0.128
	228	~100.00	9.70

* Percentage derived by dividing NISP by the total number of pig specimens.
**Percentage derived by dividing NISP by the total number of specimens identified for the entire assemblage.

single individual than any of the other paired skeletal elements. Or it could reflect a dietary preference for pig's feet.

Table 27 pinpoints the more specific acquisition units identified for the pig specimens in the assemblage. This presents a somewhat different picture than the butchering unit data: when examined solely as acquisition units, the NISP for "feet" was identified more frequently (approximately 16 percent), than any other cut, followed by blade chops (ten percent) and loin chops (nine percent).

The results for the butchering units and acquisition units identified for sheep/goat are presented in Tables 28 and 29, respectively. Figure 13 provides a depiction of the butchering unit distribution of sheep/goat specimens. Sheep/Goat remains made up almost 20 percent of the identifiable assemblage—a little over twice the frequency of pig specimens—although it should be noted that these frequencies are based

TABLE 27
PHILADELPHIA HOUSE: PORK ACQUISITION UNITS

Butchering Unit	Acquisition Unit	NISP(n)	(n)% total pork*
Rough Back/Loin	Loin Chop	21	9.21
	Loin Roast	5	2.19
	Loin Roast/Chop	7	3.07
	Rib Chop	2	0.88
	Sirloin Chop	1	0.44
	Sirloin Roast	1	0.44
	Sirloin Roast/Chop	2	0.88
	Unknown	18	7.90
Short Cut Ham/Leg	Roast	2	0.88
	Leg Roast	5	2.19
	Shank/Stew	2	0.88
	Unknown	14	6.14
Rib Belly/Spareribs/Bacon	Country Style Rib	1	0.44
	Short Rib	1	0.44
	Sparerib	2	0.88
	Unknown	16	7.02
Shoulder Butt/Boston Shoulder	Blade Chop	23	10.09
	Blade Roast	7	3.07
	Blade Roast/Chop	9	3.95
	Chop	1	0.44
	Roast/Stew	2	0.88
	Unknown	4	1.75
Picnic Shoulder	Arm Chop	8	3.51
	Arm Roast	16	7.02
	Arm Roast/Chop	4	1.75
	Arm Picnic Roast	2	0.88
	Blade Roast	2	0.88
	Unknown	1	0.44
Feet	Feet	36	15.79
	Shank/Stew	1	0.44
Jowl/Head	Jowl/Head	9	3.95
Shoulder Butt/Rough Back	Unknown	3	1.32
		228	~100.00

* Percentage was derived by dividing each NISP by the total number of specimens identified as pig.

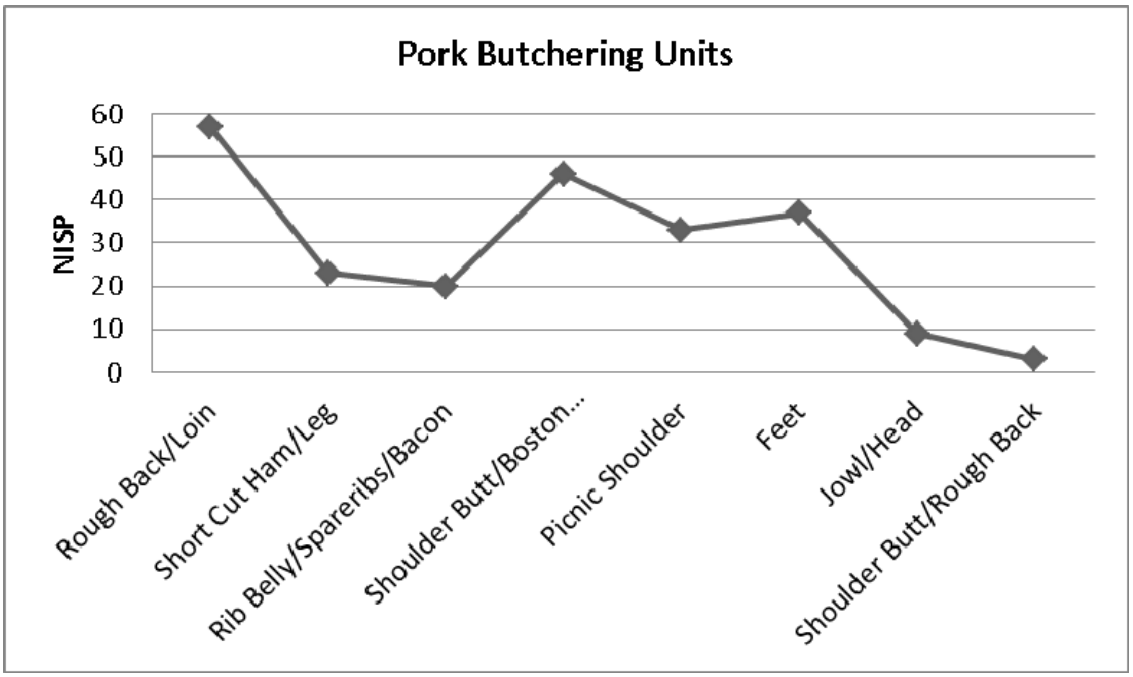


Figure 12. Philadelphia House Pork Butchering Unit Distributions.

on NISP values, which cannot be used alone to estimate the relative abundance of a particular taxon. The results provided in Tables 28 and 29 are meant to provide a very general synopsis of the units of analysis identified for sheep/goat using primary data.

As with the pork and beef butchering units, it is difficult to discern patterns of sheep/goat meat cuts from the frequencies derived using the entire identifiable assemblage. However, when examined within the category of sheep/goat itself, a few general observations can be made. The sheep/goat specimens identified as belonging to the “chuck/shoulder and neck” and “chuck/breast/rib” butchering units outnumbered any of those identified to the remaining wholesale categories at 21 percent and 19 percent, respectively. These are followed by the “feet,” “leg,” “fore shank,” and “loin” units. The relatively high frequency of “chuck/breast/rib” cuts should be recognized as an anomaly: the category represents a grouping of specimens that could not be identified as belonging

TABLE 28
PHILADELPHIA HOUSE: SHEEP/GOAT BUTCHERING UNITS

Butchering Unit	NISP(n)	(n)% total Sheep/Goat*	(n)% total ID'd**
Loin	37	7.923	1.574
Sirloin	10	2.141	0.426
Flank	-	0.000	0.000
Short or hotel rack/Rib	-	0.000	0.000
Chuck/Shoulder and Neck	100	21.413	4.255
Chuck/Rib	30	6.424	1.276
Chuck/Breast/Rib	89	19.058	3.787
Leg	50	10.707	2.128
Hind Shank	34	7.281	1.447
Brisket/Breast	2	0.428	0.085
Fore Shank	43	9.208	1.830
Head	1	0.214	0.043
Feet	66	14.133	2.808
Unknown	5	1.071	0.213
	467	~100.00	19.87

* Percentage derived by dividing NISP by the total number of sheep/goat specimens.
**Percentage derived by dividing NISP by the total number of specimens identified for the entire assemblage.

specifically to "chuck/shoulder and neck," "brisket/breast," or "short or hotel rack/rib". In addition, the large number of specimens identified as "feet" could perhaps be explained by the greater number of phalanges in a single individual than any of the other paired skeletal elements.

Table 29 summarizes the NISP frequencies for each of the acquisition units identified for sheep/goat specimens. Those that could not be assigned to a specific retail unit greatly outnumber any that could be identified, which could be due to taphonomic processes that have reduced the identifiability of specimens to specific meat cuts. Of those that could be assigned to acquisition unit, the NISP frequencies where highest for blade chops, leg roasts, and shank/stew cuts. The data presented above reveals an

TABLE 29
PHILADELPHIA HOUSE: SHEEP/GOAT ACQUISITION UNITS

Butchering Unit	Acquisition Unit	NISP (n)	(n)% total Sheep/Goat*
Loin	Loin Chop	12	2.57
	Loin Roast	2	0.43
	Loin Roast/Chop	13	2.78
	Unknown	10	2.14
Sirloin	Leg Chop	2	0.43
	Leg Roast	1	0.21
	Leg Roast/Chop	1	0.21
	Sirloin Chop	2	0.43
	Sirloin Roast	3	0.64
	Sirloin Roast/Chop	1	0.21
	Unknown	-	0.00
Flank		-	0.00
Short or hotel rack/Rib		-	0.00
Chuck/Shoulder and Neck	Arm Chop	18	3.85
	Arm Roast	2	0.43
	Arm Roast/Chop	1	0.21
	Blade Chop	23	4.93
	Blade Roast	7	1.50
	Blade Roast/Chop	3	0.64
	Rib Chop	1	0.21
	Rib Roast/Chop	1	0.21
	Loin Chop	1	0.21
	Stew	15	3.21
	Unknown	28	6.00
Chuck/Rib	Chop	9	1.93
	Roast/Chop	4	0.86
	Rib Chop	5	1.07
	Rib Roast/Chop	5	1.07
	Loin Chop	2	0.43
	Unknown	5	1.07
Chuck/Breast/Rib	Rib Chop	2	0.43
	Rib Roast	1	0.21
	Sparerib	8	1.71
	Unknown	78	16.70
Leg	Leg Chop	4	0.86
	Leg Roast	18	3.85
	Leg Roast/Chop	12	2.57
	Sirloin Roast	1	0.21
	Unknown	15	3.21

Table 29 (Continued)

Butchering Unit	Acquisition Unit	NISP (n)	(n)% total Sheep/Goat*
Hind Shank	Chop	4	0.86
	Shank/Stew	14	3.00
	Unknown	16	3.43
Brisket/Breast	Unknown	2	0.43
Fore Shank	Arm Chop	8	1.71
	Arm Roast	2	0.43
	Arm Roast/Chop	2	0.43
	Shank/Stew	30	6.42
	Unknown	1	0.21
Head	Head	1	0.21
Feet	Shank/Stew	30	6.42
	Unknown	36	7.71
Unknown	Unknown	5	1.07
		467	~100.00

* Percentage was derived by dividing each NISP by the total number of specimens identified as sheep/goat.

interesting trend that should be noted: specimens that could only be assigned to broad butchering unit groups such as “chuck/breast/rib” were simpler to identify as acquisition units (i.e., rib chop, rib roast, and sparerib). This suggests that these could perhaps be reassigned to more specific wholesale units, and highlights the importance of treating acquisition units as an osteologically identifiable variable, rather than one that can only be gleaned from meat yield estimates.

German Butchering Units

The existing zooarchaeological studies of sites from historic Sacramento utilize known Euro-American butchering patterns and techniques to analyze faunal assemblages. Indeed, much of this thesis utilizes the same information, for there is little data available on the butchering patterns of non-Euro-American groups. This thesis also

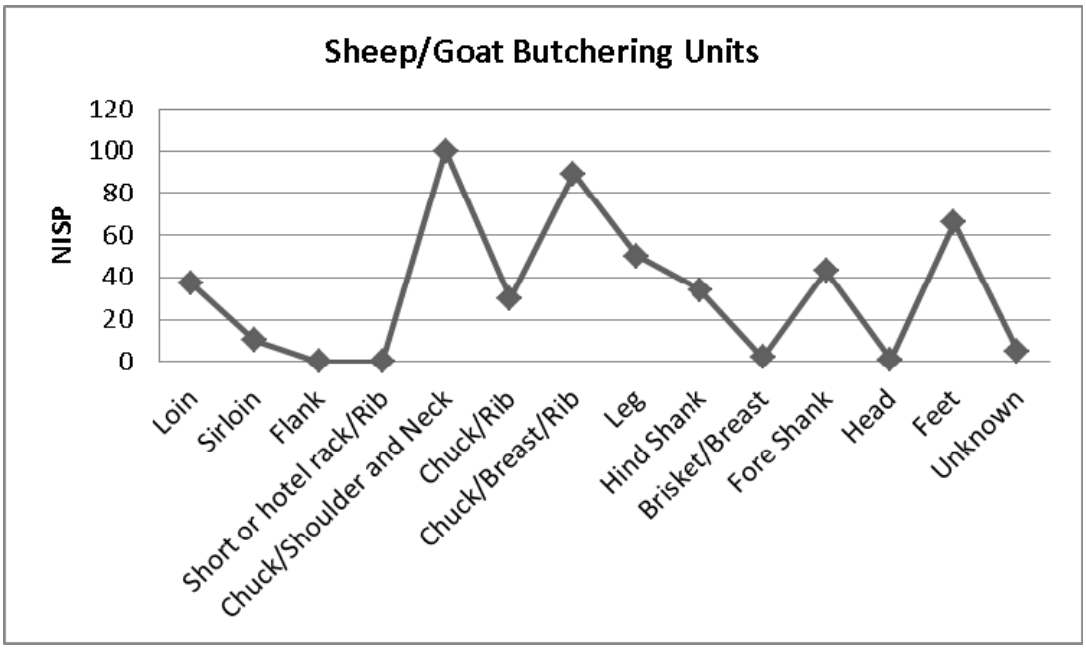
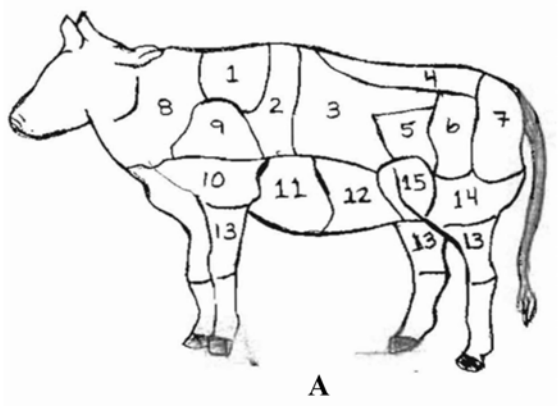


FIGURE 13. Philadelphia House Sheep/Goat Butchering Unit Distributions.

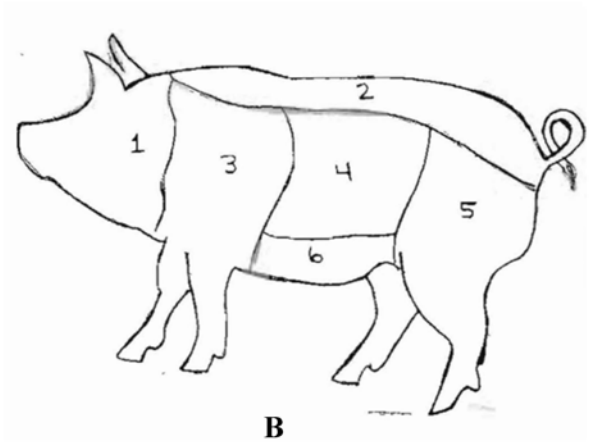
attempts to discern how the Philadelphia House faunal assemblage could be used as indicators of German ethnicity. To this end, I felt it was necessary to gather data about both general "Euro-American" butchering units, and for more specific German butchering units. Figure 14 provides a pictorial representation of German wholesale units for beef, pork, and lamb, including their German names (Scharfenberg 1989:207, 226, 359).

At first glance, it appears that there are many more categories for German cuts than for general Euro-American units, particularly for beef. Unlike the meat guides provided in Chapter V (Figures 8-9), it is difficult to discern from the German figures which skeletal indicators correspond to each butchering unit. Despite these difficulties, an attempt was made to compare the Euro-American units used throughout this thesis to the German ones pictured below. Any significant differences between the two could suggest



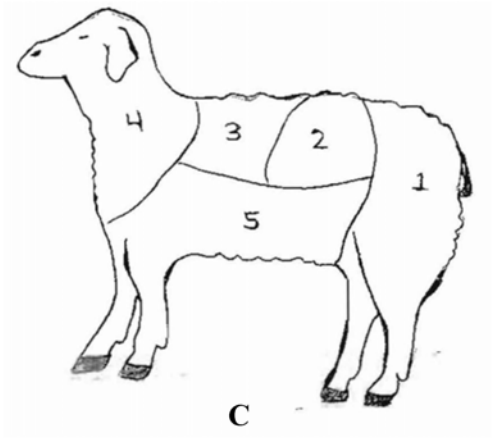
German Beef Cuts (A)

1. Neck (*Mürbekamm*)
2. Middle rib and chuck (*Fehlrippe*)
3. Short loin (*Roastbeef*)
4. *Filet*
5. Sirloin (*Blume*)
6. Sirloin (*Mittelschwanzstück*)
7. Rump and top round (*Schwanzstück*)
8. Neck (*Kamm*)
9. Shoulder (*Schaufelstück*)
10. Brisket (*Bug*)
11. Short plate (*Querrippe*)
12. Flank (*Flanke*)
13. Shank (*Hesse*)
14. Bottom round (*Unterschwanzstück*)
15. Tip of steak (*Nuss*)



German Pork Cuts (B)

1. Head, snout, and jowl (*Kopf mit Schnauze*)
2. Fatback (*Rückstrang*)
3. Butt, shoulder, and hock (*Kamm*)
4. Loin, spareribs, and bacon (*Koteletts, Karbonade, Rippenspeer, und Speck*)
5. Ham and hind foot (*Schinken, Keule*)
6. Belly (*Bauch*)



German Lamb Cuts (C)

1. Leg of lamb (*Keule*)
2. Loin (*Nierenstück*)
3. Rob or rack (*Koteletts*)
2&3. Saddle (*Rücken, Sattel*)
4. Neck plus shoulder (*Hals*)
5. Breast and shank (*Blatt und Brust*)

FIGURE 14. German Beef, Pork, and Lamb Butchering Units.

Source: Adapted by Jennifer Muñoz 2011, after Scharfenberg, Horst, 1989, *The Cuisines of Germany: Regional Specialties and Traditional Home Cooking*. Poseidon Press, New York.

that perhaps Euro-American butchering units are not the correct unit of analysis when examining a faunal assemblage for markers of German ethnicity. The results of this comparison for beef, pork, and lamb are summarized in Tables 30, 31, and 32, respectively.

The comparisons reveal that general Euro-American and German butchering units are quite similar for beef cuts. The primary differences include the splitting of the chuck and shoulder in Euro-American standard, and the grouping of them in German patterns, and slight variations in the size and location of the rib and brisket portions. The pork cuts indicate more distinctive variations: the shoulder butt/boston shoulder and picnic shoulder are split in Euro-American cuts, and grouped—along with the fore-feet—within the butt/shoulder/hock German category. The roughback/loin and spareribs/bacon groups are subsumed under the category “loin/spareribs/bacon” within German cuts, but kept separated by Euro-American standards. A similar situation is noted for the lamb butchering units as well, although in this case the differences are primarily in how the fore and hind shanks are categorized. They are distinctive in Euro-American cuts, but grouped together with “breast and shank” and “leg of lamb” in German portions, respectively.

Despite these variations, the decision was made to retain the Euro-American meat cut assignments already made for the Philadelphia House collection. The reasoning behind this decision lies in the fact that the zooarchaeological studies identified for comparison use the more general Euro-American standards; for the sake of appropriate comparison, it was necessary to ensure that the units of analysis utilized were the same.

TABLE 30
BEEF BUTCHERING UNITS, THEIR SKELETAL INDICATORS, AND GERMAN EQUIVALENTS

Euro-American (Butchering Units)	Skeletal Indicator	German Primary Equivalents	German Skeletal Indicator
Neck	Atlas, axis, cervical vertebrae 3-7, proximal humerus, distal scapula	Neck (*Kamm*)	Atlas, axis, cervical vertebrae 3-7, proximal humerus, distal scapula
Chuck	Thoracic vertebrae 1-5, dorsal ribs 1-5, humerus shaft, scapula blade	Boneless Neck (*Mürbekamm*)	Thoracic vertebrae 1-5
Shoulder	Proximal scapula, proximal humerus	Shoulder (*Schaufelstück*)	Dorsal ribs 1-5, proximal humerus, proximal scapula and blade
Arm	Proximal humerus and diaphysis	Brisket (*Bug*)	Proximal humerus and diaphysis, mid-ribs 1-5
Fore shank	Distal humerus, radius, ulna	Shank (*Hesse*)	Distal humerus, radius, ulna
Brisket	Ventral ribs 1-5 with sterna end and shaft, sternum	Hind Brisket or Short Plate (*Nachbrust, Querrippe*)	Ventral ribs 1-12 with sterna end and shaft, sternum
Rib	Thoracic vertebrae 6-13, dorsal ribs 6-13, distal humerus, radius, ulna	Middle Rib and Chuck (*Fehlrippe*)	Thoracic vertebrae 6-12, dorsal ribs 6-12
Short Plate	Costal vertebrae 6-13	Hind Brisket or Short Plate (*Nachbrust, Querrippe*)	Costal vertebrae 6-13, thoracic vertebrae 6-12, dorsal ribs 6-12
Short Loin	Lumbar vertebrae, dorsal rib 13	Short Loin (*Roastbeef*)	Lumbar vertebrae, dorsal rib 13
Sirloin	Ilium, sacrum	Part of Sirloin (*Filet, Blume, Mittelschwanzstück, Schmorstück*)	Ilium, sacrum
Cross/Short Rib	Ventral ribs 1-13	---	Ventral ribs 1-13
Round Buttock	Femur shaft, distal femur and diaphysis	Bottom Round (*Unterschwanzstück*)	Femur shaft, distal femur and diaphysis
Rump	Ischium, pubis, acetabulum, proximal femur, caudal vertebrae	Rump and Top Round (*Schwanzstück*)	Ischium, pubis, acetabulum, proximal femur, caudal vertebrae
Flank	Ventral ribs	Flank (*Flanke*)	Ventral rib 13
Hind shank	Tibia, distal femur, fibula, patella, astragalus, calcaneus, naviculo-cuboid	Shank (*Hesse*)	Tibia, distal femur, fibula, patella, astragalus, calcaneus, naviculo-cuboid
Feet and Head	Metapodials, phalanges, cranial elements (mandible, hyoid)	---	Metapodials, phalanges, cranial elements (mandible, hyoid)

TABLE 31
PORK BUTCHERING UNITS, THEIR SKELETAL INDICATORS, AND GERMAN EQUIVALENTS

Euro-American (Butchering Units)	Skeletal Indicator	German Primary Equivalents	German Skeletal Indicators
Jowl/Head	Mandible (cranial?)	Head, Snout, and Jowl (*Kopf mit Schnauze*)	Cranial bones, maxillae, mandible
Shoulder Butt/Boston Shoulder	Cervical vertebrae, scapula blade	Butt, Shoulder, and Hock (*Kamm*)	Cervical vertebrae, distal scapula and blade, humerus, radius-ulna, carpals, metacarpals, fore-phalanges
Picnic Shoulder	Distal scapula, humerus, radius-ulna	Subsumed under Butt, Shoulder, and Hock	---
Rough Back/Loin	Scapula(dorsal), thoracic vertebrae, lumbar vertebrae, dorsal ribs, ilium, sacrum	Loin, Spareribs, and Bacon (*Koteletts, Karbonade, Rippenspeer, und Speck*)	Scapula(dorsal), thoracic vertebrae, lumbar vertebrae, dorsal, mid, and ventral ribs, ilium, sacrum
Rib Belly/Spareribs/Bacon	Mid and ventral ribs	Belly (*Bauch*); Spareribs and Bacon are subsumed under Loin, Spareribs, and Bacon	---
Short Cut Ham/Leg	Acetabulum, pubis, ischium, femur, proximal tibia and shaft	Ham and Hind Foot (*Schinken, Keule*)	Acetabulum, pubis, ischium, femur, tibia, fibula, tarsals, metatarsals, and hind-phalanges
Feet	Carpals, tarsals, metapodials, phalanges	Fore: Subsumed under Butt, Shoulder, and Hock Hind: Subsumed under Ham and Hind Foot	---

The implications presented by the differences noted above for the study of German butchering patterns will be discussed further in Chapter VIII.

Comparative Studies Results

The hypothesis of this thesis—that the Philadelphia House faunal assemblage will reflect German-American food preferences—is dependent on the idea that if factors such as socio-economic status can be accounted for, the resulting patterns can be used as

TABLE 32
SHEEP BUTCHERING UNITS, THEIR SKELETAL INDICATORS, AND GERMAN EQUIVALENTS

Euro-American (Butchering Units)	Primary Skeletal Indicator	German Primary Equivalents	German Skeletal Indicators
Chuck/Shoulder and Neck	Atlas, axis, cervical vertebrae, scapula, thoracic vertebrae 1-5, ribs 1-5, proximal humerus and shaft	Neck and Shoulder (*Hals*)	Atlas, axis, cervical vertebrae, scapula, thoracic vertebrae 1-5,ribs 1-5, proximal humerus and shaft
Fore shank	Distal humerus, radius-ulna, metacarpals, carpals	Subsumed under Breast and Shank	---
Brisket/Breast	Sternum, ribs 1-12 with sternal end and shaft	Breast and Shank (*Blatt und Brust*)	Distal humerus, radius-ulna, sternum, ribs 1-12 with sterna end and shaft, metacarpals and carpals
Short or hotel rack/Rib	Thoracic vertebrae 6-12, dorsal ribs 6-12	Rib or Rack (*Koteletts*)	Thoracic vertebrae 6-12, dorsal ribs 6-12
Loin	Lumbar vertebrae	Loin (*Nierenstück*)	Lumbar vertebrae, ilium
Sirloin	Ilium	Subsumed under Loin	---
Flank	No bones	Not designated	---
Leg	Acetabulum, pubis, ischium, sacrum, femur, patella	Leg of Lamb (*Keule*)	Acetabulum, pubis, ischium, sacrum, femur, patella, tibia, femur, metatarsals and tarsals
Hind shank	Tibia, fibula	Subsumed under Leg of Lamb	---
Head	Cranium, mandible	Not designated	---
Feet	Metapodials, tarsals, carpals, phalanges	Fore: Subsumed under Breast and Shank Hind: Subsumed under Leg of Lamb	---

indicators of German-American ethnicity. Eliminating, or controlling for social and economic status requires the establishment of a data set reflecting the frequencies of identified meat cuts and their associated status rankings. These are then compared against similar studies with known (or presumed) socio-economic status; the assumption is that any significant differences existing between the Philadelphia House and an establishment with similar purchasing power will be due to food preferences associated with ethnicity.

The studies conducted by Schulz and Gust (1980, 1983a) on the Sacramento City Jail, Hannan's Saloon, Klebitz and Green's Saloon, and the Golden Eagle Hotel were chosen for comparison for a number of reasons. First, these were some of the first studies to employ a system for analyzing meat cuts based on a relative economic status ranking system, and it is fairly intuitive to follow their line of reasoning. Despite the problems that have been recognized for these studies (i.e., the use of NISP as a reflection of relative taxonomic abundance and status ranking rather than minimum number of butchering units, and the ambiguous use of the concept "socio-economic status" (See Lyman 1987 and Schmitt and Zeier 1993), the methodology is straight-forward and easily replicated. Second, these studies were chosen because the faunal assemblages associated with each are from the same city and time period as the Philadelphia House, which allows for factors such as fluctuations in cost of meat across time and space to be more easily controlled for.

The unfortunate consequence of choosing these studies, however, is that their focus was primarily on beef, with little in-depth discussion on the other meat-types identified within each collection—namely, pork and sheep/goat. The information that is provided on pork and sheep/goat does not lend itself well to comparison against the Philadelphia House assemblage, and for this reason, the discussion that follows is directed towards a comparison of beef cuts. This is followed by a brief discussion of the economic ranking frequencies for the pork and sheep/goat specimens identified for the Philadelphia House.

Schulz and Gust (1983a, 1983b) provided both the NISP values and their associated frequencies for beef specimens from 19th century Sacramento's City Jail,

Hannan's Saloon, Klebitz and Green's Saloon, and the Golden Eagle Hotel. The reported frequencies can be paired with the butchering units identified, and thus paired with the relative economic ranking for each unit. The frequencies are noted as percentages, and generally stated, a wholesale unit with a high ranking (associated with a higher monetary cost) that also has a high frequency could be used to indicate an establishment with a greater socio-economic status. This data was used to compare against that from the Philadelphia House; Tables 33 and 34 summarize these comparisons.

It should be noted that Schulz and Gust do not make use of all the beef butchering units identified in Table 24; only those units available in both were used to generate the data presented above.

An analysis of this data will be provided in Chapter VII, however it should be noted that an attempt was made to account for deficiencies associated with using NISP as an indicator of relative abundance. NISP tends to inflate differences between two variables, and it is often difficult to control for interdependence of counted bone specimens. To try to account for potentially inaccurate and misleading results, I utilized the methodology described by Lyman (1987) and generated NISP values based on meat yield per unit of analysis. These values and their associated frequencies are also summarized in Tables 33 and 34, and provide an interesting comparison against the values used by Schulz and Gust to determine socio-economic status. Although discussed more fully in the following chapter, it is evident that beef cuts with high frequencies using reported NISPs often appear to have diminished significance when using NISPs for estimated meat yield. For example, the neck cuts from the City Jail were reported with a frequency of 30.7 percent - far exceeding any of the other cuts consumed. When meat

TABLE 33
BEEF CUT RANKINGS: PHILADELPHIA HOUSE (PH), CITY JAIL (CJ), AND HANNAN'S SALOON (HS)

			Reported NISP*						Estimated Meat Wt. NISP**					
Relative Status Ranking	Relative Cost Efficiency Ranking	Beef Cut	CJ (A)	%	HS (B)	%	PH (C)	%	CJ (A)	%	HS (B)	%	PH (C)	%
1	10	Short Loin	32	6.6	20	7.2	110	18.2	100	6.3	60	5.6	320	5.8
2	1	Rib	40	8.2	26	9.4	0	0	40	2.5	40	3.7	0	0
2	1	Sirloin	9	1.9	24	8.7	16	2.6	48	3.0	144	13.5	96	1.7
3	2	Round	16	3.3	16	5.8	178	29.4	400	25.1	400	37.5	4450	81.3
4	3	Rump	22	4.5	8	2.9	20	3.3	30	1.9	10	0.9	25	0.4
6	4	Short Rib	94	19.4	31	11.2	56	9.2	42	2.6	12	1.1	24	0.4
6	4	Arm	48	9.9	14	5.1	11	1.8	720	45.2	210	19.7	165	3.0
5	5	Chuck	51	10.5	35	12.7	66	10.9	140	8.8	84	7.9	168	3.1
7	6	Plate	8	1.6	11	4.0	0	0	18	1.1	18	1.7	0	0
9	7	Fore Shank	10	2.1	28	10.1	63	10.4	21	1.3	63	5.9	147	2.7
8	8	Neck	149	30.7	55	19.9	41	6.8	25	1.6	9	0.8	7	0.1
9	7	Hind Shank	6	1.2	8	2.9	45	7.4	8	0.5	16	1.5	72	1.3
		Totals:	485	99.9	276	99.9	606	100.0	1592	99.9	1066	99.8	5474	99.8

* Reported NISPs from Schulz and Gust (1983a) for the City Jail and Hannan's Saloon
** Estimated Meat Wt. NISPs derived from Lyman (1987)

TABLE 34
BEEF CUT RANKINGS: PHILADELPHIA HOUSE (PH), KLEBITZ & GREEN (K&G), AND GOLDEN EAGLE HOTEL (GEH)

			Reported NISP*						Estimated Meat Wt. NISP**					
Relative Status Ranking	Relative Cost Efficiency Ranking	Beef Cut	K&G (A)	%	GEH (B)	%	PH (C)	%	K&G (A)	%	GEH (B)	%	PH (C)	%
1	10	Short Loin	74	15.8	175	51.3	110	18.2	220	8.7	500	47.6	320	5.8
2	1	Rib	45	9.6	24	7.0	0	0	60	2.4	40	3.8	0	0
2	1	Sirloin	25	5.3	5	1.5	16	2.6	156	6.1	24	2.3	96	1.7
3	2	Round	57	12.2	10	2.9	178	29.4	1425	56.1	250	23.8	4450	81.3
4	3	Rump	6	1.3	9	2.6	20	3.3	10	0.4	10	0.9	25	0.4
6	4	Short Rib	92	19.6	68	19.9	56	9.2	42	1.6	30	2.8	24	0.4
6	4	Arm	26	5.5	8	2.3	11	1.8	390	15.4	120	11.4	165	3.0
5	5	Chuck	30	6.4	8	2.3	66	10.9	84	3.3	28	2.7	168	3.1
7	6	Plate	23	4.9	5	1.5	0	0	54	2.1	18	1.7	0	0
9	7	Fore Shank	17	3.6	10	2.9	63	10.4	42	1.6	21	2.0	147	2.7
8	8	Neck	45	9.6	15	4.4	41	6.8	8	0.3	2	0.2	7	0.1
9	7	Hind Shank	29	6.2	4	1.2	45	7.4	48	1.9	8	0.8	72	1.3
		Totals:	469	100.0	341	99.8	606	100.0	2539	99.9	1051	100.0	5474	99.8

* Reported NISPs from Schulz and Gust (1983a) for the Klebitz & Green and the Golden Eagle Hotel
** Estimated Meat Wt. NISPs derived from Lyman (1987)

yield is factored in, however, the frequency for neck cuts is greatly reduced to 1.6 percent, suggesting that while neck cuts may have been purchased more frequently, they provided very little consumable meat. Appendix B provides the full tables I created with values for the estimated number of beef units for each of the comparative sites.

Socio-economic Status in Terms of Pork and Sheep/Goat

As mentioned previously, the data necessary for comparing the pork and sheep/goat remains from Schulz and Gust's sites to the Philadelphia House were not available. Despite this impediment, I utilized the data compiled in Tables 4 and 6 (Chapter IV) to generate NISP frequency values for the Philadelphia House pork and sheep/goat butchering units. Table 35 summarizes the results of the relative economic status rankings for pork.

TABLE 35
PHILADELPHIA HOUSE: PORK MEAT CUTS AND ASSOCIATED STATUS RANKING

General Economic Rank	Butchering Unit	Relative Status Ranking	NISP(n)	(n)% total pork	Group Combined Frequency
High	Rough Back/Loin	1	57	25.00	High
(1-2)	Short Cut Ham/Leg	2	23	10.10	35.10
Medium	Rib Belly/Spareribs/Bacon	3	20	8.77	Medium
(3-4)	Shoulder Butt/Boston Shoulder	4	46	20.18	28.95
Low	Picnic Shoulder	5	33	14.47	Low
(5-7)	Feet	6	37	16.23	34.65
	Jowl/Head	7	9	3.95	
	Shoulder Butt/Rough Back	1/4	3	1.32	1.32
		Totals	228	~100.00	100.00

Data results for NISP frequencies for each butchering unit indicate that the rough back/loin (highly ranked) and the shoulder butt/boston shoulder (moderately ranked) were both consumed more frequently than the lower quality cuts. The results change if the frequencies are grouped by general economic rank: high quality cuts have a group frequency of 35.10 percent, medium quality 28.95 percent, and low quality 34.65 percent. This data indicates that high and low quality pork cuts were purchased at a nearly equal rate, with medium-quality cuts not far behind.

Table 36 presents the results of the relative status rankings for those specimens identified as sheep/goat and their associated butchering units. The NISP

TABLE 36
PHILADELPHIA HOUSE: SHEEP/GOAT MEAT CUTS AND ASSOCIATED STATUS RANKING

General Economic Rank	Butchering Unit	Relative Status Ranking	NISP(n)	(n)% total Sheep/Goat	Group Combined Frequency
	Loin	1	37	7.92	
High	Sirloin	1	10	2.14	High
(1-2)	Flank	2	0	0.00	10.06
	Short or hotel rack/Rib	2	0	0.00	
	Chuck/Shoulder and Neck	3	100	21.41	Medium
Medium	Chuck/Rib	3	30	6.42	65.31
(3-5)	Chuck/Breast/Rib	4	89	19.06	
	Leg	4	50	10.71	
	Hind Shank	4	34	7.28	
	Brisket/Breast	5	2	0.43	
	Fore Shank	6	43	9.21	Low
Low	Head	7	1	0.21	23.55
(6-7)	Feet	7	66	14.13	
	Unknown		5	1.07	1.07
		Totals	467	~100.00	

frequencies indicate that moderately ranked chuck/shoulder and neck cuts were more commonly purchased than any other butchering unit, followed by chuck/breast/rib (medium quality) and feet (low quality).

Unlike the pork data, when grouped together by general economic rank, the NISP frequencies for sheep/goat cuts still reflect consumption dominated by medium-quality cuts (65.31 percent), followed by low quality (23.55 percent) and high quality (10.06 percent). Whether or not the same can be said for values based on meat yield is difficult to discern, and is an area that will not be fully explored in this thesis.

German Cookbook Analysis Results

Cookbooks based on "ethnic" foodways are invaluable resources for providing a range of favored recipe types, discussions on the history of particular recipes that are thought to be especially significant to the subject matter, and a better understanding of how these foods are prepared and consumed. The four German and German-American cookbooks chosen for analysis (*German-American Cookery*, *The Cuisines of Germany*, *Sauerkraut Yankees*, and *The Frugal Gourmet*) provide the information needed to define foodway patterns that are perhaps unique to German cuisine, thus establishing a frame of reference by which to further analyze the Philadelphia House assemblage.

In total, the four books presented 407 recipes divided into sections based on dish type. These included poultry, beef, pork, lamb/sheep, game and rabbit, salads, salads and appetizers, soups and stews, fish and shellfish, and miscellaneous recipes (i.e., desserts and beverages). Of these, 122 (30 percent) fell into the "miscellaneous"

category, the majority of which were recipes for various alcoholic beverages. This is an important detail to note, for it suggests not only the importance of alcohol in the diet, but the possibility that the results of this cookbook inquiry may be skewed by the large number of recipes that do not include meat products.

Table 37 summarizes the various quantities of each dish type as they occur within the four cookbooks. Among those defined as meat-based dish types (poultry, beef,

TABLE 37
GERMAN COOKBOOK ANALYSIS: RECIPE COUNTS BY DISH TYPE

	Cookbooks					
Dish Type	*German-American Cookery*	*Sauerkraut Yankees*	*Cuisines of Germany*	*The Frugal Gourmet*	Totals	Frequency per Dish Type
Poultry	6	7	15	-	28	6.9
Beef	18	12	20	1	51	12.5
Pork	6	9	27	1	43	10.6
Game and Rabbit	3	1	7	-	11	2.7
Salads	2	-	-	2	4	1.0
Salads and Appetizers	-	-	65	2	67	16.5
Lamb/Sheep	-	1	-	-	1	0.25
Soups and Stews	8	6	33	-	47	11.5
Fish and Shellfish	-	7	26	-	33	8.1
Miscellaneous	4	34	82	2	122	30.0
Totals:	47	77	275	8	407	100.0

pork, lamb/sheep, and possibly fish and shellfish), the frequencies for each type indicate that beef and pork were almost equal (12.5 percent and 10.6 percent, respectively), followed by fish and shellfish (8.1 percent), and then poultry (6.9 percent). One

interesting detail is the severe lack of recipes calling for lamb or mutton. Only one dish was listed “lamb” or “sheep.”

It should be noted that many of the salads, appetizers, soups and stews also contain meat products, and so a more detailed description of the contents of these recipes is needed to account for meat utilized in dishes not necessarily categorized as beef, pork, and poultry. To better apply these data within each recipe, it was important to analyze the ingredients listed and to record which ones contained meat products, what kinds of meat products (i.e., poultry, beef, pork, boneless and with bone), and in what quantities (i.e., whole or per pound). The quantities are often a reflection of the number of people served by each dish, but it also suggests how various animal products are utilized to prepare specific dishes. Table 38 presents the results of this inquiry for the number of recipes

TABLE 38
GERMAN COOKBOOK ANALYSIS: RECIPE COUNTS BY MEAT PRODUCT

Dish Type	Recipe Totals for Each Dish	w/ Meat Products	w/out Meat Products	Boneless Meat Products	Bone Included
Poultry	28	28	-	10	25
Beef	51	51	-	27	38
Pork	43	43	-	25	24
Game and Rabbit	11	11	-	5	11
Salads	4	4	-	2	-
Salads and Appetizers	67	62	5	52	15
Lamb/Sheep	1	1	-	-	1
Soups and Stews	47	39	8	26	19
Fish and Shellfish	33	33	-	12	28
Miscellaneous	122	24	98	20	7
Totals:	407	296	111	179	168

containing meat-based ingredients. Please note that the listing for the number of recipes including boneless meat products and those with bone are greater in number than the overall number of recipes. This is due to recipes that contained both boneless and “with bone” ingredients, and thus would be counted twice.

Approximately 73 percent of the 407 recipes examined contained some form of meat product, although in many cases these ingredients (i.e., beef stock, bacon, and sausage) would not preserve in the archaeological record. Forty-one percent contained at least one ingredient that would include bone material, and nearly 44 percent included boneless meat products such as bacon and stock. What this means in terms of how German-American dietary preferences may exist in a faunal assemblage is difficult to discern. An examination of the types and quantities of meat cuts utilized suggests that certain skeletal elements may appear more frequently than others. Tables 39, 40, 41, 42, and 43 summarize the frequencies of the butchering and acquisition units included in each recipe for poultry, beef, pork, sheep/goat, and rabbit, respectively.

TABLE 39
GERMAN AMERICAN COOKBOOKS: POULTRY MEAT CUT FREQUENCIES

Meat Cut/Element(s)	Number of Recipes					% of Poultry Recipes
	Chicken	Duck	Goose	Turkey	Totals	
Vertebra	1	-	-	-	1	3.8
Tibiotarsus	-	-	1	-	1	3.8
Whole	14	4	4	2	24	92.4
Totals:	15	4	5	2	26	100.0

From data presented in the tables, it is evident that poultry and rabbit were primarily prepared whole, followed by the removal of the cooked meat from the bones.

TABLE 40
GERMAN-AMERICAN COOKBOOKS: BEEF MEAT CUT FREQUENCIES

Butchering Unit	Acquisition Unit	Number (n) of Recipes	(n)% of Beef Recipes
Short Loin	Loin Steak	1	1.9
	Loin Roast	1	1.9
Sirloin	Sirloin Steak	2	3.8
Round	Round Steak	6	11.3
	Round Roast	7	13.2
Rump	Rump Roast	2	3.8
Chuck	Blade Roast	2	3.8
	Blade Roast/Steak	2	3.8
	Chuck Roast	1	1.9
Arm	Arm Roast	1	1.9
Cross/Short Rib	Rib Steak	1	1.9
Brisket		2	3.8
Neck	Roast/Stew	1	1.9
Fore Shank	Shank/Stew	5	9.4
Hind Shank	Shank/Stew	7	13.2
	Roast	1	1.9
Feet and Head	Unknown	9	17.0
Rib/Chuck/Brisket	Sparerib	1	1.9
	Steak	1	1.9
	Totals:	53	100.2

Thus the expectation would be for a faunal assemblage to not only contain elements representing all portions of the animals, but for these elements to exhibit few butchering marks. The data for the beef cut frequencies suggest that the most common acquisition units prepared would be feet and head, shank/stew, round roasts and round steaks. What is not evident in Table 40 is that of the 53 beef recipes listed, 15 (28.3 percent) of them call for calf, indicating that it would not be unusual to identify elements associated with young cattle within a German-based faunal assemblage.

Frequencies for the various pork cuts are distributed a bit more evenly, although a few occur more often than others: shank/stew cuts from the short cut ham/leg

TABLE 41
GERMAN-AMERICAN COOKBOOKS: PORK MEAT CUT FREQUENCIES

Butchering Unit	Acquisition Unit	Number (n) of Recipes	(n)% of Pork Recipes
Rough Back/Loin	Loin Chop	4	12.1
	Loin Roast	2	6.1
Short Cut Ham/Leg	Shank/Stew	12	36.4
Shoulder Butt/Boston Shoulder	Blade Roast	1	3.0
	Blade Roast/Chop	1	3.0
Picnic Shoulder	Arm Roast	4	12.1
Feet	Feet	3	9.1
	Shank/Stew	2	6.1
Jowl/Head	Jowl/Head	2	6.1
Whole	Whole(Suckling)	2	6.1
	Totals:	33	100.1

TABLE 42
GERMAN-AMERICAN COOKBOOKS: SHEEP/GOAT MEAT CUT FREQUENCIES

Butchering Unit	Acquisition Unit	Number (n) of Recipes	(n)% of S/G Recipes
Chuck/Shoulder and Neck	Rib Chop	1	33.33
Leg	Leg Roast	1	33.33
Hind Shank	Shank/Stew	1	33.33
	Totals:	3	99.99

(36.4 percent), loin chops (12.1 percent) and arm roasts (12.1 percent). This may indicate that perhaps faunal remains associated with German cuisine would appear from these cuts more frequently, although it should be noted that of the 33 pork recipes, two call for whole suckling pigs (*Spanferkel*) while two others call for the ham and feet of suckling pigs.

TABLE 43
GERMAN-AMERICAN COOKBOOKS: RABBIT MEAT CUT FREQUENCIES

Butchering Unit	Number (n) of Recipes	(n)% of Rabbit Recipes
Saddle	1	14.3
Whole	6	85.7
Totals:	7	100.0

The results for lamb/mutton or sheep/goat present some difficulties. Only three recipes examined utilized cuts from sheep (none for goats specifically), all of which indicate that lamb is preferred over mutton. The recipes each utilize a different sheep/goat acquisition unit: rib chop, leg roast, and shank/stew. From the small number of sheep/goat recipes, it may be suggested that lamb/mutton was not a preferred food for German-Americans. It is important to realize though that the frequency with which particular meat choices appear within these cookbooks is used as a proxy for the kinds of food considered as more significant in German cuisine. It cannot, however, validate which recipe types were actually prepared the most frequently, nor indicate the ethnic or social value placed on one meat type over another.

Germany—and thus German cuisine—is quite diverse, with each province having developed its own variety of favored foods. Perhaps then, one of the best, non-quantitative ways to better understand how certain foods may be preferred over others, would be to develop an understanding of the regional cuisines within Germany. Only one of the four cookbooks—*The Cuisines of Germany*—discusses the variation that exists within each region's foodways. Table 44, which summarizes Germany's regional cuisines, provides only a brief glance at the specialties notable for each. The most common specialty appears to be sausage, which, although it has come to typify and

TABLE 44
GERMANY'S REGIONAL CUISINES

Region	Description of Cuisine
Bavaria	A fondness for liver, kidneys, tripe, and other organ meats. Bavaria is famous for sausages, as well as pig's knuckles and pickled pig's belly meat. Fond of roast pork, consider it a Sunday dish, whereas beef is "for every day." Region includes Franconia, known for their beer, potato dumplings, and carp dishes
Central Germany	Refers to Saxony and Thuringia. Mostly known for their homestyle sausages (knockwurst, blutwurst, mettwurst, and bratwurst), and for their baked goods. Mutton was sometimes considered a delicacy to be savored.
Silesia (West Germany)	Also known for favoring sausages, though they were served in a sweet-sour pickle sauce, and with beef tongue and carp.
Berlin and Environs	Prussian influences. District of Kreuzberg has the highest per capita consumption of fresh lamb of any German community. Known for drink, pork tartare, sausage, pickled pork, chicken fricassee, eel, pork chops, and veal cutlets.
Mecklenburg and Pomerania (formerly East Germany)	Slavic influence. Known for dishes that include goose, wild stags, bison, horses, boars, cows, and sheep, as well as fish and crayfish (cheap and plentiful) and blood pudding made from goose parts.
East Prussia	Slavic influence. Known for cottage cheese, smoked whitefish, and smoked flounder.
Schleswig-Holstein	Numerous delicacies including kippers, herring, sprat, and oysters. Known for smoked ham, bacon, kippers, alcohol, and sweet and sour flavors.
East Friesland	Big on drinking buttermilk. Known for cooking food on open fire, though very little of their cuisine has become part of mainstream German food. Specialties include pancakes and corned beef.
Hamburg, Bremen, and Lübeck	They had extensive overseas connections, which influenced their cuisine. Known for smoked meats, young chicken dishes, sausage, bully beef, and wine.

Table 44 (Continued)

Region	Description of Cuisine
Lower Saxony	Known for bock beer, sour-milk cheese, sausage, carp, mutton leg and saddle, and smoked eel.
Westphalia	Known for large portions. Favored strong beer, free-range pork.
The Rhineland	Vinegary, fatty, and often considered too pretentious. Specialties include eel and mussels, smoked meats, potato pancakes, venison, and blood sausage.
Hesse	Pork products prevail above all else; Hessians have even developed special terminology for various pork products. Thick, juicy ribs. Frankfurters, sausages, and wine.
The Palatinate and Rhenish Hesse	Simple dishes, including stuffed pork maw, rabbit, roebuck, and wild boar.
Baden	High quality food influenced by France and Italy, and characterized by delicacy. Specialties include snails, frog's legs, freshwater fish, roebuck saddle, pickled pork shoulder, and smoked hams.
Swabia	Dominated by soup and spätzle. Other dishes include brine pretzels. Flour is the key ingredient.

Source: Data compiled from Scharfenberg, Horst, 1989, *The Cuisines of Germany: Regional Specialties and Traditional Home Cooking*. Poseidon Press, New York.

stereotype German cuisine, does not survive in the archaeological record. It is interesting to note that more pork dishes are mentioned as favored over beef and lamb or mutton, however, the information provided for Bavarian cuisine (pork was for Sundays and beef was for "every day" suggests that favored dishes may not always have been the ones most frequently consumed.

Although the regional cuisines appear to be quite diverse, they all play a role in the make-up of traditional, mainstream German cuisine. It is unlikely that a particular regional style would be evident archaeologically, particularly in the United States where

differences in availability and types of resources, along with the settlement of German immigrants into groups comprised from multiple regions, may have altered the dietary choices made. Regardless of these factors, foodways are one of the strongest and most formidable cultural variables. Immigrants carried with them the traditions of their homeland, making dietary preferences one of the tools utilized for maintaining ethnic ties and customs. Knowing where the owners, proprietors, patrons, and boarders of the Philadelphia House came from in Germany might illuminate the kind of patterns to be expected from the faunal assemblage.

Summary

The data sets contained within this chapter are many, and all are meant to shed light on not only what is contained within the Philadelphia House faunal assemblage, but on what constitutes “German cuisine,” and what may be expected from faunal remains thought to represent German-American ethnicity. Using standards developed in zooarchaeology, the results include summarizations and discussions on the identifiable and unidentifiable faunal specimens, the observed cultural modifications, and the aging results for the elements identified for cattle, pigs, and sheep/goats. Although attempts were made to age the specimens identified as “chicken,” the results were very sporadic (likely due to difficulties with aging domestic fowl for which breed and diet are unknown) and thus not included in this chapter. The age-range assignments were made in order to identify any patterns related to age-based food preferences that could potentially be associated with ethnicity. This was followed by an examination of the butchering and acquisition units identified for beef, pork, and sheep/goat (i.e., lamb): the three most

common and most easily identifiable meat-types in the assemblage. The assignments made to wholesale and retail cuts were based on Euro-American butchering standards. In order to eliminate potential biases, these cuts were compared against known German butchering units, although it was recognized that the Euro-American assignments needed to be retained so that the data could be compared against similar zooarchaeological studies. These studies consisted of those conducted by Schulz and Gust (1983a, 1983b) on sites from historic Sacramento, and comparisons were made in order to account for socio-economic status as a factor affecting butchering patterns.

The results indicate that the occupants and patrons of the Philadelphia House purchased and consumed a wide variety of meat cuts from all cost-based status rankings. Several patterns were discernable including a relatively high frequency of beef round cuts, which are both moderately priced and economically efficient purchases. One of the hallmarks of German cuisine is the use of meat-based products that would leave behind no skeletal indicators in the archaeological record. These include a heavy use of bacon, bacon fat, stock from beef and pork, and sausage. Sadly, despite the fact that sausages were produced to extend the life and preservability of pork and beef, they do not preserve well archaeologically, thus leading one to question what types of dishes consumed by German-Americans would leave behind skeletal signatures. An analysis of four German and German-American cookbooks provided insights that could help shed light on this issue, including a preference for roasts, shanks, and stew meat. The possible patterns identified from all specified avenues of inquiry will be discussed further in Chapter VII.

CHAPTER VII

INTERPRETATION *(BEDEUTUNG)*

Introduction

If asked today whether or not there is a distinctive German-American ethnicity existing in this country, many folks would find it difficult to say "yes." In fact, most scholarly books on America's ethnic groups would agree, discussing German-Americans as one of the most quickly Americanized and assimilated ethnicities, having integrated themselves so well into the mainstream as to be decidedly indistinguishable. The reasons most often given for this include their physical similarities to the Anglo majority and the turning away from German traditions following WWI and WWII. Fuchs (1990) included another explanation: that their involvement in the governmental institutions and education systems of so many American cities led to such a strong role in the civic culture that to continue involvement meant the sacrifice of many long-held traditions.

Few people would disagree with the fact that German immigrants played such an incredibly significant part in the formation of this country, whose efforts and entrepreneurial success far exceeded their numbers. In my opinion however, it is far too simple an explanation to assume that assimilation to a majority tradition is the path all ethnic groups in America eventually follow. This is not to say that assimilation does not occur; believing so would be tantamount to ignoring the influence people have on one

another, and to saying that all groups live in isolation from one another, thus passing along none of their cultural traditions or customs. It is my belief that those who favor assimilation-based explanations often fail to consider one important aspect of influence: the ability of ethnic groups to influence the mainstream, rather than simply vice versa. Perhaps then I can provide an alternative and additional explanation for why "German-American" is now so difficult to define. It may be the case that the mainstream itself adapted and assimilated to specific attributes of German-American ethnicity. Those traits that seemed to define and at times isolate California's early German immigrants—such as a love of festivities, alcohol on Sundays (or any day of the week), the inclusion of women during celebrations, gift-giving during Christmas, and the belief that physical health is a necessary component of mental health and well-being—are many of the very things that most Americans, mainstream or otherwise, claim as their own. At the risk of resorting to stereotypes, so is a love of frankfurters, sausage, and potato salad.

What it means to be German or German-American is a complex issue that may never be fully resolved. Nor need it be; ethnicity is just one aspect of many in the formation of social identity. It is often ambiguous and difficult to define, but its ambiguity should not preclude it from being studied. In fact, its very complexity lends itself well to the idea that strict definitions are unnecessary, flawed, and often lead to content-based listings of what does and does not constitute one ethnicity and not another. The previous chapter presents a vast amount of data that may at times appear to be just the kind of listing anthropologists seek to avoid, however, there is "method to my madness" in including so much information. The results provided are meant to present the many lines of inquiry that can be utilized to explore the topic of faunal-based markers

of ethnicity, and will be interpreted throughout this chapter so as to make them more meaningful and relevant.

It seems that many people may be reluctant to involve themselves in any study relating to ethnicity and its formation, but it is my belief that the issues which drive people batty over their complexity are the same ones that can tell us the most about how people have negotiated their social environment. Recognizing the fluidity which all forms of identity may have, it is important to consider ethnicity as a social process that is in part dependent on time and place. One of the best ways to begin investigating the meaning behind any particular group is to take a conjunctive approach—to explore all avenues of inquiry possible. As will be discussed below, the two primary avenues examined for this thesis are those derived from history and archaeology. The historical and theoretical framework will be discussed first, followed by an examination of what the Philadelphia House assemblage may imply archaeologically about social status and ethnicity.

German-American Ethnicity in a Historical and Theoretical Framework

German immigrants began settling in the United States long before it existed in its current form, and long before Germany itself existed as a country with known or presumed boundaries. By the early to mid-1800s they had made their way to the west, establishing roots throughout California, particularly in the northern valley of Sacramento. Often having lived first in other regions of the United States, many German immigrants brought with them both an understanding of the English language and the income and skills necessary to obtain work and establish businesses of their own. After failed attempts in the east and Midwestern United States, California was viewed as a new

frontier on which to build a new “German state.” The influx of people driven to California by the discovery of gold virtually squelched these plans, however they continued to play an integral role in the formation of Sacramento as the center of the interior valley, helping to solve many of the city’s early problems with flooding, fire, and housing gold rush visitors. German immigrants made up only a small percentage of Sacramento’s population, but they structured their businesses and goals with the force of a majority. Despite their efforts, they were often treated as social minorities by the larger Anglo-American population.

Many of the conflicts they faced with their Anglo-American neighbors were related to religious and cultural differences. The German belief that merriment, alcohol consumption (on Sundays), and physical exercise were fundamental components of life often clashed with the majority Victorian solemnity of the period. They were also resented by many for their success in the gold rush and their ability to prosper during the founding of the city.

Regardless of their many successes and their ability to integrate into the mainstream better than most other immigrant groups, historian Carole Cosgrove Terry (2005) painted a picture of Sacramento’s early German immigrants as a group of individuals who tended to settle into neighborhoods largely composed of their fellow countrymen. They built their businesses in these neighborhoods, many of which, like the Philadelphia House, catered to those newly arrived from Germany.

The argument can be made that, with the regional variation which existed in Germany at the time, it was unlikely for these neighborhoods to be composed of individuals from the same regions, (especially since most were single males rather than

family groups) and thus it was equally unlikely that they would have shared common traditions, customs, and foodways. The regional boundaries and differences that comprised Germany are (in this case) essentially irrelevant. For lack of a better phrase, the situation that occurred amongst Sacramento's 19th and early 20th century German immigrants can be presented as a case of "situational ethnicity." Regardless of their regional homeland, these individuals shared a common history. Combined with the common social, political, and economic challenges they faced in a new environment, this shared history allowed for the *perception* of common origins.

Perceiving a shared world experience meant the creation of ties based on kinship, friendship, and interest. In many ways, the act of migration is a social process that can aide in the formation of stronger ethnic ties than may have existed in a group's homeland. In Sacramento, their links to a common past—perceived or otherwise—led to the deliberate establishment of German associations such as the *Turn Verein* (voluntary gymnastics association), and the *Turnerhalle* (Turner Hall) where German immigrants could meet over plans for the city and their neighborhoods, hold celebrations and physical contests, provide support for newly arrived immigrants, and devise ways to encourage greater numbers of Germans to settle in California.

The case of Sacramento's early German immigrants appears to parallel that of the Polish who, as described by Thomas and Znaniecki (1984), established an ethnic identity that was neither Polish nor American, but a new product composed partly of their remembered traditions, and partly from the new conditions in which they found themselves. This is quite similar to the idea of situational ethnicity, although for my purposes, the concept is not meant to refer to identities that change according to an

individual's particular and shifting interests, but rather to the social process of identity formation that is dependent upon the situational context a group faces (i.e., time period, location, and proximity and influence of other groups).

Given the intentional efforts made to maintain a German-based ethnic identity, its stands to reason that the things they did in the name of "German-ness" (such as the festivals they chose to hold and the foods consumed during them), could be considered indicators of German-American ethnicity. Their activities and behavior during the mid-to-late 1800s would lead one to believe that they not only considered themselves to be ethnically and culturally distinctive, they made the effort to maintain this distinctiveness, despite being able to integrate into various aspects of city life. How this uniqueness may manifest itself archaeologically is another matter altogether, and will be discussed shortly.

What the Philadelphia House Tells Us About Social and Economic Status

The Philadelphia House Assemblage

In their final report, TREMAINE (2005) noted that the Philadelphia House appeared to be an establishment of a third or fourth rank, compared to the Golden Eagle Hotel which was first-rank. They based this on the census data—which listed the occupations of the Philadelphia House boarders—along with the cultural material recovered during excavation. Although this ranking system was not defined, it is assumed from TREMAINE's discussion of the middle-ranked quality of other artifact classes, that a third or fourth rank assignment is indicative of a middle-class establishment.

The results presented in Chapter VI for the Philadelphia House faunal assemblage appears to be somewhat in agreement with this middle-class assignment. Tables 33a and 33b show that in terms of NISP values, the cuts of beef most commonly purchased were from a middle-to-high ranking, such as the round (29.4 percent), rump (9.2 percent), and chuck (10.9 percent). It is somewhat surprising that high quality cuts such as those from the short loin comprised approximately 18 percent of the beef assemblage, however when defined by meat-yield and cost-efficiency, the high quality cuts make up only 5.8 percent, whereas the round cuts jumped to 81.3 percent. This seems to indicate that not only were the Philadelphia House proprietors purchasing middle-ranked (in cost) beef cuts, they were selecting those with a high meat yield, and thus purchasing efficiently as well. It also suggests that perhaps the Philadelphia House proprietors provided their clientele with higher quality food options than would be assumed from the middle-class ranking assigned by TREMAINE to the establishment.

Table 25 listed the acquisition units identified within the faunal assemblage for beef cuts, and it is interesting to note that over 20 percent were identified as round steaks. This is the most commonly occurring meat cut found in the entire identifiable assemblage, pork, sheep/goat, and poultry included. The high frequency is due in part to the many round steaks that were fragmented, which could inflate the perceived frequency. To help alleviate this issue, I matched up as many fragments as I could; if two or more fragments could be refitted, they were counted as one specimen. It is felt that the high percentage of round steaks is an accurate representation of the faunal assemblage. Measurements for these steaks indicate that they were fairly thick, often exceeding 20 millimeters (0.75 inches) in height, suggesting that the Philadelphia House patrons and

boarders were consuming large portions of beef steaks. This is likely representative of the kinds of food served at saloons. Steaks can be prepared quickly and easily to feed many people, and in the case of the Philadelphia House, would have been necessary to serve saloon and restaurant patrons as well as the boarders. Schulz and Gust noted that late 19th century saloons served free lunches in order to draw customers to the bar (1983a:49). The free lunch system meant that the food needed to be prepared with as little time and effort as possible while still being plentiful. These conditions are easily met by the use of roasts and steaks, which are indeed prevalent in the Philadelphia House assemblage.

Although the meat yield could not be determined for this study, the cost-based ranking system for the butchering units of pork and sheep/goat indicate that middle-ranked cuts were frequently purchased. Table 35 shows that for pork, highly-ranked cuts such as the rough back/loin and short cut ham/leg comprised 35.1 percent of the pork assemblage, while middle-ranked (rib belly and shoulder butt) made up 28.95 percent. What is surprising however is that low-quality cuts such as head and feet, and shank (fore and hind) made up 34.65 percent of the pork cuts. Given that head and feet cuts are known German favorites, and the fairly even distribution of the three major groups of pork rankings (high, medium, and low), it is unlikely that the high percentage of low quality cuts are a reflection of economic status. This serves as a reminder that cost-based values do not necessarily equate with how a cut of meat may be valued by those who consume it.

Table 36 shows a somewhat similar situation for the sheep/goat assemblage. Of the 467 specimens identified as sheep/goat, approximately ten percent were of high ranking (loin and sirloin), 65.3 percent were moderately ranked (chuck/shoulder and neck

and hind shank), and 23.5 percent were of low quality (fore shank, feet and heat). Although it appears that sheep/goat cuts from all rankings were consumed, those considered to be indicators of middle-status far exceeded high and low status. These are also likely the cuts that would have produced the greatest meat yield from a sheep or goat, suggesting as it did with beef that the Philadelphia House proprietors were making cost efficient purchases.

Comparative Studies

One of the aims of this thesis was to see if it was possible to filter out the patterns likely associated with socio-economic status in order to have a clearer perspective on the patterns that could be related to ethnic-based food preferences. One way to do so was to compare the Philadelphia House assemblage to those analyzed by Schulz and Gust (1983a) from historic sites in Sacramento. These included the City Jail, Hannan's Saloon, Klebitz and Green's Saloon, and the Golden Eagle Hotel.

The City Jail faunal assemblage dated to the 1870s, and consisted of large quantities of animal bones from the remains of prisoners' meals. The assemblage consisted of 485 beef specimens, the majority of which were identified as soup bones from the neck and shoulder and thus suggested a low socio-economic status for the City Jail. The building that housed Hannan's Saloon, once located on K Street, was constructed in 1854. From the time of its construction until the end of the 19th century, a series of saloons operated from it. For 18 years it was Hannan's Saloon, owned and operated by Irishman Owen Hannan, who lived there with his family during most of his tenure (Schulz and Gust 1983a:46).

Around the corner from Hannan's Saloon was that saloon of Klebitz and Green, who leased the building on Fourth Street in 1855. Klebitz and Green were German immigrants, and they operated the saloon until 1884 when they sold their lease to their bartender and fellow countryman, George Wissemann (Schulz and Gust 1983a:46). Unlike Hannan, they advertised their saloon daily, and they owned homes elsewhere in the city. They also had real estate holdings and a sheep ranch, and thus were considered relatively wealthy.

From this brief history of the two establishments, it might be assumed that the faunal remains from Hannan's Saloon may be marked by lower-quality beef cuts, whereas those from Klebitz and Green's saloon would exhibit more highly ranked cuts. From the beef 276 specimens from Hannan's business, and the 469 from Klebitz and Green's, Schulz and Gust found that the two saloons contained "limited and roughly parallel frequencies of high value cuts, but otherwise diverge[d], with the Klebitz and Green deposit yielding higher percentages of middle value cuts and the Hannan privy yielding more of low value" (1983a:49).

From their NISP value frequencies for beef cuts, it would appear that the expectations regarding socio-economic status were met, and the same is true for Schulz and Gust's analysis of the Golden Eagle Hotel. Founded in 1851 by D. E. Callahan, the Golden Eagle Hotel was at first a board and canvas rooming house, but by the mid-1850s, Callahan had made it into one of the finest and most highly regarded hotels in the state. They held banquets for the city's elite, and advertised in commercial, literary, and travel periodicals (Schulz and Gust 1983a:47).

The faunal assemblage analyzed by Schulz and Gust for the hotel came from the excavation of four features dating from the early 1860s to 1874. Two of the features were associated with the hotel, and two with the hotel's oyster saloon, also known as Cronin's Oyster Saloon. Schulz and Gust found that of the 341 beef bones identified for the Golden Eagle Hotel, over 50 percent consisted of fine steak portions such as T-bone steaks and steaks derived from the short loin, which is the most costly beef cut. Such a high frequency parallels the upper class status of the hotel. This is further corroborated by Simons' (1980) analysis of the hotel's avifaunal remains: he found that the overall "duck:chicken" ratio was approximately one-to-one. During a time when chicken was fairly expensive to acquire, this would suggest that the Golden Eagle could afford to provide its clientele with costly domestic poultry.

Using similar methodology to that employed by Schultz and Gust, I examined the beef cuts from the Philadelphia House faunal assemblage and compared my NISP value frequencies to those they reported for the City Jail, Hannan's Saloon, Klebitz and Green's Saloon, and the Golden Eagle Hotel. The results of this inquiry were presented in Chapter VI, Tables 33a and 33b. The reported NISP frequencies suggest that the Philadelphia House occupants and patrons consumed a wide variety of beef cuts, ranging primarily from those from the round (29.4 percent), the short loin (18.2 percent), the chuck (10.9 percent), and the fore shank (10.4 percent). Using Schulz and Gust's relative status ranking system, this would indicate that the majority of the cuts were from mid-to-highly ranked beef. The Philadelphia House assemblage does not seem to compare well to any of the four sites, however, the one it most closely resembles is that from Klebitz and Green's Saloon. Both have similar proportions of high, middle, and low-ranked beef

cuts, although the Philadelphia House seemed to favor round cuts whereas Klebitz and Green's Saloon had a higher proportion of rib cuts. The similarities may be due in part to the fact that both were saloons, and likely served similar meals. They may also be a reflection of similar socio-economic status, although judging from the earlier comparison of the Hannan and Klebitz and Green saloons, the profiles for the proprietors of the Philadelphia House fall right in-between the two. What is of particular interest is that both the Philadelphia House and Klebitz and Green's Saloon were run by German immigrants. It cannot be discounted that perhaps the similarities between the two could in part be a reflection of common, ethnic-based food preferences and not just socio-economic status. It is also possible that Klebitz and Green sold lamb/mutton to the Philadelphia House proprietors—thus accounting for the high frequency of sheep/goat specimens—although there is no documentary proof.

There are many problems with using NISP value frequencies as a guide to relative abundance of a particular meat cut. Not only can NISP values inflate the resulting data sets, they do not take into account the amount of meat yielded by each cut. A beef cut with a high relative economic status ranking (such as the short loin) may be more costly, but it yields very little meat compared to the round, and thus are not cost-efficient purchases. Of course, it is entirely likely that many people in late 19th century Sacramento were not purchasing cost-efficiently, especially those with the means not to care about market-place prices.

NISP values as utilized in the above site comparisons also have another weakness: the analyses are based on butchering unit identifications, and do not reflect very well the acquisition units that would have actually been purchased. In order to

account for some of these flaws, I utilized Lyman's (1987) methodology for determining estimated meat yield values from the reported NISPs. The results of this analysis were included in Chapter VI, Tables 33a and 33b for a side-by-side comparison with the NISP frequencies. Not included in these tables are the ENU (estimated number of units) derived from the reported NISPs and the meat yield NISPs: these are provided in Appendix B.

The meat-yield NISP frequencies summarized in Tables 33a and 33b paint a slightly different picture than the frequencies from NISP values alone. It is evident that beef cuts with high frequencies using reported NISPs often appear to have diminished significance when using NISPs for estimated meat yield. For example, the neck cuts from the City Jail were reported with a frequency of 30.7 percent—far exceeding any of the other cuts consumed. When meat yield is factored in however, the frequency for neck cuts is greatly reduced to 1.6 percent, suggesting that while neck cuts may have been purchased more frequently, they provided very little consumable meat.

This does not necessarily change the overall picture for the associations made to socio-economic status. The Philadelphia House faunal assemblage still appears to be most similar to that from Klebitz and Green's Saloon, although because of the wide range of beef cuts consumed, it also does not appear drastically *dis*-similar to the City Jail, the Hannan's Saloon, and the Golden Eagle Hotel. Perhaps this is a suggestion that while middle-ranked beef cuts (middle-ranked by both cost-based and cost-efficiency-based values) were purchased more frequently than those valued as low and high, the Philadelphia House's proprietors use of cuts from all rankings is a reflection of an

establishment with a middle class socio-economic status who based their purchases on price, cost-efficiency, and dietary preferences.

Using the program SPSS to analyze these data statistically, a one-way Anova bonferroni test comparing the mean beef meat yield for each site indicated that there was a significant difference (the mean difference was significant at the 0.05 level) between the Philadelphia House and the City Jail, the Philadelphia House and Hannan's Saloon, the Philadelphia House and the Klebitz and Green Saloon, and the Philadelphia House and the Golden Eagle Hotel. A chi-squared test of the NISP values per beef cut type by site provided the same results. The information produced by the bonferroni test is summarized in Appendix C.

What the Philadelphia House Tells Us About Ethnicity

The Philadelphia House was, for most of its existence, an establishment owned and operated by German immigrants, and catered primarily to blue-collar German immigrant workers. As a boarding house, saloon, and restaurant located in a neighborhood composed primarily of German-born residents, it provided a sense of familiarity for those newly arrived immigrants. Advertised first as being kept "in the best style" and later as "in the best German style," suggests intentionality behind the business practices of its owners and proprietors. What is meant by "in the best German style" is not entirely clear, though it could refer to a similarity with boarding houses in Germany, either in decorative style, functionality, or manner of running a business. Considering that the Philadelphia House served meals to its patrons and boarders, the first thing that comes to mind for what is meant by German style would be German-based foodways.

If their intention was to draw customers and boarders primarily from Germany, it seems likely that one of the simplest ways to do so would be by providing meals familiar to their clientele. Without trying to examine the psychological implications of traditional foodways, dietary preferences and food preparation techniques are often considered to be some of the most resilient and formidable aspects of cultural heritage. Assuming that they were providing food prepared and served in a manner meant to be distinctive from non-German establishments, this thesis presented the hypothesis that the faunal assemblage recovered by TREMAINE in 2004 would reveal patterns explicable by socio-economic status and ethnic identity.

What a German-American ethnic pattern would "look" like faunally was difficult to picture, and so I attempted to first explore the variable of socio-economic status in order to compare the assemblage to those from sites of known or presumed status. The assumption was, that if systemic and structural variables such as availability and cost of resources, and household or business-type could be controlled for, then perhaps the pattern indicated within the faunal assemblage would be a reflection of ethnic-based dietary preferences.

The taxonomic identifications made for the Philadelphia House faunal assemblage suggests that a variety of animals were consumed, including cattle, pigs, sheep/goat, chickens, ducks, geese, turkeys, and (keeping in mind the affect of taphonomic variables and excavation procedures) to a lesser extent crab and fish. Other than the two specimens identified as woodpecker, however, none of the species stand out as unusual, such as the large number of passerine (bird) remains identified within the Golden Eagle Hotel collection thought to represent French/Franco-American cuisine.

The skeletal element identified for each species provide some interesting results, namely that cranial elements were identified for cattle, pigs, chickens, and geese. This suggests that the chickens and geese were obtained whole. They were also likely prepared whole (possibly minus head and feet), as indicated by the relatively few avifaunal bones exhibiting any butchering marks. This is supported by the findings from the German cookbook analysis, which showed that the majority of the recipes for poultry dishes call for cooking birds whole. Many of the recipes also indicated, however, that they are then "cut into serving pieces." Whether or not these cuts are made through the bone or through the joints is not clear, although one recipe indicated the use of poultry shears.

Chicken specimens occurred quite frequently within the assemblage, making up nearly 11 percent of the identifiable specimens and only exceeded by cattle, sheep/goat, and medium-sized artiodactyls. This is somewhat surprising considering both the fact that TREMAINE described the Philadelphia House as a third or fourth rank establishment (based on census data and clientele) and the fact that chickens were still relatively expensive during much of its existence (Simons 1980). This suggests that either the Philadelphia House had more purchasing power than previously assumed, or perhaps despite having a lower socio-economic status than establishments such as the Golden Eagle Hotel, they made a concerted effort to obtain a favored food item, as Simons noted for the Chinese of Woodland (1984). The high frequency of chicken remains may also be explained by the fact that the Newman family, who ran the Philadelphia House from 1877 to 1877, supplemented their income by raising chickens in their backyard (which

would have been the back of the Philadelphia House), though it is not known whether the chickens were raised primarily for eggs or for consumption.

The identification of cranial and foot elements from pigs and cattle is noteworthy, as it suggests dietary preferences often associated with German cuisine. The cookbook analysis showed that among German beef dishes, 17 percent of the recipes examined contained cuts from the feet and head, far exceeding any of the other beef cuts called for that contain bone elements. It was also noted that of the 53 beef recipes, 15 (28.3 percent) contained veal and calf meat, a German favorite. This is supported by the identification of juvenile cattle remains, although it should be noted that only broad age ranges could be assigned to the identified fused and unfused specimens.

The majority of the pork recipes that contained bones (approximately 36 percent) called for cuts from the short cut ham/leg, followed by a combined 15.7 percent calling for head and feet. Although the results from the Philadelphia House indicate that all pork cuts were consumed and none exceptionally more than another, it is notable that over 20 percent came from the head and feet, perhaps suggesting the consumption of head cheese and pickled pigs' feet, both of which are considered to be German favorites. What is exceptional is the large number of nearly whole elements from the hindquarter which indicate that the Philadelphia House proprietors were purchasing pork cuts resembling large butchering units. TREMAINE suggested that perhaps these were butchered further on site and then possibly ground for sausage (Nelson 2005:114).

Live, large domestic livestock were not allowed within Sacramento city limits. In addition, Euro-American butchering practices were such that the head and feet were removed prior to quartering; the wholesale units were then reduced to smaller retail cuts

that were then made available for purchase. Taking these factors into consideration it would appear that the Philadelphia House proprietors were intentionally purchasing cuts of beef and pork that may not have been easily obtained. This could be due in part to the large number of people they fed, as well choices made based on dietary preferences.

In their final report on the Philadelphia House, TREMAINE compared the artifact assemblage to those from Meyer's (2002) study on the Golden Eagle Hotel and the Eagle Hotel. They found that in terms of cookware, tableware, kitchenware, and social drugs (alcohol, tobacco, and opium), the Philadelphia House differed very little from the two hotels in their consumer decisions. In terms of faunal remains, however, the Philadelphia House collection contained far more rabbits and sheep, suggesting that a different cuisine was offered (Nelson 2005:112). Schulz and Gust (1980) attributed the rabbit specimens identified for the Golden Eagle Hotel as a possible reflection of French/Franco-American jackrabbit stew, however TREMAINE found that the MNI for rabbit specimens identified from Locus 1 Unit 1 outnumbered those from the Golden Eagle Hotel 10:1. When adding in my results, the ratio increases to 15:1, suggesting that perhaps ethnicity, (and ethnic-based dietary preferences) is more clearly evident in faunal-based food remains than in artifacts attributed to food preparation and serving dishes.

Few items of German manufacture were recovered from the Philadelphia House excavations, however, this is not surprising considering that the boarders were primarily single males who moved frequently and carried very little baggage. Anything that would have sentimental value was not likely to have been left behind. Despite the lack of "German" items, German heritage was reflected in the toys recovered from the

assemblage, including doll fragments, marbles, and play money all made in Germany. These are likely associated with the Newman children, who lived at the boarding house during their father's ownership.

As with many of the faunal assemblages from 19th century California, the Philadelphia House remains were dominated by beef in both NISP counts and meat yield associated with these values. This is likely due to the greater availability of beef than any other meat product. In *The Cuisines of Germany*, Scharfenberg (1989) noted that a preference for roast pork was found among Germany's Bavarian cuisine. They were so fond of roast pork that they preferred to save it for Sundays, whereas "beef was for every day". This statement is especially intriguing for a number of reasons. For one thing, the Newman family who ran the Philadelphia House for ten years was from Bavaria. Though it may never be proven, perhaps the family's Bavarian foodways factored in to the types of meat they chose to consume and serve. The statement is also intriguing because it indicates that just because a particular food may be favored over another does not mean that it was eaten often. Pork dishes may have been favored over beef, but it was beef that provided the primary meat-of-choice at the Philadelphia House.

One pattern that is evident within the faunal assemblage is the high frequency of bones from cattle, pigs, and sheep/goat that are often associated with soups and stews. These included primarily cuts from the hind shank, fore shank, and neck. In *Sauerkraut Yankees*, Weaver (1983) noted that German-Americans, particularly the Pennsylvania Dutch, developed soup-making into a high art form. "Of all the kitchen utensils, the *Kochkessel*, or stewpot, was probably fraught with the most symbolism and meaning…" and was associated with community, fellowship, and "all things motherly and good" (91).

Perhaps the high frequency of bones associated with soups and stews is a reflection of similar beliefs. Shank and neck bones are low on the meat-yield scale (Lyman 1987), however they could have provided the broth and stock necessary for large pots of soup. This is consistent with the large number of recipes that call for beef and pork stock, although it should not be forgotten that a very functional explanation is just as likely: they had many people to feed and needed to do so cheaply.

Although it may be associated with the soups and stews discussed above, one unanticipated result of the faunal analysis was the large number of sheep/goat specimens. They comprised nearly 20 percent of the identifiable specimens, and if the remains identified as “medium artiodactyls” are added, the number jumps to over 30 percent. In terms of NISP values, this is comparable to the cattle remains, although how much meat was yielded by the sheep/goat cuts is unclear.

In *Sauerkraut Yankees*, Weaver noted that roasts were the centerpiece of the meal, preferably pork, though oftentimes beef and “rarely ever mutton” (1983:18). This appears to be affirmed by the cookbook analysis, which shows only one recipe out of 407 noted as a sheep dish, and only three recipes calling for sheep at all. And yet the Philadelphia House assemblage contained a high proportion of sheep/goat specimens. As discussed earlier, TREMAINE observed that the Philadelphia House appeared to serve far more sheep-based dishes than either the Golden Eagle Hotel or the Eagle Hotel, but it is unclear if this pattern is a reflection of ethnic-based food preferences or some as-of-yet unrecognized variable. It should be recalled however that the cookbook results for the number of recipes within each dish-type are only meant as a proxy for which meat types

may have been preferred over others. The significantly low number of sheep dishes is not necessarily an indicator of the importance assigned to them.

Summary

Meyer (2002) found that regardless of cultural or ethnic background, working-class hotel and boarding house residents consumed similar meals that were served on similar dishes, which would suggest that the faunal assemblages are more a reflection of social and economic status rather than ethnicity (2002:151). This is likely due to the fact that economic status is somewhat easier to "see" than ethnicity archaeologically because cost, availability of resources, and purchasing power play such a significant role in influencing what people can and cannot consume. Cost-based decisions appear to be much more objective than those based on ethnic or cultural preferences.

Monetary cost-based price ranking systems have often been used as a proxy for economic status: the higher the frequency of lower-quality, lower-priced items recognizable in an assemblage, the lower the assumed status. This seems fairly intuitive, although as Lyman (1987) and Schmitt and Zeier (1993) have noted, there are many issues with this line of reasoning. For example, "cost" does not include monetary value alone; cost can be used to imply the time it takes to acquire and prepare or utilize a particular resource, especially those that are food-based. Also, as Lyman has discussed on multiple occasions, the use of price-ranking systems are often based on reported NISP values and their associated frequencies, which do not factor in the meat-yield value of each butchering and acquisition unit. An assemblage which has many low-cost, high meat-yield cuts may be more a reflection of a group of individuals acting cost efficiently

(getting the most meat for their money), rather than of a low socio-economic status. In addition, it may be the case that availability of resources and low purchasing power may require that a low-class individual or household purchase more expensive cuts of meat that they can hardly afford.

One of the greatest weaknesses of relative cost-based status ranking is that it often fails to define what is meant by socio-economic status. There are more factors that go into a household's perceived status than their income. A household with a high-status reputation may purchase expensive food items that they cannot afford in order to maintain appearances. Or, to use Lyman's (1987) clever example, a pimp is someone who can have an income that allows for expensive items to be acquired, and amongst his own social network, he may be treated as someone with a high status. To the world at large however, he would likely be viewed as someone with a low social status. In addition, the composition of a faunal assemblage such as that from the Philadelphia House is unlikely to tell us much about the composition of the household or establishment: perhaps the patrons were provided with higher quality cuts of meat than the proprietor and his family.

What the Philadelphia House *can* tell us, however, is that a faunal assemblage cannot be solely explained by either socio-economic status or ethnic-based food preferences. Both (or all if you split socio-economic status into two categories) inform the decisions people make regarding what to and what not to purchase. Regardless of how they are defined, they are all part of the social process that works at both the group and the individual level to help them better understand the world around them and their place within it.

Neither should a faunal assemblage be used alone to define the status differences between various groups of people and their establishments. These are issues that are best explored using multiple lines of inquiry. We cannot assume that human interactions and the material trappings of life had the same meanings for different social actors. This thesis is not meant to either confirm or tear apart preconceptions about what it meant to be German-American, but rather to take a fresh look at the way cultural and dietary preferences can inform us about how different groups of people establish, maintain, and alter their ethnic identities.

CHAPTER VIII

SUMMARY AND CONCLUSIONS ON THE USE OF FAUNAL REMAINS AS MARKERS OF ETHNICITY

Introduction

This study took its lead from anthropological discussions regarding the use of ethnicity as a viable concept. So much of recent anthropological discourse has berated its use as a flimsy analytical tool that only generates laundry-list type analyses. However, it is my belief that not only is ethnicity a valid concept; it is a necessary one for any study dealing with a group of people's identity and self-perceptions. Ethnicity is such a dynamic aspect of daily life that informs upon the decisions all of us make, regardless of whether or not many of us would assign ourselves a particular ethnic identity. Perhaps scholars have shied away from studying ethnicity because of its complexity, and the difficulties with even trying to define what the word means. Or perhaps it is because identity is very fluid, and any attempt to pigeon-hole people into pre-defined groups is bound to produce negative results. I feel, however, that it is *because* ethnicity is such a complex and ambiguous concept that it is not only fascinating, it can lend itself well to the holistic nature of anthropological analysis. Studying the various ways that ethnic identity has informed upon the decisions people make as social actors does not preclude the drawing of analytical boundaries around what it means to be of one ethnicity but not

another. Rather, it can highlight the ways in which ethnicity—as one of many forms of social identity—has been utilized by groups of people in specific times and places as a fluid and situational social process.

The most commonly recognized historical archaeology studies on identity are those of Langenwalter (1980), Simons (1984), and Wegars (1991) on the Chinese, and Crader's (1984, 1990) on African-American plantation life. Most however—especially those involving zooarchaeological analysis—have focused on the use of faunal assemblages as indicators of socio-economic status. These include Gust (1983), Meyers (2002), Lyman (1979, 1987), Schulz and Gust (1980, 1983a, 1983b), Simons (1980), Schmitt and Zeier (1993), and Szuter (1996), to name a few. Although many included brief discussions on the impact ethnicity may have had on the faunal assemblages, they generally attributed the patterns revealed to socio-economic status. This may in part be due to the fact that it is considered much easier to "see" socio-economic status in an archaeological assemblage, the assumption being that the higher the frequency of high-quality, expensive goods, the higher the perceived status. It could also be due to a genuine belief that ethnic-based preferences either did not play much of a role in consumer decisions, or they are not visible archaeologically. The unfortunate consequence of this perspective is that those studies which have used faunal remain as markers of ethnicity, have tended to focus on groups considered to be social minorities, with little attention paid to those we now think of as having a majority presence.

The Philadelphia House—which for most of its existence catered to and was operated by German immigrants—presented itself as a perfect case study by which to examine the role that faunal analysis can play in identifying ethnic and economic-based

food patterns within a group now thought of as indistinguishable from the mainstream. Using multiple lines of inquiry, including theory-based perspectives on the formation of ethnic identity among immigrant groups, historical evidence for the maintenance of German-American activities and foodways, zooarchaeological analysis of the Philadelphia House faunal assemblage and comparative studies, and the use of cookbooks in helping to create expectations for ethnic-based faunal patterns, this study sought to explore the ways in which the socioeconomic and ethnic status of Sacramento's early German immigrants manifested itself archaeologically.

Limitations of this Study

As with any study, there are limitations to this thesis, many of which cannot be easily controlled for while others were outside the scope of this project. To begin with, there are biasing variables involved with faunal identifications at the taxonomic level. These biases include taphonomic variables that impact the fragmentation rate and ability to identify specimens accurately, as well as the recognition that certain elements from particular species are more readily identifiable than others. These biases resulted in reduction of the usable sample by over 50 percent, which can certainly have skewed the resulting data. In addition, excavation techniques that involved the use of ¼-inch mesh could have potentially created a loss of data for bones from mammals, bird, and fish species that were too small to have been recovered. Biases could also have been introduced from the gradual reduction in cubic meters of soil excavated throughout the levels of one of the units chosen for analysis. The site was not excavated in its entirety; this, combined with the fact that there is no way to know how the refuse was disposed of

(was it just tossed down the stairs, carried down and piled into corners…?) and thus little chance of identifying specific disposal events that could be tied to the time frame of particular proprietors and boarders, means that there is a greater chance of not having a representative sample for the Philadelphia House as a whole. As a result, the data gathered from the two units chosen were not analyzed by level: perhaps doing so would have revealed trends across time that were not recognized in this study.

In addition, the Philadelphia House was an active business involving the consumption of food by restaurant patrons, saloon clientele, boarders, and at times, the family of proprietors who occupied the building. This means that we may never know for sure who was eating what and when. It is possible that the food produced for the restaurant and saloon patrons was of a type fairly standard for this form of business, and perhaps it was only the family of the proprietors from Germany who were consuming more traditional German cuisine.

Whenever possible, I worked to alleviate the biases that could occur from using NISP frequencies for determining patterns associated with socio-economic status and ethnicity, particularly when comparing the Philadelphia House data to that from Sacramento's historic city jail, Hannan's Saloon, Klebitz and Green's Saloon, and the Golden Eagle Hotel. This was done by comparing both the reported NISP value frequencies and the meat yield NISPs for beef, which would be a more accurate representation of the amount of meat actually consumed. In addition to the problems associated with using either butchering units or acquisition units as the appropriate unit of analysis, it should be noted that the site-by-site comparison was made only for beef. This study delved only into what the NISP values could tell us about the pork, sheep/goat,

poultry, and fish consumed at the Philadelphia House, and it is possible that had an analysis of the meat yield for each been done, the resulting discussion would have been different.

One of the greatest biases of all, however, is the fact that faunal remains can tell us little about the foods that do not preserve archaeologically. Considering that many favored food items in traditional German cuisine include no bones at all (such as sausage and bacon), it is virtually impossible to identify the role these foods may have played in the dietary habits of the Philadelphia House proprietors, patrons, and boarders.

Potential for Future Research

Regardless of these limitations, there is great potential both within and outside of the Philadelphia House faunal assemblage for future research regarding ethnicity. To name just a few of the options, it would be very interesting for the entire faunal assemblage to be analyzed in a similar manner to what has been presented here, in order to see if the patterns observed remain the same or become stronger. It would also be worthwhile to examine the assemblage by excavated level to address any questions regarding distribution across time.

In addition, the combination of a zooarchaeological analysis and a cookbook analysis could be greatly enhanced by not only the examination of a greater number of German and German-American cookbooks, but by an investigation of cookbooks from other ethnicities. This might help filter out dietary preferences that are unique to German ethnicity, and would strengthen the patterns observed in the faunal assemblage. It would also be particularly intriguing if historical menus could be found for the Philadelphia

House such as those gathered by Gust and Schulz (1980) for the Golden Eagle Hotel. An analysis of the menus would provide a significant avenue for linking known meal options with observed faunal patterns.

And finally, this study lends itself to the possibility of comparing the Philadelphia House to similar sites both within and outside of the United States. This could include additional sites within Sacramento from businesses established by German immigrants, as well as possibly to boarding houses run by Germans in Germany itself.

Concluding Statement

The concept of ethnicity can become an ambiguous aspect of the anthropologist's analytical toolkit. This is particularly true when utilized to categorize groups of people as though they are unchangeable, with clear-cut boundaries across time and space. Though we may like to believe that the traditions we hold dear are unchanging features of our ancestral heritage, we would be foolish not to recognize that the most enduring tradition of all is the human gift of social adaptability. This is not to say that strong cultural traditions with ethnic ties do not exist; I sincerely believe that the practices one claims as one's traditional heritage are a significant aspect in maintaining pride in one's own identity and links to the past. It should not be forgotten however, that the past and present constantly create and recreate each other, and any selective treatment of the past can do a grave injustice to the very forms of ethnic distinctions we wish to celebrate. By utilizing the advances made in archaeology and zooarchaeology, we can help to ensure that ethnicity is treated as a complex yet highly significant social process.

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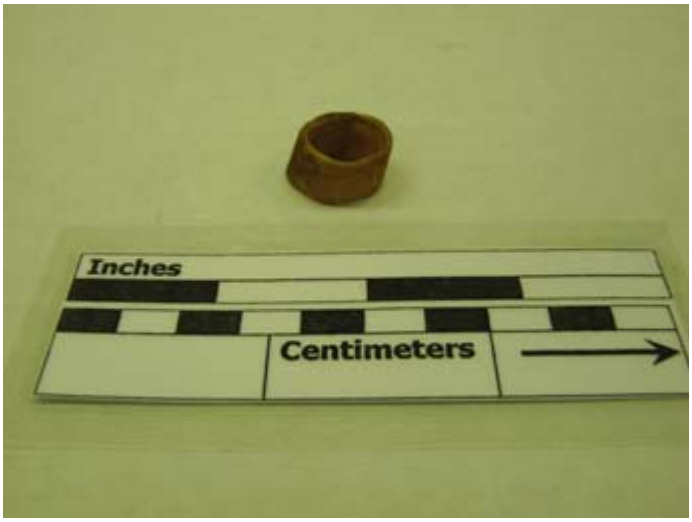
APPENDIX A

PHILADELPHIA HOUSE – POLISHED BONE ANOMALIES

As noted in Chapter VII, there were six specimens from the Philadelphia House faunal assemblage that exhibited a high degree of polishing. The polishing occurs on the bone exterior and along the transverse surfaces, although no polish marks were observed within the curved interior of the cortical bone, as might occur had the specimens been strung as beads. All six have the appearance of "chop" cuts from long bone fragments (likely humeri), and it is possible that they were initially sawn as cuts of meat. The polishing is heavy, and appears intentional, rather than the incidental product of cooking techniques or depositional/taphonomic processes.

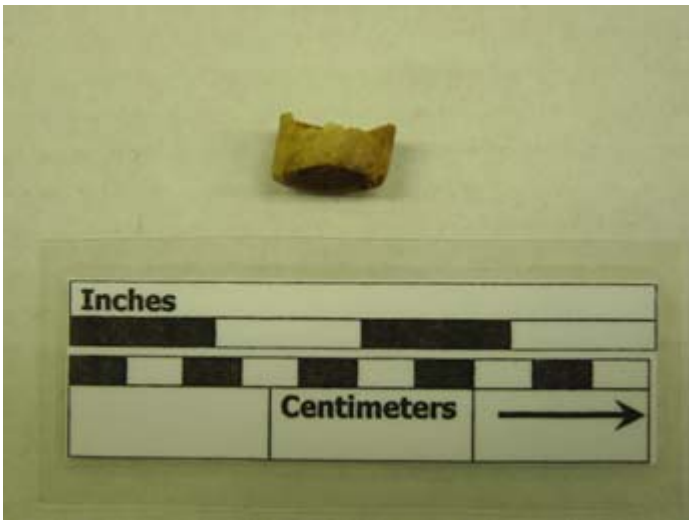
None of the specimens were taxonomically identifiable, although they range from small mammal (i.e. rabbit) to medium-large mammal (i.e. sheep/goat or pig). There is no mention in TREMAINE's final report of similar anomalies within the Philadelphia House collection, and as of yet, the purpose or function of these specimens is unknown. Photographs of each specimen are presented below.

Polished Bone Specimen 2
Catalog #: JMM-02611
Small Mammal, Proximal Humerus



Polished Bone Specimen 1
Catalog #: JMM-02610
Small Mammal, Proximal Humerus

Polished Bone Specimen 2
Catalog #: JMM-02611
Small Mammal, Proximal Humerus



Polished Bone Specimen 2
Catalog #: JMM-02611
Small Mammal, Proximal Humerus

Polished Bone Specimen 3
Catalog #: JMM-02612
Medium Mammal, Proximal Humerus

Polished Bone Specimen 3
Catalog #: JMM-02612
Medium Mammal, Proximal Humerus

Polished Bone Specimen 4
Catalog #: JMM-02904
Medium Mammal, Long Bone Shaft

Polished Bone Specimen 4
Catalog #: JMM-02904
Medium Mammal, Long Bone Shaft

Polished Bone Specimen 5
Catalog #: JMM-02905
Medium Mammal, Humerus Shaft

Polished Bone Specimen 5
Catalog #: JMM-02905
Medium Mammal, Humerus Shaft

Polished Bone Specimen 6
Catalog #: JMM-02972
Medium Mammal, (Sheep/Goat), Humerus Shaft
Note: Foramen is natural, not cultural.

Polished Bone Specimen 6
Catalog #: JMM-02973
Medium Mammal, (Sheep/Goat), Humerus Shaft

APPENDIX B

SITE COMPARISONS – REPORTED AND ESTIMATED NISP VALUES

te	Beef Cut	Relative Status Ranking	Relative Cost Efficiency Ranking	Reported NISP(n)	Reported NISP Frequency (%)	Reported NISP ENUs	Estimated Meat Wt NISP	Estimated Meat Wt. NISP Frequency (%)	Estimated Meat Wt ENUs
City Jail	Short Loin	1	10	32	6.6	5	100	6.3	640
City Jail	Rib	2	1	40	8.2	2	40	2.5	800
City Jail	Sirloin	2	1	9	1.9	4	48	3	108
City Jail	Round	3	2	16	3.3	16	400	25.1	400
City Jail	Rump	4	3	22	4.5	6	30	1.9	110
City Jail	Short Rib	6	4	94	19.4	7	42	2.6	564
City Jail	Arm	6	4	48	9.9	48	720	45.2	720
City Jail	Chuck	5	5	51	10.5	5	140	8.8	1428
City Jail	Plate	7	6	8	1.6	1	18	1.1	144
City Jail	Fore Shank	9	7	10	2.1	3	21	1.3	70
City Jail	Neck	8	8	149	30.7	25	25	1.6	149
City Jail	Hind Shank	9	7	6	1.2	1	8	0.5	48
Hannan Saloon	Short Loin	1	10	20	7.2	3	60	5.6	400
Hannan Saloon	Rib	2	1	26	9.4	2	40	3.7	520
Hannan Saloon	Sirloin	2	1	24	8.7	12	144	13.5	288
Hannan Saloon	Round	3	2	16	5.8	16	400	37.5	400
Hannan Saloon	Rump	4	3	8	2.9	2	10	0.9	40
Hannan Saloon	Short Rib	6	4	31	11.2	2	12	1.1	186
Hannan Saloon	Arm	6	4	14	5.1	14	210	19.7	210
Hannan Saloon	Chuck	5	5	35	12.7	3	84	7.9	980
Hannan Saloon	Plate	7	6	11	4	1	18	1.7	198
Hannan Saloon	Fore Shank	9	7	28	10.1	9	63	5.9	196
Hannan Saloon	Neck	8	8	55	19.9	9	9	0.8	55
Hannan Saloon	Hind Shank	9	7	8	2.9	2	16	1.5	64
Klebitz & Green	Short Loin	1	10	74	15.8	11	220	8.7	1480
Klebitz & Green	Rib	2	1	45	9.6	3	60	2.4	900
Klebitz & Green	Sirloin	2	1	25	5.3	13	156	6.1	300
Klebitz & Green	Round	3	2	57	12.2	57	1425	56.1	1425
Klebitz & Green	Rump	4	3	6	1.3	2	10	0.4	30
Klebitz & Green	Short Rib	6	4	92	19.6	7	42	1.6	552
Klebitz & Green	Arm	6	4	26	5.5	26	390	15.4	390
Klebitz & Green	Chuck	5	5	30	6.4	3	84	3.3	840
Klebitz & Green	Plate	7	6	23	4.9	3	54	2.1	414
Klebitz & Green	Fore Shank	9	7	17	3.6	6	42	1.6	119
Klebitz & Green	Neck	8	8	45	9.6	8	8	0.3	45
Klebitz & Green	Hind Shank	9	7	29	6.2	6	48	1.9	232
Golden Eagle Hotel	Short Loin	1	10	175	51.3	25	500	47.6	3500
Golden Eagle Hotel	Rib	2	1	24	7	2	40	3.8	480
Golden Eagle Hotel	Sirloin	2	1	5	1.5	2	24	2.3	60
Golden Eagle Hotel	Round	3	2	10	2.9	10	250	23.8	250
Golden Eagle Hotel	Rump	4	3	9	2.6	2	10	0.9	45
Golden Eagle Hotel	Short Rib	6	4	68	19.9	5	30	2.8	408
Golden Eagle Hotel	Arm	6	4	8	2.3	8	120	11.4	120
Golden Eagle Hotel	Chuck	5	5	8	2.3	1	28	2.7	224
Golden Eagle Hotel	Plate	7	6	5	1.5	1	18	1.7	90
Golden Eagle Hotel	Fore Shank	9	7	10	2.9	3	21	2	70
Golden Eagle Hotel	Neck	8	8	15	4.4	2	2	0.2	15
Golden Eagle Hotel	Hind Shank	9	7	4	1.2	1	8	0.8	32
Philadelphia House	Short Loin	1	10	110	18.2	16	320	5.8	2200
Philadelphia House	Rib	2	1	0	0	0	0	0	0
Philadelphia House	Sirloin	2	1	16	2.6	8	96	1.7	192
Philadelphia House	Round	3	2	178	29.4	178	4450	81.3	4450
Philadelphia House	Rump	4	3	20	3.3	5	25	0.4	100
Philadelphia House	Short Rib	6	4	56	9.2	4	24	0.4	336
Philadelphia House	Arm	6	4	11	1.8	11	165	3	165
Philadelphia House	Chuck	5	5	66	10.9	6	168	3.1	1848
Philadelphia House	Plate	7	6	0	0	0	0	0	0
Philadelphia House	Fore Shank	9	7	63	10.4	21	147	2.7	441
Philadelphia House	Neck	8	8	41	6.8	7	7	0.1	41
Philadelphia House	Hind Shank	9	7	45	7.4	9	72	1.3	360

APPENDIX C

MULTIPLE COMPARISONS

Estmeatweight
Bonferroni

(I) Site	(J) Site	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
City Jail	Hannan Saloon	-.579805	.584867	1.000	-2.22323	1.06362
	Klebitz & Green	-2.131233*	.502351	.000	-3.54279	-.71967
	Golden Eagle	.200509	.548192	1.000	-1.33986	1.74088
	Philadelphia House	-5.750443*	.472602	.000	-7.07841	-4.42248
Hannan Saloon	City Jail	.579805	.584867	1.000	-1.06362	2.22323
	Klebitz & Green	-1.551428	.588474	.084	-3.20499	.10213
	Golden Eagle	.780314	.628060	1.000	-.98448	2.54510
	Philadelphia House	-5.170638*	.563292	.000	-6.75344	-3.58784
Klebitz & Green	City Jail	2.131233*	.502351	.000	.71967	3.54279
	Hannan Saloon	1.551428	.588474	.084	-.10213	3.20499
	Golden Eagle	2.331742*	.552038	.000	.78057	3.88292
	Philadelphia House	-3.619210*	.477059	.000	-4.95970	-2.27872
Golden Eagle	City Jail	-.200509	.548192	1.000	-1.74088	1.33986
	Hannan Saloon	-.780314	.628060	1.000	-2.54510	.98448
	Klebitz & Green	-2.331742*	.552038	.000	-3.88292	-.78057
	Philadelphia House	-5.950952*	.525112	.000	-7.42647	-4.47544

*. The mean difference is significant at the 0.05 level.

(I) Site	(J) Site	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Philadelphia House	City Jail	5.750443*	.472602	.000	4.42248	7.07841
	Hannan Saloon	5.170638*	.563292	.000	3.58784	6.75344
	Klebitz & Green	3.619210*	.477059	.000	2.27872	4.95970
	Golden Eagle	5.950952*	.525112	.000	4.47544	7.42647

*. The mean difference is significant at the 0.05 level.