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The characterization and measurement of archaeological depositional units: Patterns from nineteenth-century urban sites in Portsmouth, New Hampshire

Wheeler, Kathleen Louise, Ph.D.
The University of Arizona, 1992

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THE CHARACTERIZATION AND MEASUREMENT
OF ARCHAEOLOGICAL DEPOSITIONAL UNITS:
PATTERNS FROM NINETEENTH-CENTURY URBAN SITES
IN PORTSMOUTH, NEW HAMPSHIRE

by
Kathleen Louise Wheeler

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A Dissertation Submitted to the Faculty of the
ANTHROPOLOGY DEPARTMENT
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1992
As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Kathleen Louise Wheeler entitled The Characterization and Measurement of Archaeological Depositional Units: Patterns from Nineteenth-Century Urban Sites in Portsmouth, New Hampshire and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Ph. D.

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copy of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Dissertation Director

Date
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DEDICATION

The completion of this work is dedicated to Ellen, because she more than anyone else knows what the road to closure entailed.
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ABSTRACT

This dissertation is an examination of the formation processes operating at nineteenth-century housesites in Portsmouth, New Hampshire. The approach stresses the reconstruction in behavioral terms of all urban deposits, including those considered "mixed" or "disturbed."

The data base for the dissertation consists of three disparate archaeological collections at the Strawbery Banke Museum in Portsmouth. The analysis was performed under a unifying research agenda and with a consistent set of analytic techniques in a kind of "postexcavation salvage."

These methods include developing a Harris matrix to reconstruct site stratification, plotting deposition locations in reference to known activity areas (such as doors and windows), measuring relative sherd size, and calculating a minimum number of vessels through the examination of ware, form, and surface decoration and the refitting of sherds. This latter exercise of crossmending helped to establish the horizontal and vertical displacement of sherds. Measures of diversity included counting the number of artifact classes to determine richness and developing a prevalence index to assess evenness; i.e., the distribution of artifact types within a deposit.

The behavioral unit of analysis was the household, as
it was hypothesized that individual households generated refuse in patterned ways. Nineteenth-century households from three sites were reconstructed from historical sources such as city directories, census information, family genealogies, and tax assessment records. Twelve households occupying three different housesites were linked with various refuse deposits and compared over time and space.

Several patterns of trash-disposal behaviors recurred at the three sites. Preferred modes of refuse discard included the use of open-air middens, privies, and opportunistic middens. Households apparently also transformed or redeposited secondary-refuse aggregates to create tertiary deposits. Often characterized as mixed or disturbed, these tertiary deposits can be informative about depositional behaviors in the urban context.

Conclusions summarize how immigrant status, stage in household development, tenancy, and owner occupation affect the discard behaviors at the three sites. Once a "grammar of garbage" is reconstructed in behavioral terms, more abstract constructs, such as the worldview of hygiene and sanitation, can be suggested.
Chapter 1

INTRODUCTION

This dissertation is the study of the formation of nineteenth-century deposits at three sites in Portsmouth, New Hampshire. The formation of long-occupied urban sites is often viewed as culminating in "mixed," or severely disturbed, archaeological contexts that have little or no significance. Following Salwen (1973, 1978) and Staski (1987), I contend that, with careful attention to reconstructing the formation of the site, analysis of even highly disturbed sites can result in increased knowledge of past human behavior and cultural systems. Many studies in historical archaeology emphasize sealed deposits like privies or trash pits, but I believe we can also learn about household behaviors from less-intact contexts like scatter deposits and long-term middens.

AIMS OF THE STUDY

Reid (1985) outlines a three-fold division of archaeological goals: (1) accounting for the formation of the archaeological record; (2) reconstructing human behavior; and (3) explaining human behavior. Reid (1985:14-15) notes that the identification of site formation processes can be an independent goal of research, in and of
itself, and is also a necessary step in reconstructing human behaviors. Like Reid (1985:14), I view these three divisions as logically sequential; i.e., one proceeds from understanding site formation processes to reconstructing human behavior, and then to reconstructing the cultural imperatives that guided human behavior.

My primary aim is to account for the archaeological record in order to build inferences or arguments of relevance (sensu South 1988) to reconstruct past human behavior. Ultimately, I will address each of the above goals, beginning with the enumeration of the range and types of formation processes operating at three sites in nineteenth-century Portsmouth, New Hampshire. The archaeological deposits are then described in terms of human behaviors and linked with social units--such as households or neighborhoods--gender, ethnicity, and socioeconomic class, to create a "grammar" of garbage. In the concluding chapter, cultural views are briefly summarized in terms of explanations of refuse behavior.

This dissertation is a counterpoint to current trends in historical archaeology that are largely concerned with the explanation of human behavior. The practitioners of this approach account for human behavior with the elaboration of cultural rules that influenced human actions, often with heavy use of historical documents and
considerably less attention to archaeological materials. I have no quarrel with historical archaeologists involved in the quest for the recovery of meaning and agree that the ultimate responsibility of the archaeologist as anthropologist is to provide a reconstruction of past cultural systems. However, I feel that the contribution unique to archaeologists is the recovery, examination, and interpretation of artifacts. These include both material remains and historical documents, with an emphasis on the former.

Once archaeological deposits are measured and characterized, they are associated with one of 11 households examined for this study. Household size, composition, and relations are reconstructed from systemic (documentary) context and linked with trash-generating behaviors. Ethnicity, owner occupancy, tenancy, and kinship ties are some of the variables examined to evaluate the kinds and degrees of similarities in refuse-disposal behavior over time. Patterns of refuse-generating behavior are then used to develop theoretical and operational definitions (sensu Gibbon 1984) for urban site formation processes.

CONTRIBUTIONS OF THE STUDY

This dissertation offers three major contributions to archaeology. First, this work presents an approach to urban
archaeology that stresses the examination of all deposits and the excavation and recording of the true stratification rather than reconstructions from arbitrary levels and auger coring. My study is a consideration of the "built environment" that includes architecture and the archaeological identification of uses of open space for refuse disposal, provisional discard, gardening, lawn, or weedy areas, and activity areas such as animal pens, children's play areas, clotheslines, or outdoor laundry facilities. This work emphasizes the need for new research questions that inform on past human behaviors through the understanding of cultural discard, reclamation, and disturbance at urban houselots in the nineteenth century.

It is common in urban archaeology to focus on features rather than nonfeature, or matrix, deposits (e.g., Agnew 1983; Beaudry 1984; Edwards et al. 1988; Moran 1976; Moran et al. 1982; Mrozowski 1984; Pinello 1989; Roussel 1984; Worthy 1982). Privies, cellarholes, and backfilled wells attract great interest while general yard makeup is regarded as too mixed or disturbed to merit much attention. This attitude is partly the consequence of the exigencies of contract archaeology where limited resources are the norm and time limitations require that a maximum amount of information be drawn from the earth with minimum investment. The greatest bulk of archaeological remains often do come
from negative features (i.e., downcutting features that cut into horizontal strata [Harris 1989]), but the excavation of features alone will not yield a full range of information about past human behaviors. Deposits are not democratized: they are not created equally, and they do not offer the same kinds and degree of information. We cannot afford to ignore the extensive area of yard deposits in a search for the more pristine, "intact" feature deposits.

Despite the complexity of the archaeological record at urban sites, I propose that deposits that are carefully delineated in time and space can be assigned to individual households. Embedded in my analysis is a ceramic classification that is decoration based (Majewski and O'Brien 1987; Miller 1980, 1991) as well as ware based to gain chronological control over nineteenth-century deposits. With time controlled for, the nature and composition of the deposits can be analyzed for effects of formation processes.

The second contribution is a methodological study of numerous museum archaeological collections within a single, coherent research program. With the enactment of federal legislation protecting archaeological resources, the 1970s and 1980s were a period of active archaeological investigation in many parts of the United States. However, funding has been dramatically cut back, and museums with archaeological programs are increasingly finding themselves
with collections that have been abandoned, or that have seen only preliminary study, or that were excavated long enough ago that they need reworking in the light of new research questions and analytic techniques. This dissertation is a kind of postexcavation salvage to cope with artifact assemblages that languish in basements or storerooms and offers a standard for studying diverse archaeological collections within a single framework.

My research is both materialist and methodological in an effort to develop simple quantitative measures that can be applied at urban sites in any global context, whether these are modern sites in the northeastern United States or Mesopotamian tells from the second millennium B.C. I have developed a set of analytic techniques that have been applied to the study of three sites, excavated by different project directors, under varying conditions, and with separate research objectives. My analytic measures emphasize stratigraphic principles (following Harris 1989), minimum-vessel counts, vessel-to-sherd ratios, and deposit diversity, among others, to establish the temporal-spatial boundaries and characteristics of deposits. Once this first-level analysis has been performed, linkages are drawn between the different deposit types and the human behavior that created them.
The third contribution is an assessment of the notion of economic decline in nineteenth-century Portsmouth, New Hampshire. Several authors (Durel 1984; Dwight 1969; Graffam 1981; Pendery 1980) have stressed the waning importance of Portsmouth as a commercial center. However, little has been offered on the archaeological correlates of decline, or on the material expressions of social stagnation or decay. Discussions of economic decline tend to focus on variables that are available from the historical record, such as population decline through census-record analysis or demographic studies through the interpretation of land deeds and cartographic resources. One aspect of the present study is to consider the impact of fluctuations in the economic system as evidenced through the consumer behavior of households.

Given that Portsmouth, New Hampshire, is so readily accessible in both historical and archaeological terms, I seek to define the notion of decline by asking: what is meant by decline, and how is it reflected archaeologically? Culbert (1977) reviews some of the characteristics of growth and development in Late Classic Maya culture. Population growth rates are exponential, with a large core population concentrated in a regional center. The urban center relinquishes its food-producing activities to specialize in the manufacture of goods and services and becomes
increasingly dependent on the hinterland for the delivery of agricultural products. Regional centers tended to become active in the political control of territory within their economic spheres and to evidence signs of heightened competition with other regional centers.

Decline may be seen as the reverse of some or all of these trends: much slower population growth rates or an outright decline in numbers, a drop in the specialized production of goods and services, and decrease in the effective control or connection to a hinterland. A regional center in severe decline may be usurped and incorporated within the economic sphere of a former rival.

Although Portsmouth did apparently lose some prominence (in terms of control and influence at the state and region levels), we need to rethink the concept of decline and to outline in archaeological terms exactly what it entails. The historical context and archaeological correlates of decline are discussed in greater detail in Chapter 3.

CHAPTER SUMMARIES

This dissertation contains seven chapters. In chapters 1, 2, and 3, I establish the background for the research and summarize research trends in historical archaeology, theoretical frameworks and the operationalization of concepts of site formation processes, and provide a brief

Because the archaeological data for this research derive from historical archaeology, the succeeding section in Chapter 1 traces the history of this discipline in America from the 1960s to the present day. I discuss the current theoretical and methodological orientations and offer an assessment of how site formation theory is included (or excluded) from general reconstructions of the historical past.

Chapter 2 is an overview of site formation process theory that reviews the concept names and operational definitions (sensu Gibbon 1984) as developed by Schiffer. The objective of Chapter 2 is to ascertain which principles of cultural formation processes may be best applied to the study of urban sites in the northeastern United States.

Chapter 3 explores the background of Portsmouth, New Hampshire, in terms of the history of its settlement, and the nature of archaeological investigations in this city. More than the history of settlement, Chapter 3 discusses the
growth of Portsmouth as a pre-industrial city using anthropological and archaeological models of urbanism. The chapter also establishes the cultural context of nineteenth-century Portsmouth by placing it in relation to trade networks, political organization, and the heterogeneity of its social structure.

Chapter 4 is an outline of the methods used to look at three sites in the Strawbery Banke neighborhood to compare and contrast cultural formation processes. Analytic techniques used in characterizing the nature of archaeological deposits are elaborated. Ceramic refitting, determining a minimum number of vessels per deposit, and the measurement of average size and density of artifacts within deposits are some of the analytic procedures used to identify the various formation processes.

Chapter 5 is a review of the use of the household as an analytic unit in anthropological archaeology. Next, I outline the characteristics of three nineteenth-century houselots and their households in an effort to elaborate developmental cycles and the archaeological signatures these may leave. This chapter articulates the advantages of working with historical-period sites, in terms of being able to delineate settlement patterns and household size and composition from documentary evidence such as maps, city directories, and federal census information. Chapter 5
develops hypotheses about the kinds of formation processes one may encounter in urban settings, especially as these relate to architecture and household development cycles.

In Chapter 6 I report on the findings from the analysis of materials and establish how refuse-disposal behaviors can be linked to behavioral units such as households. Building on Schiffer's work on cultural formation processes, I explore the range of depositional strategies pursued by nineteenth-century residents of Portsmouth, New Hampshire.

In Chapter 7 I consider ways in which cultural formation processes intersected with immigrant status and how cultural concepts like germ theory may have influenced trash-disposal behaviors. I also outline the advantages of historical archaeology in having available two independent data bases. Documents can help archaeologists determine clearly bounded analytic units (e.g., households), which can then be associated with observational units recovered from the archaeological record. Once the linkages between analytic and observational units are clarified at historical-period sites, we may be better able to decode such linkages where documentary evidence is either not available, as at prehistoric sites, or less abundant, as is the case for first and second millennium B. C. sites in the Near East.
RESEARCH TRENDS IN HISTORICAL ARCHAEOLOGY

The following section places my research within the context of the study of historical archaeology study in the northeastern United States. Historical archaeologists research the archaeological remains of colonial New England and postcolonial America from the seventeenth to the twentieth century. They operate with two distinct data bases--history and archaeology--to form explanations about the past.

Historical archaeology has been practiced in North America since the eighteenth century, but it was formalized as a discipline only in the 1960s with the initiation of the Society for Historical Archaeology and the publication of its journal, *Historical Archaeology* (Deagan 1982:151-156). Most practitioners of historical archaeology view their discipline as the study of post-1492 contacts between Europe and the New World within the Americas (Deagan 1982:152; Deetz 1977:5; Noël Hume 1969:12; Schuyler 1970:119; South 1977a:1). My own view is that any discipline that employs documents and archaeological remains to explain past behaviors is a form of historical archaeology and is not restricted in time or geographical range. Historical archaeology would then include most Near Eastern archaeology postdating the third millennium B. C., the Maya Lowlands, and postliterate societies of Europe, Africa, and Asia.
Mrozowski (1988:18-19) also suggests that the breadth of historical archaeology should be geographically extensive so as to allow crosscultural studies of such issues as the rise of "world urbanism."

Historical archaeology, as the name suggests, is a discipline that incorporates the interpretation of historical documents and archaeological remains in the reconstruction of the past. Kathleen Deagan (1988:8) notes:

> Historical archaeology is the simultaneous access to documentary and material evidence; the problem has been the integration of these two lines of evidence. There is a tendency to treat documentary and archaeological information as separate and overlapping categories of data, using one source... to reinforce or refute the conclusions arrived at through the other source.

The dual aspect of historical archaeology is a great strength (Schuyler 1978; Spencer-Wood 1987) but is also the root cause of a persistent identity crisis, as researchers struggle to balance the inputs of history and archaeology (Binford 1977; Deagan 1982, 1988; Schuyler 1988:38). Those inclined toward anthropological archaeology (Geismar 1982; South 1977a, 1977b) believe the particularizing aspects of history are not conducive to the testing of archaeological conclusions, while those oriented toward history suggest that quantification and other reductionist methods of "new archaeology" purportedly diminish the humanistic study of the past (Ascher 1974; Noël Hume 1969:13-19).
Increasingly, authors have suggested that historical archaeology is neither one nor the other (Adams 1979; Deagan 1988:7; Spencer-Wood 1987:3-5). Cleland (1988:15) reminds us that the scientific method calls for hypotheses drawn from one data set to be tested by another and offers a perspective on the collaborative use of documents and artifacts. In spite of this apparent rapprochement, a tension remains between the three main groups of historical archaeologists: the particularists, the archaeological scientists, and the cognitive archaeologists. Each of these three divisions and their contributions to the discipline are briefly reviewed below.

**Particularistic Studies**

Particularistic studies within the discipline of historical archaeology have been a necessary and critical component in the identification and classification of artifacts. Beginning with Noël Hume's (1970) landmark contribution, historical archaeology has greatly benefited from the work of scholars who have documented the manufacturing periods and the production methods of various artifacts recovered from the archaeological record. Elaboration of the manufacturing processes of various materials often owes a substantial debt to historical documents that record the dates, places, and methods of
production and distribution.

Particularistic studies, especially of objects, form an important building block of the analytic process, as they allow a community of researchers to reach accord over the identification of archaeological remains. As such, much attention is still devoted to the study of ceramics (Beaudry et al. 1983; Brown 1973; Deetz 1973; Ferguson 1992; James 1988; Majewski and O'Brien 1987; Miller 1980, 1991; Olsen 1978; Worthy 1982), bottle and window glass (Baugher-Perlin 1982; Hill 1982; Jones 1971; Jones and Sullivan 1985; McKearin and Wilson 1978; Miller and Sullivan 1984; Schoen 1990; White 1978), tin cans (Busch 1981; Rock 1984), nails (Fontana 1965; Nelson 1968), and other materials. As interest in later periods increases, we can expect material studies to begin for bakelite, celluloid plastic, milk glass, and other products more commonly available in the late nineteenth and early twentieth centuries.

In addition to materials, particularistic studies can also be said to apply to specific events, times, or groups. Of recent interest in historical archaeology is the archaeological documentation of the historically less visible or disenfranchised social groups, such as African Americans (Otto 1977, 1980), European immigrants (Rothschild 1992), Chinese railroad workers (Wegars 1991), and other members of the working and slave classes (Beaudry 1989;
Olsen 1978). These studies rely heavily on archaeological remains to buttress the relatively small historical record dedicated to these elements of society and include plantation studies that investigate the relationships between planters, overseers, and slaves (Fairbanks 1984; Ferguson 1992; Orser 1984, 1988a, 1988b, 1989; Otto 1977, 1980, 1984). The present study examines, among others, Irish immigrants who came to Portsmouth, New Hampshire, after the great famines of the late 1840s.

**Archaeological Science**

Deagan (1982) defines one avenue of inquiry within historical archaeology as "archaeological science," which may be defined as the elaboration of hypotheses and the use of quantification to generate observable patterns from the archaeological record (Geismar 1982; Otto 1977, 1980, 1984). This avenue of inquiry is akin to the "new archaeology" of the 1960s that incorporated anthropology and statistics within the study of archaeological remains (Binford 1962, 1968a, 1968b; Gibbon 1984; Gould 1978; Hill 1970; Kelley and Hanen 1988; Schuyler 1970).

One specific aspect of Deagan's "archaeological science" is the study of site formation processes, which undertakes the "examination of the archaeological record with the objective of determining the behavior responsible
for producing that record" (Carrillo 1977:74). Mrozowski (1984:32) notes that in historical archaeology, the study of site formation processes has been primarily a study of patterns of refuse disposal (e.g., Deetz 1977; Moran 1976; Moran et al. 1982). South (1977a, 1977b, 1978b; 1988) early saw the need to develop methods to recognize the patterned distribution of artifacts within the archaeological record and, further, to seek explanations for those patterns in the refuse behaviors of the site's occupants. He elaborated several artifact "patterns" (e.g., Brunswick, Carolina, Frontier) that linked ethnicity, the time period, and social status with the distribution of remains. Analysis of the spatial distribution of refuse patterns has been an active area of research in the mid-Atlantic and southeastern states (Carrillo 1977; Garrow 1984; King 1988; King and Miller 1987; Pogue 1988; Tordoff 1979).

Studies of other aspects of Schiffer's (1987) cultural formation processes have been slow to follow, and it is rare to find entire works devoted to accounting for the archaeological record in historical periods. Historical archaeologists have investigated the impact of reuse and recycling on lag times between artifact manufacture and disposal (Busch 1987; Dickens and Bowen 1980; Hill 1982; Worthy 1982), the effects of plowing and other disturbances processes (Riordan 1988), and the archaeological
implications of razing (White and Kardulias 1985).

Beyond the domain of site formation processes, archaeological science has been applied to the resolution of such issues as foodways (Graffam 1984; Price 1985; Singer 1985, 1987), socioeconomic status (Geismar 1982), and ethnicity (Schuyler 1980; Wegars 1991). In a parallel to mainstream archaeology, archaeological science in historical archaeology has been somewhat sidetracked by the influence of postprocessual archaeologists, as is discussed below.

The Recovery of Meaning

In the northeastern United States, the predominant trend within historical archaeology has been the interpretation of archaeological remains as they relate to cultural systems. Following Leone and Potter (1988), this agenda may be called the "recovery of meaning" or "cognitive archaeology" (Deagan 1982) and can be likened to Hodder's (1985) postprocessual archaeology. Researchers emphasize the establishment of the ideology--the "taken-for-granteds" or hidden assumptions--behind the cultural remains. These archaeologists take a heightened interest in culture, meaning, individuals, negotiations, and history. In historical archaeology, the recovery of meaning results in an orientation heavily biased toward the interpretation of historical documents rather than of archaeological remains.
In her 1982 review of historical archaeology, Deagan (1982:168) notes that cognitive studies were in "a very initial stage of development." Since then, however, the recovery of meaning has been an active area of research in North American historical archaeology (Beaudry 1989; Deetz 1988; Harrington 1989; Herman 1984, 1990; Leone 1981, 1984; Leone and Potter 1988; Leone et al. 1987). The recovery of mind and meaning was first championed by Deetz (1977), who, building upon the efforts of Glassie (1975), stressed that material expressions are reflections of an underlying, cognitive structure. Changes in patterns of material expressions can be associated with, and are explained by, changes in the cognitive structure.

Deetz (1973, 1977, 1988) found that the location of refuse clusters could aid in reconstructions of ideas about trash. Deetz contends that underlying attitudes about waste--what it is, how it should be disposed of--affected patterning of remains in archaeological context. For instance, the recovery of "scatter deposits" at early colonial sites in America near doorways and windows has been interpreted by Deetz to be consistent with the medieval practice of throwing garbage from doors and windows. This behavior is said to be part of a worldview that saw little opposition between humans and nature; houses were constructed of raw materials (wood and thatch); dinnerware,
in the form of wooden trenchers, was manufactured from natural materials; and refuse was returned to its natural state.

Deetz believes that about midway through the eighteenth century ideation regarding the role of humans and nature underwent a major change. At this time, people and nature entered into opposition to one another. Houses were built to emphasize this new relationship and stress symmetry and order (which are said to be elements of civilization); food is consumed from ceramic plates and with utensils of silver or pewter; and the essence of trash changes as well. Deetz (1973, 1977) sees new depositional behaviors reflected in the high occurrence of archaeological remains found in trash pits, privies, abandoned cellarholes, or other such cultural features that set themselves apart from nature. Moran (1976) reports the same findings for a Salem, Massachusetts, site occupied during this same time period.

Although Deetz's concepts are intellectually pleasing, problems with his approach still remain. Archaeological correlates of technology, distribution networks, availability of materials in a new setting, and manufacturing innovations in Great Britain are all aspects to be further considered prior to reconstructing the colonial mindset. Although Deetz may be on the right track, I believe many more levels of analysis and interpretation
need to be undertaken before we can satisfactorily answer questions about the recovery of underlying cognitive structures.

Nonetheless, historical archaeology in New England has been greatly influenced by Deetz's ideas. A generation of historical archaeological were trained by Deetz during his tenure at Brown University in the 1970s. In his dissertation on seventeenth-century Charlestown, Massachusetts, Pendery (1987) emphasized culture—the exchange of information through social interaction and symbols—as the main mechanism for distinguishing differences in status. Many of his arguments of relevance derive from historical contexts (probate inventories, town records, contemporary observations, and maps) rather than from the archaeological data.

At the Boott Mills boardinghouse in Lowell, Massachusetts, Beaudry (1987a, 1987b, 1989) examines corporate ideology as it is manifested in the mill boardinghouse system, where the efforts of many were channeled for the profit of a few. Rigid control mechanisms are expressed in the organization of the architecture and yard space of both the boardinghouse (Beaudry and Mrozowski 1987a) and the agent's house (Beaudry and Mrozowski 1987b). Again, most arguments of relevance for the expression of corporate ideology derive from historical analyses of the
industrial revolution (Beaudry 1989). The reconstruction of the lifeways of the millworkers does not seem to greatly benefit from the consideration of archaeological remains.

Cognitive archaeologists raise intriguing and socially relevant issues by urging that historical archaeologists move beyond descriptions of patterns of archaeological distributions to an explanation of human processes. Of all the subfields of archaeology, those with access to historical documentation have a great advantage in being able to develop an ethnographic context from written records. However, the true contribution to archaeology will come with the balanced input of both the historical and archaeological records. For instance, one strength of Beaudry's (1987b, 1989) work, as I see it, is a discussion of the discovery of artifacts—smoking paraphernalia and alcoholic beverage containers—that suggested a kind of worker rebellion against the tight social controls of corporate ideology. As historical archaeologists become more interested in the social processes of the nineteenth century, they will need to resist the appeal of relying too heavily on documents, and give the artifacts their own weighted contribution to the study of the past.

SUMMARY

This chapter has defined the reconstruction of
archaeological deposits at three sites in Portsmouth, New Hampshire as the main goal of this dissertation. The contributions of this study are three-fold: (1) to examine all deposit types; (2) to offer a set of simple analytic techniques that can be applied to any stratigraphically complicated site; and (3) to provide an outline of the archaeological correlates of social decline as these are manifested in Portsmouth, New Hampshire.

Given that my data base is drawn from historical-archaeological resources, Chapter 1 also reviewed some of the major trends of historical archaeology. My work falls within the realm of archaeological science and, to some degree, it may also be considered a particularistic study of Irish immigrants in nineteenth-century New Hampshire. To a lesser degree, after having accounted for the formation of the archaeological record, I offer some tentative statements about the enculturation processes of Irish immigrants in Portsmouth.

Chapter 2 outlines the theoretical framework of this work by stressing the concepts and principles of site formation processes. Where applicable, I indicate the contributions of historical archaeologists to this body of knowledge.
Chapter 2

SITE FORMATION PROCESSES

In the final section of the preceding chapter, I outlined the prevailing trends in historical archaeology, one of which is what Deagan (1982) called archaeological science. This chapter examines site formation theory as it has been developed for different parts of the world (Harris 1979, 1989; Reisner et al. 1924; Schiffer 1987) and ties major concepts to specific urban contexts of the United States. With the exception of South (1977a, 1977b, 1978) and others (Carrillo 1977; Ferguson 1977), historical archaeology has not devoted a great deal of attention to accounting for the archaeological record. Rather, as stated in Chapter 1, explanations of past human behavior in historical archaeology are often drawn from or embedded in historical reconstructions rather than archaeological ones.

The following review articulates the history of the study of site formation processes, examines some of the main concepts and applications, and highlights which of the latter are most important in northeastern American urban contexts. Schiffer's (1972, 1987) works form the foundation of this discussion, with a special emphasis on cultural formation processes. Reconstructing the linkage between archaeological depositional units and the human
behaviors that formed them is a critical step prior to inferring cultural or cognitive systems.

ACCOUNTING FOR THE FORMATION OF THE ARCHAEOLOGICAL DEPOSIT

At first the attempt was made to remove the debris layer by layer; but this was quickly found to be impossible, for as soon as the cultivation stratum had been removed there were no regular horizontal strata. The debris of decay of each period had been considerably disturbed during the construction of the buildings of the next period, in the search for building material and in the effort to place the new foundations on rock. As a result, foundations of all periods rested on the rock, and stood side by side. Amid this apparent confusion, however, the successive deposition and disturbance of strata proved easily traceable, at least over certain areas [Reisner et al. 1924:36].

George A. Reisner was an American archaeologist working in Syro-Palestine in the first quarter of the twentieth century who understood early that the composition of debris layers, or the excavated anthropogenic sediments, was important to the understanding of the history of the archaeological site (Wright 1969:122-131). His work presaged the emphasis of British stratigraphers Wheeler (1954) and Kenyon (1939, 1981) on the recovery and recording of successive deposits laid down in archaeological context. Moreover, Reisner understood that different debris types corresponded to the different human activities that produced them. He outlined six different debris types, four of which are exclusively behavioral in origin—mason's debris,
occupation or floor debris, disturbed mudbrick debris, and dumped debris. The remaining two were the results of geological agents, such as aeolian forces and water (Reisner et al. 1924:34).

Reisner's early insights on the formation of Syro-Palestinian tell sites were lost, as he left to pursue research interests in Egypt. His assistant, Clarence A. Fisher, poorly understood Reisner's emphasis on the reconstruction of debris types, and focused his attention instead on the recovery of architecture and floor levels. Another 30 years were to pass before British archaeologist Kathleen Kenyon practiced Reisner's techniques at a tell site in Palestine in 1939.

Levantine tells are gigantic cultural features, with some standing as high as 40 m and encompassing more than 120 ha. The bulk of the tell matrix consists of cultural materials, the by-product of countless, repetitive human activities of architectural construction, renovation, and demolition; the procurement, use, and dumping of materials required in day-to-day living.

Urban sites of the northeastern United States may be seen as scaled-down versions of the tell phenomenon. They are more recent in time, consist of fewer occupational horizons (having been formed over hundreds rather than thousands of years), and are made up of different raw
materials. Modern New World urban sites are composed of considerably less mass or bulk and are entirely built structures; *tells* stand as high as 40 m while total depths for northeastern American urban sites can range between two and 10 m. Because of the shorter total length of occupation and compressed stratification, the more recent New World sites may also be less complex stratigraphically. Nonetheless, Reisner's insights can be brought to bear on the formation of these sites, in that the study of debris—the sediments, the fill layers, and the materials within the fill—is "indispensable to the understanding of the history of the site" (Reisner et al. 1924:36).

Harris (1979, 1989) outlines some of the contributions of Sir Mortimer Wheeler and Dame Kathleen Kenyon, who specialized in refining the techniques of recording and interpreting site stratification. Both of these archaeologists stressed the importance of stratigraphy as a means of understanding how the site was formed, at least in terms of sequencing phases of past occupational horizons.

Building upon the works of Wheeler (1954) and Kenyon (1939, 1981), Harris further develops the principles of archaeological stratification. He sees three main factors that determine the accumulation of cultural remains: (1) existing land surfaces; (2) forces of nature; and (3) human activities. The last factor is probably the one that
accounts for the greatest portion of the archaeological record, and requires principles of stratification governed by psychological and cultural variables in addition to geological laws. Ultimately, then, sediments at archaeological sites, especially those that have seen intensive land use over long periods of time, will be largely anthropogenic in nature.

In North American archaeology, the study of debris types has taken on the rubric of site formation study, as championed by Michael Schiffer (1972, 1987). Accounting for the formation of the archaeological record incorporates Schiffer's (1988) reconstruction theory, which establishes the linkages between past behaviors and archaeological data, often through the use of ethnoarchaeology and experimental archaeology. One of the main components of reconstruction theory is the active development of principles that explain the formation of the archaeological site in terms of human behavior. In the past two decades, reconstruction theory has become an active area of research (Ammerman 1985; Binford 1978; Crawford 1982; Davidson 1976; Horne 1983; Miksicek 1987; Rathje and Schiffer 1982; Schiffer 1972, 1975, 1976, 1983, 1987; Sullivan 1988, 1989).

Reconstruction theory states that there are basic cultural and environmental forces that are regular and can be described in terms of law-like statements (Schiffer 1972,
Formation process theory developed in response to the unresolved questions of the new archaeology of the 1960s. New archaeologists focused on material-culture dynamics (correlate theory), but discovered that past behavioral systems were not necessarily reflected directly in archaeological assemblages as once proposed (Binford 1962, 1972; Fagan 1985). Rather, "the material traces of the sought-after organizational patterns could be disturbed and new patterns created by diverse processes of humans and nature" (Schiffer 1983:676). Site formation theory, then, was oriented toward the study of the patterns that originated from the transformative disturbances.

In his discussion of reconstruction theory, Schiffer (1988) outlines three domains: correlates, noncultural formation processes, and cultural formation processes. While the domain of greatest interest for my research is that of cultural formation processes, the effects of the other two domains on historical period archaeology cannot be ignored and are briefly reviewed here.

Schiffer's (1988) domain of correlates is also known as the theory of material-culture dynamics. Correlates may be thought of as statements about the linkages between artifacts (materials) and behavioral variables such as procurement, manufacture, or use. In other words, these
statements link objects and people, usually without reference to the formation of the archaeological context. One of the main failures of "new archaeology" was that archaeologists did not go beyond correlates.

Material-culture dynamics can be studied at several levels. For the individual artifact, researchers can study traces of wear patterns on tools to reconstruct their function. Griffiths (1978) examined use wear on historical-period ceramics to correlate uses with ceramic form. At the level of the household, Hill (1970) attempted to associate the manufacture of ceramics with spatial location as it was associated with postmarital residence patterns. At the level of household clusters, Sullivan (1989) determined that the presence of potsherds in architectural debris was linked to the mode of architectural construction. At increasingly complex levels of cultural organization, archaeologists have attempted to correlate changes in grave markings with changes in attitudes toward death (Deetz and Dethlefsen 1965).

The second of Schiffer's (1988) domains is noncultural formation processes, or the set of impacts arising from nature that affect the number, kind, condition, and distribution of cultural materials both in systemic and archaeological context. In systemic context natural forces such as the presence of insects in adobe structures
contribute to decisions about discard and abandonment. In many cases noncultural formation processes operate as postdepositional disturbances and destruction of archaeological materials. Investigators have examined the effects of rainfall impacts on architecture (Agorsah 1985; Bullard 1985; Holl 1987; McIntosh 1974); wind and sandblasting on architecture (Schiffer et al. 1987); faunalturbation (Miksicek 1987); cryoturbation (Wood and Johnson 1978); and catastrophic events like earthquakes (Karcz and Kufri 1978) and forest fires (Wildesen 1985).

The bulk of laws that describe the operation of these processes are borrowed from the "hard" sciences of geology, biology, chemistry, or animal-behavior studies. Principles of noncultural formation processes also arise from experimental archaeology; Carter and Pagliero (1966) tested several methods for conserving mudbrick architecture against water erosion, while Skibo and Schiffer (1987) studied the effects of water abrasion on ceramics.

Intuitively, I believe most noncultural formation processes are subtractive in nature, causing the disintegration of materials and the disturbance of deposits. For example, insect and worm burrowing cause a blurring of interfaces between deposits, resulting in both vertical and horizontal mixture. However, rodent and animal burrows are readily apparent in profile (though they may be missed in
the excavation process), and intrusive materials can be accounted for. Generally, though, large animals—such as groundhogs—are less prevalent in urban settings than in rural ones, but it is not unusual to detect rodents and worms.

In New England, noncultural formation processes that affect the condition of materials in archaeological context include freeze-thaw cycles, acidic soil conditions, and high water-table levels. These cause vertical displacement of artifacts (freeze-thaw cycles), corrosion of metals, and the differential preservation of materials. High moisture levels at Portsmouth, New Hampshire, are particularly destructive for iron artifacts. The local topography is varied enough that erosion is sometimes a factor in the horizontal and vertical movement of deposits.

New England wood-frame architecture is affected by the elements in both systemic and archaeological contexts. Insect infestations by termites and carpenter ants undermine wooden joists and sills and cause the instability of residential structures. This noncultural formation process, if left unchecked, can result in the abandonment or razing of the vermin-infested structure.

Wood-frame houses are also susceptible to the effects of wind, rain, and snow. Maintenance processes—applying paint, replacing broken window panes, replacing rusted nails
or weather-beaten clapboards—and razing processes (e.g., White and Kardulas 1985) account for a substantial portion of the archaeological record in the form of architectural debris. Insects, weathering, water, and freeze-thaw cycles continue to work on architectural materials once they enter archaeological context, causing further degradation, and in some cases, complete disintegration.

The Puddle Dock neighborhood that is the focus of my research was the subject of a curious intersection of natural and cultural formation processes. The neighborhood was founded in the late seventeenth century along the broad portion of a tidal inlet. Settlement along waterways was not uncommon in the early colonial period, as waterways provided access to trade routes, potable water, and defensibility prior to the construction of overland highways. Indeed, Puddle Dock saw tremendous trade activity as low-drawing boats called gundalows engaged in commerce along the waterfront.

Over the years of the nineteenth century, however, the Puddle Dock became increasingly infilled, due to a combination of silting and other natural and cultural causes. The city of Portsmouth, New Hampshire, finally elected to complete the filling operation of the low-water area by turning it into a municipal dump. This major cultural transformation of the marsh essentially raised the
water-table level, by displacing the water within Puddle Dock, which, in turn, affected the differential preservation of archaeological materials.

CULTURAL FORMATION PROCESSES

The focus of the dissertation is Schiffer's (1988) third domain--cultural formation processes--that aspect of archaeological theory that provides the linkage between archaeological deposits and human behaviors. As used here, cultural formation processes are defined as the human behaviors related to the creation of the archaeological site. Schiffer (1976, 1983, 1987) outlines four general families of processes: reuse, deposition, reclamation, and disturbance. Each of these basic sets of processes may be further broken down into subsets or varieties. Schiffer has done much to provide the theoretical definitions of concepts, and, in some cases, supplied operational definitions and linkages as well.

Schiffer (1987) elaborates and summarizes the formal, spatial, frequency, and relational dimensions of formation processes, and includes abundant references to case studies. The following section, however, focuses primarily on cultural formation processes that have been noted in North American historical-period archaeology from the contact period (sixteenth and seventeenth centuries) to the present.
This long-range temporal view should allow for the consideration of various patterns and changes in human behavior relating to reuse, cultural deposition, reclamation, and disturbance. Each of the four families are reviewed in turn below.

In addition, cultural formation processes that relate to overarching social formations, such as economic systems, trade networks, technological innovations, and political structures are examined. These are considered in terms of impacts on the procurement or availability of material goods in nineteenth-century Portsmouth, New Hampshire.

**Reuse**

Reuse processes are those behaviors that operate prior to the transformation to archaeological context and involve the change of objects in either the user, use, or form (Schiffer 1987:28). Schiffer (1976:29) also describes reuse as S-S processes; that is to say, the processes operate exclusively in systemic context and can affect the formal, spatial, frequency, and relational variability of objects before they enter archaeological context. Varieties of reuse include lateral cycling (change in user), secondary use (change in use), recycling (change in form), and conservatory processes (change in use for the purpose of permanent preservation).
Issues concerning reuse become significant when the reconstruction of chain of ownership or use life of artifacts is attempted. Reuse behaviors serve the purpose of retaining items in circulation longer, creating a lag time between manufacture and use and the deposition of the material as refuse. When one confronts such lags in the archaeological record, it may be important to consider the effects of reuse in the retention of materials in systemic context. Establishing chronological control of archaeological deposits can be problematic when the mechanisms of reuse are not identified.

Lateral Cycling

Lateral cycling involves a change in the user of an object, whether this refers to a pot, a piece of clothing, or the inheritance of a piece of property. Some general principles of lateral cycling may be outlined at the level of the individual, the household, and the community.

At the individual level, various life stages are associated with different complexes of material culture (Schiffer 1987:41). When a life stage is completed for any one individual, the lot of materials associated with this age can become available to other individuals when they reach the life stage. A mother's collection of wedding ceramics or silver may be passed to a daughter when she comes of marital age.
At the household level, reuse processes also operate in decisions to maintain materials rather than to dispose of them. Busch (1987) found that before bottles were cheaply produced by machine in the early twentieth century, they were a scarce commodity and were frequently reused as storage containers. Bottles were owned by the bottlers who reused them to continue their trade and business. However, within households, women often laterally cycled bottles for their use in preserving foods. This reuse was such a problem, that bottlers banded together in trade associations to fight bottle loss. In 1901 the Pennsylvania Bottlers' Protective Association recovered from household cellars more than a million bottles filled with home preserves (Busch 1987:71). Women whose cellars were raided and found to contain illegally acquired bottles were rarely prosecuted, but the bottles were confiscated.

Hill (1982) also notes a high degree of lag time between manufacture and deposition and infers lateral cycling as at least one explanation for this phenomenon. These reuse processes result in a prolonged use life of objects, in that choices are made to maintain materials within systemic context rather than to discard them.

At the level of the community, such factors as population size, social mobility, and the degree of social differentiation and inequality (Schiffer 1987:38) affect the
types of reuse mechanisms operating within a social system. Where there is a great discrepancy between social classes, the general direction of reuse can be said to be one of downgrading, as in the "trickling down" of goods from upper classes to lower classes. Schiffer (1987:38-39) describes this as downward flow, where the poorer strata of society become beneficiaries of material goods from the upper strata. Baker (1978, 1980) describes this phenomenon of lateral cycling at Black Lucy's Garden in Andover, Massachusetts. Materials were recognized as "out-of-date" and deposited later than expected, having been laterally cycled to a different owner.

Distinguishing lateral cycling from other availability processes (such as gleaning or scavenging) is often a difficult one. Otto (1977, 1984) challenged whether lateral cycling of ceramics from masters' households to slave quarters in eighteenth- and nineteenth-century Georgia was responsible for the distribution of ceramics recovered from slaves' quarters. He posited that other factors could be responsible for the availability of ceramics to slave households, including the provision by slaveowners of materials to their slaves (i.e., the outright purchase of ceramics specifically intended for use in slaves' kitchens) or the purchase by slaves of household items.

In keeping with the trend of African-American
archaeology to accord more power to slave populations, Adams and Boling (1989:84) believe that blacks had access to the market and selected their own ceramics. In any case, the effects of lateral cycling, as well as gleaning and other reclamation processes, will often produce an artifact distribution that shows some lag time between the date of manufacture and date of deposition, given the later period of use for the discarding household. These "lag processes" are likely to have operated in Portsmouth, a highly differentiated and segregated urban society as early as the mid-eighteenth century (Pendery 1980).

In nineteenth-century New England the intergenerational transfer of property is a critical form of lateral cycling. The New England kinship structure is reckoned bilaterally but is dominated by patrilineal descent. The predominant inheritance system assured that property--specifically real estate--remained in male control. On the other hand, personal property was inherited by both sons and daughters. Daughters commonly received from their natal household domestic or perishable goods such as ceramics, glass, furniture, and silver or livestock, hay, and grain. These inheritances would then become part of the household of their husband's descent group upon marriage (Ward 1987). The lateral cycling of such materials creates female "lineages" of portable goods that move from one piece of
real estate to another. The potential hazards for archaeological inference building or interpretation about social status have been succinctly summarized by Pinello (1989:26):

> The archaeological implications of inheritance patterns where women control the movable objects and men the real estate are powerful. The majority of historical archaeological artifacts are movable objects. The ceramic, glass, and small finds that have been dumped into privies, foundations, and wells were not only used primarily by women, but were also considered the property of women.

In the concluding chapter, I will comment further on this aspect of lateral cycling.

**Recycling**

Recycling in archaeological terms refers to a change in an object's form, so that it may continue in use. A modern example of this concept is the transformation of newspaper into other kinds of paper products. Among other places, the effects of recycling practices have been noted in the Near East; Horne's (1983) ethnoarchaeological studies in Iran detected recycling of a variety of materials, such as clothing for rags and straps and modified stone tools. Instances of recycling in historical archaeology have not been adequately described at this time, although it almost certainly did occur in nineteenth-century Portsmouth. One possible example is the reuse of metal barrel hoops as a replacement for metal strapping, or the recycling of broken
tool handles as stakes. In the 1970s glass-cutting kits became popular; households could transform bottles into drinking glasses, thereby recycling what would have otherwise entered the waste stream.

Secondary Use

Change in an object's function constitutes secondary use (Schiffer 1976:29, 1987:28). This is similar to recycling, except there is no little or no modification in the object's form. At Tel Migne in Israel Gitin (1987) demonstrated that Iron Age olive-pressing stones were reused as construction material in the building of mudbrick houses. One archaeological example of secondary use in New England comes from the Deer Street sites in Portsmouth. Several of the features uncovered by excavators consisted of buried barrels, reused as trash receptacles (Agnew 1985a).

Conservatory Processes

A change in the use of an object for the purpose of permanent preservation is defined by Schiffer (1976, 1987) as conservation. In his analysis of probate inventories for the Plymouth, Massachusetts area, Brown (1973) noted a phenomenon of curating older--and sometimes broken or repaired--ceramics; these were often recorded as located in hallways or areas where they were displayed as status items.

Archaeological examples of this conservatory practice were recovered at the Deer Street sites in Portsmouth, New
Hampshire (Agnew 1989:29, 55; Edwards et al. 1988:37) when curated family heirlooms were retrieved from privies and cellarholes. These had been preserved intergenerationally but were ultimately discarded with the rest of the household ceramics when significance was no longer attached to them, presumably when the houselot was sold out of the family.

**Cultural Deposition**

Cultural deposition can be defined as the transformation of materials from systemic context to archaeological context (Schiffer 1987:47), or the S-A processes (Schiffer 1976:28). As items in use become broken, depleted, or used up, they become "trash" and are discarded. For the archaeologist, the study of cultural deposition is of utmost importance, as these processes are most responsible for the deliberate introduction of materials into the archaeological record, and for that reason, greatest attention is paid to this realm of formation processes. Varieties of cultural deposition include processes of discard, loss, cache behavior, burial of the dead, and abandonment; each of these is discussed below.

**Discard**

Any living community is constantly in the process of discarding items that are no longer considered usable.
These materials are known as debris, garbage, trash, debitage, junk, or waste and are deliberately disposed of. Although these materials, when recovered by the archaeologist, are not a direct reflection of the past lifeways of people, they could be a reflection of disposal activities. Patterns in discard processes are governed by principles that are beginning to be investigated in ethnoarchaeological studies (Binford 1978; Deal 1985; Hayden and Cannon 1983; Hitchcock 1987; Wilk and Schiffer 1979) and waste stream analyses (Wilson 1991).

Discard processes are affected by many factors, including artifact size, use life, the temporal and physical distance between an artifact's use and its disposal, and cultural attitudes that define the toxicity or reuse potentials of materials. Discard processes may be said to pick up where reuse processes leave off in the general life cycle of objects, in that an item is often discarded when there is no further potential for reuse. In contexts of secondary-refuse features, recovered artifacts are normally found broken, and it is assumed that they were deposited in that condition. Of course, some breakage can occur during the discard event itself.

For the purposes of this discussion I will follow Schiffer's use of the terms "primary refuse," "secondary refuse," and "de facto refuse." Primary refuse is trash
that is discarded at the locus of use. For instance, Binford (1978) recorded the disposition of craft waste and bone chip dispersal at the Mask site in Alaska; hunters tended to drop these materials at the locus of use, creating regular patterns of discarded primary refuse that coincided with the hunters' seating plan. Primary refuse is found in those cases when its on-site disposal will not interfere with further activities. This can occur when the trash is so small so as to be unobtrusive, or when settlements are characterized as transitory and groups literally move away from their own trash. This latter characteristic of primary refuse disposal is still visible in our own culture at camp and picnic sites.

Secondary refuse, on the other hand, is waste that is discarded at a locus other than the place of its use. In most sedentary communities, where space is rigidly defined or restricted to particular uses, there is a tendency to dispose of refuse in out-of-the-way places. In the interpretation of remains, a disjuncture between the dump site and use site must be considered, as the archaeological findspot may have little to do with the use of the remains or any activity other than that of disposal. Secondary refuse is most often associated with objects that are broken or thought to be in no way reusable by the discarer.

The third class of trash is "de facto refuse," or that
which is left behind when a settlement is abandoned. Speed of abandonment, degree of planning, and distance to the next settlement are variables that affect the kinds and distribution of de facto refuse. More is said about how these variables interact in the section below on abandonment processes.

The size of the object can determine its locus of discard. In areas that are well maintained, artifacts smaller than five centimeters in diameter are often overlooked in cleaning processes and are recovered by archaeologists as primary refuse (McKellar 1983). This kind of primary refuse is often used to infer the function of activity areas. Miksicek (1987) for example, describes how charred saguaro seeds from a pit can be considered evidence for the seasonal preparation of saguaro fruit. At Tell Migne in Israel, Rosen (1989) examined sediments from archaeological contexts that were assessed in the field as floor surfaces; analysis of the archaeological materials helped to evaluate the validity of the identification. In historical archaeology, small-sized objects that fall between the cracks of floorboards are a form of primary refuse that aid in the interpretation of the use of the rooms (South 1977a; Tordoff 1979; Wheeler 1985).

On the other hand, archaeological materials of larger size are generally considered to be the products of either
secondary refuse or de facto refuse. Schiffer hypothesizes that artifacts tending toward completeness will often be refuse left behind during abandonment (i.e., de facto trash); these materials can often be whole vessels or serviceable items. Artifacts that are large in size but that do not constitute complete vessels are more likely to be secondary refuse—those materials which have been broken and thrown away in a nonuse locus.

An additional category of refuse is what I will call tertiary refuse (see Henrickson [1984] for additional discussions of this concept). Tertiary refuse can be defined as secondary refuse that has been moved or transformed from its locus of discard. In urban contexts and other sites that have been long periods of settlement, it is not uncommon for archaeological deposits to have been disturbed or redeposited. Tertiary refuse refers to trash that is one step removed from the disposal activity.

One characteristic of tertiary refuse is the diminished size of the artifacts, owing to fragmentation from trampling, plowing, shoveling, or other disturbance-related behaviors; evidence of increased edge attrition is another. Size is one variable used in my analysis to determine the kind of refuse behavior involved in the formation of the archaeological deposit. A larger size of ceramics is hypothesized to be an indicator of the intactness of
secondary-refuse aggregates, while fragmentary sherds are thought to be evidence of tertiary, or transformed, refuse deposits.

Still another kind of refuse that deserves mention is what Deal (1985) calls "provisional discard." These are materials that are deposited close to their locus of use, stored for possible reuse or until such time as enough trash is amassed to warrant a major trash-disposal episode. Deal found that broken ceramics were leaned up against the side of houses or left in other discrete areas of trash collection; reuse and reclamation behaviors took advantage of the proximity of the trash, but when enough trash had been collected, the waste was removed to a more formalized dump area. In historical-archaeological contexts, Mrozowski (1984) notes that the sale of properties is often a time for departing households to clean up provisional discard.

The physical distance from the locus of use and locus of discard is another variable governing disposal behaviors. In general, one might suspect that human energy output will be minimized in carrying refuse to a trash dump, and one way to efficiently utilize energy in trash-discarding behaviors is to keep the distance between locus of use and locus of discard short. In Suberde, Turkey, Daly (1969) and Perkins and Daly (1968), noted that butchered remains of large animals were selected for meat-bearing parts, and these were
carried back to the living camp while non-meat-bearing parts were left behind at butchering sites as primary refuse. In other words, there was a high-energy investment in schlepping materials of value a long distance, while low-value materials (i.e., "trash") were not transported at all.

Schiffer (1987:69-70) describes this minimization of effort to discard trash as the "schlepp effect." The term derives from the German word to carry. On a day-to-day basis, disposal activities occur within short distances of activities; i.e., trash is "schlepped" a short distance to provisional discard dumps or to other more formalized areas of discard. On the rarer occasions of large-scale cleanings, longer "schlepps" may be undertaken to transport trash to more distant dumps. Deposit location, in reference to doorways, windows, activity areas, is another variable in defining the type of refuse context. Generally, if artifacts are discovered near the house or other discernible activity area, these may correspond to secondary or provisional discard episodes.

The size of debris intersects with the "schlepp effect," in that the larger the item, generally the shorter the "schlepp" (e.g., Daly 1969; Perkins and Daly 1968). In the analysis that follows, artifact size is correlated with the location of refuse-collection areas to help identify the kind of refuse-disposal activities. However, in trying to
reconstruct the discard behavior, the archaeologist must be aware that the size of artifacts does not have a one-to-one correlation with location; in other words, the smallest artifacts are not necessarily associated with the closest trash dumps. As stated above, fragmentary and small remains tend to be tertiary refuse, while larger sherds are the result of secondary refuse-disposal behaviors. We need a model of behavior that incorporates the notion of the "schlepp effect"—i.e., the choice of humans not to travel far with their trash—and the general preference to carry smaller loads. The size of the trash load should be not confused with the size of the materials within the discard load.

The perception of a material's potential hazard will also have a bearing on how, or how far away, it will be disposed of (Hayden and Cannon 1983). In some historical-period situations, it appears that glass bottles were not discarded in scatter deposits adjacent to activity areas, owing to the danger broken glass presents. Rather, glass bottles were placed in a segregated trash heap, located at some distance from the main arena of activity areas; for instance, along stone walls or fencelines, or in a trash pit on the far side of the barn.

The removal of potentially dangerous trash to out-of-the-way refuse areas is common at rural housesites, but in
urban contexts, because of the constricted space, hazardous waste may be discarded near high-traffic zones. Bottle and window glass are common constituents in nineteenth-century archaeological deposits. These sherds are often small and show evidence of transformation through scuffing and trampling. These materials are likely to be tertiary refuse or contents from transformed secondary deposits. The question then becomes, exactly how and where were glass items disposed of until such time that their perceived danger had passed? Where there special locations for such dangerous materials?

In colonial and nineteenth-century New England, the disposal of human wastes took place in "privies," more commonly known as outhouses. These vertical wooden features are erected over deep pits to offer privacy and protection from the elements. Privies are often recovered archaeologically as brick- or wood-lined pits, filled with nightsoil and domestic debris such as glass, ceramics, and personal items. It is not uncommon to discover remnants of the wooden superstructure that have fallen--or have been pushed--into the pit.

In systemic context, the use life of privies can be extended by cleaning them out and carting off the human wastes for disposal elsewhere. "Honey wagons" were appropriated for this task; Bell (1987) discovered from the
reading of Public Health files in Lowell, Massachusetts, that farmers from outlying towns came into the city to remove the contents of privies and use the nightsoil on their fields. Roberts and Barrett (1984) note that a similar scenario prevailed in Philadelphia, and it is also likely rural-based "nightmen" cleaned privies in Portsmouth, New Hampshire, carrying nightsoil out into neighboring towns for use as fertilizer. It is possible that in some local cases, human wastes were used as compost on city gardens.

In addition to toilets, privies served as multipurpose trash-disposal units, collecting ceramics, bottle glass, faunal materials, and probably food scraps. It is not known how much household refuse was discarded in privies, but given that archaeological remains can be retrieved from virtually any part of a houselot, it is certain that not all trash was dumped into privies. When cleaning of privies is contemplated, the archaeologist must reconstruct the tertiary deposition of this household waste. Roberts and Barrett (1984) caution that the artifacts associated with the redeposited fill have to be interpreted in terms of their transfer from an urban context to a rural one. Where residents cleaned out their own privies and used the nightsoil on their gardens, archaeologists need to consider the effects of this transformation. Such tertiary refuse should show some evidence of redeposition, such as smaller
size and increased edge attrition.

Privies are commonly found with high concentrations of artifacts that have been variously interpreted as single-episode mass depositions (Agnew 1989; Edwards et al. 1988; Graffam 1981) or the slow accumulation of household trash over time. Understanding the formation processes of privies requires knowing the rate of infilling. Pinello (1989) found that archaeobotany and palynology were useful analytical tools in determining the rate of deposition for such features; discerning the rates of filling, whether rapid or slow, can help to further pinpoint the nature of behaviors involved in the creation of the privy features. More is said about the use of these features in Chapter 6.

Loss

Loss processes, or the unintentional deposition of materials, are recovered on a small scale at urban sites. Schiffer (1987) views loss principles as relating to size and value of an object. Put simply, small objects are more easily lost than large objects, and it is more likely that items of little value will be lost than those objects that carry high value. Personal item like combs and buttons serve as a good example of the intersection of the variables of size and value; small and readily replaced, these materials commonly appear in the archaeological record as lost items. At the Portsmouth sites, other such low-cost
items that appear to have been introduced into archaeological context through loss processes include fountain pens, slate pencils, common pins, and marbles.

The retrieval cost—or the effort required to recover a lost item—will affect the kind and distribution of lost items. In some cases, even the most valued objects may not be worth retrieving. This can be especially true of items dropped in privies. A silver Spanish coin recovered from a Deer Street privy (Follansbee et al. 1983) may be one example where retrieval costs were too high, while a pocket watch found in an 1890s privy in Tucson, Arizona (Jonathan Mabry, personal communication 1991) is another.

**Human Burials**

Burial of the dead is another form of cultural deposition, in that remains from systemic context are placed with deliberate intent into archaeological context. Processes of burial in urban Portsmouth, New Hampshire, will be treated only briefly, in that the archaeological recovery of Euroamerican burials is not common here. Neither is it usual to encounter Native American remains in Portsmouth, as it appears that the first intensive land use of the city area came with the arrival of Europeans.

Graveyards are numerous in Portsmouth and often correspond with neighborhoods. The first burial yard was "Point of Graves," located at the site of the first meeting
house on Marcy Street, near the heart of the early settlement. A second early- to mid-eighteenth century cemetery is located just south of Strawberry Banke, on South Street. A cemetery was also located at the western edge of the Deer Street neighborhood.

By way of contrast with urban settings, burial practices in the town of York, Maine, are briefly considered. The earliest burial yard in York was located in the town center on glebe, or church, land and was available to all town residents. The "Old Burial Yard" is similar to Portsmouth's "Point of Graves." In the eighteenth century, a larger area for burial was appropriated behind the Congregational Church, directly across the street from the earliest cemetery. Later, however, families often set aside portions of their land on which to bury their kin. In the nineteenth century, it was quite common to view granite pillars and iron railings demarcating the family cemetery (Wheeler 1990a). Sometimes these were placed discreetly in a back corner of the houselot, while other families erected large visible monuments on the street side of their lots. The Old York Historical Society has recorded 83 such family plots. In Portsmouth, however, the preferred burial practice was the disposal of the dead in church or municipal graves.

Although this is the case for most Portsmouth
inhabitants, it behooves the archaeologist to be aware of possible burial pits. Blakely and Beck (1982) describe some of the characteristics of burial pits in urban contexts, and Wheeler (1990a) discovered that the outlines of family graves can be quite distinct, even in portions of yards that have seen prior use for scatter deposits and transformed secondary refuse.

Abandonment

The final group of processes within the family of cultural deposition is that of abandonment. Abandonment takes place at several levels; we can talk about abandoned artifacts (household assemblages, structures), or we can refer to entire settlements being abandoned. When a group (e.g., household) leaves a site behind, a number of factors will impact the cultural materials abandoned by the departing group. The abandoned or de facto refuse will be affected by how much material there is to transport, how far it will have to be transported, and by what means. Death is another occasion that often warrants the abandonment of materials. Depending upon cultural beliefs about death, materials can be cycled laterally to another owner, buried with the deceased, thrown away as undesired, or simply left behind. Kent (1984) discovered that the latter was not uncommon among the Navaho, given their beliefs about the contamination of the deceased's effects.
Stevenson (1982) examined the relation between the rate of abandonment (rapid, unplanned, as opposed to slow, planned) and the kinds of de facto refuse left behind. In cases of rapid abandonment, more materials were left, and several construction projects were found in a state of partial completion. A high quantity of de facto refuse, then, is a possible indication of a rapid, largely unplanned site abandonment. Conversely, in cases of slow, planned site abandonment, more materials are incorporated into the move to the next site, leaving less behind.

Other factors include the size of the artifacts, the distance to the next settlement, the mode of transport to the next settlement, and the anticipated length of stay away from the abandoned site (Nissen 1968; Schiffer 1987; Wilk and Schiffer 1979). Linkages between object size, distance to the next settlement, and an anticipated return show that where there is a lengthy distance to the next settlement, there is a tendency for the larger objects to be abandoned as de facto refuse, especially in cases of an anticipated short length of time away from the abandoned site.

The archaeological detection of abandonment at the site level is inferred from architectural structures where occupation seems to be leave off abruptly. In Portsmouth, several Deer Street privies were found filled with what appear to be an entire household's glass and ceramics (Agnew
1989; Roussel 1984). These authors hypothesize that these features were backfilled at the abandonment of the housesite. More specifically, they see this as a phenomenon that commonly occurs when there is a rupture in the female lineage, as at the death of a surviving daughter, or when the inheriting son marries a woman from another "lineage." If modern parallels are any indication, the incoming family may be responsible for clearing away the de facto garbage of the previous tenants as a signature act of claiming the property as their own.

At the neighborhood level, abandonment occurs in modern settings with urban-renewal projects. Here, entire blocks of houses are abandoned at once to allow for new development. In the Deer Street cases, the sites were abandoned, bulldozed, and left to sit as a parking lot for a dozen years or more until new construction took place. The Deer Street projects sampled a portion of the long occupation range of several sites.

Abandonment of entire blocks or neighborhoods in the face of urban renewal may not be an exclusively modern site formation process. Documents for Cairo's thirteenth-century Gheniza describe ramshackle sections of town that may have been slums or partially abandoned areas of the city (Goitein 1969). At large Near Eastern sites, localized examples of abandonment may be explained as neighborhood abandonment.
Most of the sites analyzed for this dissertation have been continuously occupied from the early eighteenth century to about 1960. At the Follett site, there is the possibility that the house was left unoccupied for an unspecified amount of time. If the housesite itself has not been abandoned, certainly cases arise of abandoned outbuildings such as warehouses, barns, or privies. Once structures are abandoned, they are often torn down to make room for new architecture or for open space.

The abandonment of nonarchitectural features can be followed by reclamation processes. Pits are often reclaimed and used for secondary-refuse deposition. For instance, the clay borrow pit or "sunpan" used by the Marshall potter was reclaimed as a trash pit (Pendery and Chase 1977). Dickens (1985) and Ward (1985) also found that storage pits were often reused as refuse-collection pits. Archaeologists commonly refer to this class of features as "garbage pits," but they should properly be called trash-filled pits. These reclaimed features are discussed further in Chapter 6.

Because a majority of the residential architectural structures are built of wood over cellarholes, de facto refuse at urban sites will normally be "primary de facto" refuse (sensu South 1977b), related to activity areas other than floor surfaces. That is to say, occupation surfaces within architectural units are highly susceptible to wood
rot and can completely disappear. In the Portsmouth cases of abandonment, house floors may not be recovered in archaeological context, except as rubble that has collapsed into the cellarhole, similar to ceiling and wall fall in adobe and mudbrick architecture.

On the other hand, exterior ground surfaces associated with different occupation levels are found archaeologically. Materials within these occupation zones can be searched for primary de facto refuse as Rosen (1989) did for packed earth floors at the Israeli tell site of Migne. Primary de facto refuse is likely the best source of evidence for the reconstruction of behaviors associated with activity areas, although analysis may have to proceed at something less than a macroscopic level.

Reclamation

The third family of cultural formation processes is reclamation, or the set of behaviors that return to systemic context materials recovered from archaeological context, i.e., Schiffer's (1976) A-S processes. Reclamation results in at least the partial depletion of the total archaeological inventory and is often associated with site disturbance. If reclaimed items are returned to archaeological context in a second episode of deposition, old materials can come to be mixed with more recent ones.
Horne (1983) observed the consequences of reclamation when Iranian villagers salvaged ancient stone tools to use as doorstops in modern homes. Failure to appreciate reclamation as a process contributing to the formation of the archaeological site means overlooking a potential—and recognizable—source of bias.

Schiffer (1987:99-120) distinguishes among several kinds of reclamation processes. Different concept names enumerate the various kinds of processes, distinguishing between groups who deposit materials and those who reclaim them. For instance, reclamation of resources by the same group that abandoned them is called reincorporation; if abandoned items are reclaimed by groups other than the one which left them, Schiffer refers to the process as salvage. The distinction is important, because Stevenson's (1982) work suggests that the potential for reincorporation enters into decisions of slow, planned abandonment. Perhaps the most common form of reclamation is scavenging, or "the exploitation of previously deposited artifacts in a settlement by that settlement's inhabitants" (Schiffer 1987:106).

In gross terms, the northeastern United States has been occupied by two main groups, indigenous Native Americans and European immigrants. Archaeologists tend to view these two populations in monolithic terms and divide their work
accordingly into prehistoric and historical research. For nonaboriginal sites after 1492, it might be fair to view colonial and post-Revolutionary War America as Euroamerican, with but slight ethnic differences between groups.

However, the analysis of historical documents allows for fine distinctions among Anglo-Europeans and free African-Americans along the lines of ethnicity or socioeconomic class. When the resident population is thus seen as multivariate in composition, archaeologists may be able to distinguish between reincorporation, salvage, and scavenging. If distinctions of socioeconomic class and ethnicity can be articulated from the archaeological record, we have a case where historical archaeology can operationalize concepts. Nineteenth-century Portsmouth was socially heterogeneous, with classes ranging from merchants and shopowners to newly arrived immigrants.

Schiffer (1987) elaborates other types of scavenging behavior. Where there is reclamation of materials from secondary refuse aggregates, it is known as "gleaning" and is exemplified by dump-picking activities at local landfills (Schiffer 1987:107). Gleaning might be said to be associated with members of the lower class who collect materials rejected by other socioeconomic levels, and is similar to lateral cycling. The one difference is that materials actually enter archaeological context, for however
short a period. Distinguishing between the two—gleaning and lateral cycling—can be difficult, but both processes ultimately result in a lag time between manufacture dates of objects and the time of final cultural deposition.

For Portsmouth in the first half of the nineteenth century, it is not altogether clear if large-scale secondary refuse aggregates, (i.e., city dumps) existed. We do have evidence of municipal dumping in the Puddle Dock waterway in the waning years of the century (Ingersoll 1971), and it is possible dump-picking took place here. In the 1920s to 1950s, the southern portion of the Puddle Dock neighborhood in Portsmouth was taken up with junkyard businesses. Photographs of this period show junked automobiles, which could be cannibalized for parts. Many of these junkyards were built over the filled Puddle Dock area, and this may be a formalization of an earlier form of salvage in this part of the neighborhood.

**Disturbance Processes**

The final family of cultural formation processes consists of disturbances that impact upon the archaeological record, and these disturbances are sometimes characterized as A-A processes (Schiffer 1976:29). Schiffer (1987:121) defines disturbance as a combination of cultural and noncultural formation processes that resembles reclamation
where artifacts remain in archaeological context. Disturbances can arise from such activities as the construction of a house, the excavation of a pit, or landscaping activities.

Differences in disturbance processes can be established by degree. Some disturbances mainly affect the surface while others are major earth-moving episodes. Each of these is discussed below.

**Surficial Disturbances**

Disturbance processes that affect only the surfaces of archaeological deposits include gardening, plowing, and trampling. These are considered less destructive than earth-moving processes, although the concept of "surface" has not been adequately developed in the literature. In plow zones as much as 30 cm may be churned by plow blades; at rural sites, this could constitute disturbance of the entire stratigraphic sequence.

At the three Portsmouth sites, the average depth of cultural deposition ranged from 60 cm to 2.5 m. Although plowing is a less common occurrence in cities (given the problems of turning plow teams or tractors on the small landholdings), gardening will produce the same effect. Turning over soil to the depth of a shovel blade can still result in the disturbance of as much as 30 cm. Maps for nineteenth-century Portsmouth indicate that houselots did
include garden areas, although the exact location and nature of these activity areas have been poorly documented. Analysis of archaeological materials may offer insights into this disturbance process.

Investigators have begun research into the nonrandomness of surficial disturbance processes chiefly through experimental archaeology (Ammerman 1985; Nielsen 1991). Ammerman (1985) discovered that the total range of horizontal and vertical movement of artifacts in plow zones fell within predictable measures. His experiment encouraged some in historical archaeology to examine plow-zone contexts more closely (Riordan 1988).

Archaeologists have long intuited that trampling—both human and animal—affects size and edge wear. Nielsen's (1991) experiment confirmed these intuitions but also provided quantitative measures that could correspond to disturbances from trampling. His results are applied below to deposits in Portsmouth, New Hampshire, to help reconstruct pathways to and from various activity areas.

Animals raised at urban houselots, such as chickens, pigs, goats, or bovines can create surficial disturbances. All three sites considered here had outbuildings that probably functioned as barns, and it is possible households derived some of their sustenance from animals kept in these outbuildings. The range of faunal materials is examined
with attention to the size and completeness of specimens. In other words, large animals, such as cattle and horse, who are represented by all body parts including head, neck, ribs, hindquarters, and feet, were probably not schlepped whole to the site (Perkins and Daly 1968), and were either raised and butchered on site, or led away from the marketplace to be butchered at the living site. Attempts were made to associate disturbed areas with the maintenance of such animals, especially when these tertiary deposits were located near the presumed barns or stables.

Earth-Moving Processes

These disturbance processes can be considered as large-scale movement of earth, such that would take place with burials (Blakely and Beck 1982; Wheeler 1990b), the excavation of pits (Dickens 1985; Pendery and Chase 1977; Ward 1985), and architectural modification (Hubka 1984; White and Kardulias 1985). Each of these processes encompasses massive and often deep movements of earth. Reisner's quote at the beginning of the chapter summarizes the effects of such disturbances at urban tell sites in the Near East (Reisner et al. 1924:36). The construction of architecture within a circumscribed urban landscape can have dramatic effects on underlying deposits. Some of these impacts have been explored by Agorsah (1985), Holl (1987), and McIntosh (1977) for Africa; Horne (1980), Henrikson
(1984), and Redman (1983) for Mesopotamia; and Ferguson and Mills (1987) for the New World. In New England, researchers are well aware of the disturbance new construction of architecture causes (Beaudry 1987c; Rothschild and Rockman 1982; Rubertone 1982a, 1982b).

Twentieth-century earth-moving processes are often associated with heavy machinery, resulting in the disturbance of archaeological deposits over wide areas to deep levels. In Puddle Dock neighborhood, the first half of the twentieth century was characterized by the construction, razing, and rebuilding of new outbuildings. Cinder blocks and cement became important components of architectural foundations, requiring mechanical means of razing with backhoes or other forms of power equipment. Underlying nineteenth-century deposits were often severely transformed during these operations. For the urban archaeologist, it is important to be aware of the location of architecture, especially those buildings that might have late dates of construction that involved trenching with heavy machinery.

**OVERARCHING SOCIAL FORMATIONS**

No discussion of site formation processes can be complete without some consideration of procurement strategies that introduce materials to systemic context. For nineteenth-century Portsmouth this may be subsumed under
the concepts of availability and consumer choice. Factors entering into availability include—but are not restricted to—trade systems, technology, marketing structures, and political organizations. Settlement and growth factors also shape and contribute to site formation processes.

The trade system of Portsmouth, New Hampshire, had major links to Great Britain, beginning with the establishment of the coastal colony in the seventeenth century. Portsmouth of the eighteenth century was a competitive member of the trade system as it exported timber, fish, and other natural resources expensive to obtain in Britain. As an active seaport, it is assumed that most consumer goods, including ceramics, bottle glass, and other household items, entered Portsmouth directly from England. By the end of the eighteenth century, however, Portsmouth's contribution to the timber industry began to decline, as nearby areas became deforested. Increasingly in the nineteenth century, Portsmouth imported more than it exported and showed signs of increasing reliance on other, more local, trade centers such as Boston. This would entail an indirect routing of trade goods through another principal node and possible higher prices for these same goods.

In terms of ceramic technology, Britain dominated the market up through the first half of the nineteenth century. After 1830, American ceramic manufacturers began to compete
with the British goods, although locally made redwares were produced in America from the earliest times of settlement. These coarser wares are often thought to be "utilitarian" in nature and were used primarily for food procurement and preparation. Ceramics for food consumption (i.e., tableware) were manufactured and distributed by Britain. The 1800s were a period of many technological innovations, one of which was changes in ceramic technology. As British ceramic manufacturers of the early nineteenth century tried to subvert the Chinese stranglehold on the production of porcelain, many innovations in decorative techniques were introduced. A new ceramic ware, ironstone, was also developed to imitate Chinese export porcelain. These innovations were fueled by market competition and were linked at least partly to consumer demand.

In America itself, the widespread adoption of the railroad produced major changes in the trade network system, allowing the flow of market goods into previously inaccessible areas. Railroad lines also permitted the bypassing of former commercial centers or the linking of small nodes to larger ones. Perhaps after the second half of the nineteenth century, more materials were routed by sea to Boston, and then came to Portsmouth via railroad.

Evidence of changes in Portsmouth's connections to the market may be inferred from the examination of
advertisements in the city directories. Local merchants took out small ads that did not elaborate the types and kinds of dry goods available to shoppers. Boston merchants, however, took out larger ads that specified the complete range of ceramic products they had for sale. It could be that the Portsmouth retailer did not have to advertise his or her goods, because the customer could readily view the wares. An alternative explanation is that Boston had more goods available, being on a direct line to British suppliers.

If Portsmouth had been depressed to a secondary-level node on the trade network, the prices of goods could become higher for the Portsmouth consumer. At the household level, higher prices would affect consumer behavior, especially if households were poorer. Miller and Hunter (1990) have illustrated the effects of different spending patterns on place settings; for the wealthier consumer, the more expensive transfer-printed and silver lustre wares predominated. At the middle level of consumer wealth, plates tended to be consist of hand-painted edge wares. At the lowest levels, plates, cups, and saucers were depicted as undecorated with chips and cracks in them. These archaeological correlates of consumer behavior are discussed in greater detail in Chapter 7.
SUMMARY

The preceding chapter has been a review of the theoretical framework orienting the research of this dissertation. Accounting for the formation of the archaeological site, especially in terms of repetitive, day-to-day human behaviors, is a critical aspect of the reconstruction of the past. Of great significance are the cultural formation processes of reuse, cultural deposition, reclamation, and disturbance. In urban contexts—or other settings with continuous occupation—we may assume that all four processes were (and continue to be) in effect.

The rise and decline of Portsmouth, New Hampshire, is discussed in the following chapter to reconstruct the historical context of the nineteenth-century city. I outline some of the settlement processes that affected site formation, i.e., the subdivision into small lots resulting in a more congested landscape, and built environments that were crowded with residential, gardening, and commercial functions. According to the reports of historians and contemporary travelers, Portsmouth fell into economic decline early in the first quarter of the 1800s. I discuss how archaeologists might begin to articulate archaeological correlates of a settlement that went into decline and close with an abbreviated history of archaeological study of sites in Portsmouth.
Chapter 3

BACKGROUND TO PORTSMOUTH, NEW HAMPSHIRE: HISTORY AND ARCHAEOLOGICAL INVESTIGATION

This dissertation is a study of the formation processes of three urban sites in Portsmouth, New Hampshire. The goals are to develop means for identifying and measuring the characteristics of various depositional contexts, and to develop linkages between these deposits and the human behaviors associated with their creation. In the preceding chapter, examples of site formation analysis as developed in historical archaeology were used to illustrate Schiffer's concepts of reuse, cultural deposition, reclamation, and disturbance.

The current chapter establishes the historical background and cultural context for the three sites I analyzed. Both primary and secondary documentary sources are used to reconstruct the history of Portsmouth. I begin with the settlement of the seaport in the seventeenth century, trace its rise through the eighteenth and early nineteenth centuries, and chart its general decline through the second half of the nineteenth century. One of the advantages of historical archaeology is that documents can be used to construct the economic organization of a settlement in terms of marketing systems, trade routes, and
the availability (and price) of household goods. In this chapter, I speculate how archaeologists can identify archaeological correlates of economic decline in terms of dwindling resources (decreased availability) or higher prices when new trade routes are established.

In a concluding section, I review the range and depth of archaeological research in Portsmouth, New Hampshire, to create a context for my study. Portsmouth is an ideal location for the archaeological study of urban rise and decline because of the abundance of both historical and archaeological resources.

Archaeological sites in Portsmouth have been preserved through the intersection of three overarching social forces that contribute to site formation. The first of these includes the initiation of municipal garbage-removal services in the late nineteenth century, diminishing the household's need to find a solution to trash disposal in its own backyard. The off-site removal of household refuse in the twentieth century reduces the number and kinds of later depositional behaviors that might impact on the earlier levels, leaving portions of the nineteenth-century archaeological record virtually intact.

The second conservatory effect is the result of the preservation of an entire neighborhood by conservation-minded citizens. Destined for imminent destruction in the
1960s under urban-renewal plans, 10 acres of one of the oldest neighborhoods in the city were set aside as a historical museum. Some six streets and 10 blocks of houses have been incorporated as the Strawberry Banke Museum, which serves as a visible reminder of four centuries of occupation.

The third major formation process is the general state of architecture and sites in Portsmouth. A visitor to the city in 1992 is often struck by the nineteenth-century brick architecture and the maddening tangle of streets that is the legacy of eighteenth-century town development. In the early nineteenth century, the flow of goods through the port city declined, and the commercial community suffered several severe setbacks. The economic welfare of Portsmouth continued to slip throughout the nineteenth and early twentieth centuries, while an influx of Italian and Irish immigrants labored to start a new life. This long period of stagnation has been credited with preserving an urban landscape that dates largely to the opening decades of the nineteenth century (Agnew 1989:2).

Once a major mercantile and commercial center, the Portsmouth economy today is largely fed by tourism. At the heart of the tourist industry is Strawberry Banke, Inc., a museum that took its name from the early settlement it seeks to restore and interpret. Ranked as one of the 10 most
important architectural locales in the United States, the museum has done much to revitalize the city (Harrington 1983:52). The rise and fall of the city of Portsmouth, New Hampshire, are reviewed below.

HISTORY OF THE SETTLEMENT OF PORTSMOUTH, NEW HAMPSHIRE

Situated along the 18-mile stretch of coastal New Hampshire, Portsmouth is a small city established on a deep-channel harbor that rarely freezes. Once the capital of colonial New Hampshire, Portsmouth lies 100 miles south of Portland, Maine, and 60 km north of Boston, Massachusetts, along the New England seaboard (Figure 3.1). Each of these ports initially had independent ties to Britain, and trade was orchestrated between the individual town or city and England.

Like Boston, Portsmouth's rise to early prominence derived from its location at the mouth of an extensive river catchment. The Piscataqua River drainage is a five-fingered dendritic system consisting of the Piscataqua, Cocheco, Oyster, Lamprey, and Exeter rivers (Figure 3.2). Three of the four earliest settlements, Portsmouth, Exeter, and Dover, were established along two of these rivers, while the fourth--Hampton--was settled south of Portsmouth on the coastal plain.

The Piscataqua River drainage is tidal and is therefore
Figure 3.1. Location of Portsmouth, New Hampshire (after American Automobile Association 1992)
Figure 3.2. Piscataqua River System (after New Hampshire Historical Society Collection)
different from the Merrimac River catchment that later powered the industrial rise of factory cities like Lowell, Massachusetts, and Nashua and Manchester in New Hampshire. It served, as did tidal drainages in the Chesapeake and Carolina coast region, as the primary medium of transporting supplies to early settlements in the New World (South and Hartley 1985). Portsmouth's place at the mouth of such a system allowed it to control the flow of resources both in and out of colonial New Hampshire. Portsmouth's role as a node between Britain and the hinterland that supplied much needed resources from across the Atlantic was a critical factor in the growth and prominence of this settlement. Once trade outpaced the availability of these natural goods, Portsmouth could not maintain her export business.

The earliest recorded European contact with Portsmouth came in 1603 as the Martin Pring expedition explored the New World coastal inlets (May 1926:35), traveling 12 miles up the Piscataqua River. Twenty years later, a settlement was established at Pannaway to exploit the fishing resources, but it did not survive. The first successful continuous occupation of Portsmouth began along the shores of "Strawberry Banke" in 1630, as the Laconia Company attempted to establish a fishing and trade colony.

Through the years of the seventeenth century, two distinct neighborhoods came into being, the North End and
the South End (Figure 3.3). The South End was the original Strawberry Banke plantation and the surrounding environs. Bisecting the neighborhood was a small tidal inlet called the Creek and later known as Puddle Dock. On the southern boundaries of the South End neighborhood was a larger tidal inlet; it was dammed in 1675 to become Pickering's Mill Pond (Brighton 1979:9), on which was erected the quarter's grist mill.

At the northern end of town, a second cluster of households formed along the Piscataqua and another small tidal inlet (later dammed to form the North Mill Pond). Here, too, sites closest to the water were selected for settlement. The Christian Shore neighborhood on the east side of the North Mill Dam surged in the third quarter of the seventeenth century. A system of wharves, mills, tanyards, shipbuilding, and other craft activities was developed in near exclusion from that of the South End.

By the 1690s, the largely agricultural plantation of Strawberry Banke saw land subdivision and the beginning of residential and commercial building along the creek. The merchant oligarchy who owned this area entered into real-estate speculation to collect profit on their vast landholdings. Their property was subdivided to maximize the number of parcels with water frontage, resulting in a pattern of land use consisting of parcels that were long and
Figure 3.3. The Two Major Neighborhoods of Eighteenth-Century Portsmouth (after Portsmouth Chamber of Commerce 1981)
narrow, usually with maximum widths of 40-50 feet.

Despite their small size, demand was high for these waterfront parcels, as tradesmen from other parts of New England came to Portsmouth with adequate capital to buy land and build a local business. The first wave of specialists was associated with the shipbuilding industry and included mariners, sailmakers, blockmakers, and ships joiners. These were later joined by blacksmiths, carpenters, cooperers, housewrights, bricklayers, masons, and at least one potter (Pendery 1980:29) who attended to the production of materials vital to eighteenth-century daily life. Other men of skill—woodworkers, cabinet makers, silversmiths, and joiners—were closely linked to the men of wealth and taste. Garvin (1971:15-29) contends there was almost a symbiotic relationship between the wealthy patrons and the skilled craftsmen hired to demonstrate the status of the oligarchy.

Pendery's Figure 3 (1980:31) shows the nature of spatial relations in the Strawbery Banke neighborhood in the mid-eighteenth century. One can see the long, narrow shape of parcels abutting on the Puddle Dock inlet. The heaviest concentration of settlement is east of Atkinson Street, with the bulk of landowners being listed in deeds as carpenters, mariners, housewrights, joiners, or bricklayers (Pendery 1980:29). In his analysis of the same neighborhood, John Durel (1984) discovered that the spatial organization of
residences reflected to some degree the social organization, in that segregation of certain socioeconomic or occupational classes occurred along lanes and roads. In the Deer Street area of the North End, Agnew (1989) and Pinello (1989) discovered a neighborhood bonded closely by kinship ties.

Smaller in size and population than Boston, Portsmouth nonetheless sought to rival the Massachusetts Bay Colony capital in its political influence and economic status. Within the context of New Hampshire, Portsmouth was the most significant and powerful settlement of the early colonial period. By 1727, Portsmouth could boast of having 298 houses, 52 slaves, 407 cows, 154 horses, 108 hogs, on 226 acres of tillage land, 520 acres of meadow, and 87 acres of marsh (Brighton 1979). Oddly enough, these figures did not include a statistic for the nonslave population.

The economic structure of eighteenth-century Portsmouth centered on the shipbuilding industry and mercantile trade. Portsmouth approached the Revolutionary War ranking second or third in New England ship production. Overall, for the 13 colonies, Portsmouth produced 17 percent of all ships (Heffernan and Stecker 1986:69). Shipbuilding was funded and controlled by merchants, who then used the ships to bring back trade goods from England, Europe, and the West Indies. Boston, on the other hand, grew to great prominence over the course of the eighteenth century; on the eve of the
American Revolution, Boston was the third largest city among the 13 colonies (Baugher and Venables 1987:33); its population of 16,000 in 1775 was three times higher than the population of 5,339 recorded for Portsmouth in the 1800 federal census.

The second quarter of the eighteenth century saw the rise of a third neighborhood—the downtown commercial district centered on Market Square. Market Square was the geographical center of Portsmouth that served first as the town cornfields, and later as glebe, or church, land (Brighton 1979:6). Early in the eighteenth century church leaders erected an edifice here, and roads began to crisscross the 12-acre parcel (Brighton 1979:22). By the 1760s, there was a decidedly commercial focus to the Market Square district; in 1767, to improve traffic circulation, Market Street became the town's first paved street.

Historical analyses (Brighton 1979; Daniell 1970, 1981; Heffernan and Stecker 1984) describe the Revolutionary War and the War of 1812 as disastrous for Portsmouth; these periods signaled times when the ability to trade overseas with England was severely curtailed. Beginning in 1775, life would change dramatically for Portsmouth. Governor John Wentworth and his family were banished from town as Tory sympathizers. The shipping industry was slowed, as trade routes across the Atlantic were closed by British
warships. When hostilities opened, a maritime militia emerged; captains and crews were allowed by law to keep and distribute all captured booty from British supply ships.

Privateering during the two wars helped to offset economic losses and was a big business in Portsmouth. Nearly 100 ships and 3,000 men participated in the volunteer navy; the latter figure represents fully 10 percent of the total number of men from all 13 colonies who engaged in privateering from 1775 to 1783 (Heffernan and Stecker 1986:69). The owners of some of these ships were merchants, thus allowing them to continue "overseas" trade.

The final years of the eighteenth century and the beginning of the nineteenth century were difficult ones for Portsmouth. Brighton (1979:89-97) recounts the series of natural disasters and diseases that struck the seaport from 1798 to 1813. In 1798, a seafaring ship brought yellow fever to town. The North End was quarantined, but 55 people died. South End wells became polluted during this time, and 58 persons died of dysentery (Brighton 1979). One intriguing archaeological correlate that has not been investigated is the impact of contagious disease on the mass discard of the deceased's affairs.

A particularly bad year occurred in 1802. On February 24, some six to 10 feet of snow fell on the city. Later that fall, a second epidemic of yellow fever struck. Only
eight died, but there was a great panic. Finally, on December 26, the commercial heart of Portsmouth was ravaged by a fire that caused an estimated $200,000 worth of damage. The conflagration started at Market Square and moved east along both sides of Daniel Street. Most of the merchants and shopkeepers in the destroyed areas simply moved their businesses to State Street (Brighton 1979).

Two years later, on October 9, 1804, a hurricane struck the New England coast, causing heavy damage along the waterfront. Many vessels were lost both at the shore and at sea. In 1806, a second fire struck on December 24, racing along Bow Street and the Haven wharves and destroying the old Queen's Chapel.

Further devastating blows to Portsmouth came with the Jefferson Embargo Act of 1807, the 1812 blockade, and the December 1813 fire. In 1807, Jefferson signed into law a bill that attempted to cut off trade to both the British and the French, in a move that was meant to be self-preserving for the new nation. However, sea trade virtually ceased in Portsmouth (Brighton 1979:100). The War of 1812 effectively closed off trade routes again, and this time privateering was less effective as an option. Commercial activities slacked off, and Portsmouth was eclipsed by other seaports such as Salem, Massachusetts, Boston, and New York. Portsmouth became a port of import, with no goods to export.
The fish, timber, pine masts, and other supplies that had contributed to the city's wealth had been depleted by the first quarter of the nineteenth century. The second and third decades were a period of critical economic depressions (Pendery 1980:32).

To add to Portsmouth's woes, a third major conflagration struck the commercial heart of the city. The fire started at a barn near Church Place on Court Street, and high winds spread flames quickly toward the sea. All areas between Daniel Street to the north and Court Street to the south--including both sides of State Street and sidestreets--were consumed. There was no loss of human life, but 108 dwelling places and 64 public buildings and stores were destroyed (Brighton 1979:97). The Portsmouth Pier and the 16 stores located on it were also destroyed. Most of the merchants who had moved to the State Street area after the 1802 fire could not recover from the effects of this third blaze (Brighton 1979).

Timothy Dwight's (1969) travelog, written several years before its initial publication date of 1822, describes the state of affairs in Portsmouth following the 1812 war and the three fires. The town was beautifully situated but contained a large number of houses that "must certainly have fallen beneath the lowest rate of assessment" (Dwight 1969:311). Most streets were narrow and "disagreeable,"
although there remained a few visual signs of Portsmouth's former life of luxury: some wide streets, superior houses and "a great number of neat, well-cultivated gardens" (Dwight 1969:312).

Dwight (1969:117) further notes that "the trade of Portsmouth with the interior has hitherto fallen in a great measure into the hands of its rivals." Dwight was likely referring to the ports of Boston and Salem, Massachusetts, and the early industrial cities of Lowell, Manchester, and Dover. New technology in the form of steam-powered ships served to outdate the sail-driven vessels built and used in Portsmouth (Brighton 1979:126). Furthermore, transportation linkages in the first quarter of the nineteenth century exploited the hinterlands of New Hampshire and its far west border along the Connecticut River valley. Canals and highways largely linked the farmsteads of the Connecticut River to the industrial complex of Boston-Lowell-Nashua and Manchester (Heffernan and Stecker 1986:90).

For Portsmouth, economic decline continued throughout the nineteenth century. In spite of city ordinances to rebuild structures in brick, fires continued to wreak havoc and cause destruction of private property in the commercial district (Brighton 1979:132). The banking industry that had begun with such optimism in the opening years of the century began to fail. At one time, banking operations had been
primarily located in Portsmouth, Dover, and Exeter, thereby concentrating power and wealth in the seacoast area. However, in 1833, President Jackson removed funds from the Bank of the United States; most of this federal money was then transferred to rural banks in Merrimack County (Heffernan and Stecker 1986:127).

The maritime economy resurfaced slightly in the 1840s when Portsmouth built and manned clipper ships to supply gold miners in California. These graceful fast-moving ships could sail with goods more quickly than other sea or land vessels. The 1840 Census showed a population of 7,887, down 1.8% from the previous decade. However, by 1850, population rates soared up 23% over the 1840 mark, fueled by an infusion of immigrants who worked along the docks as shipbuilders and longshoremen. New businesses sprang up, including Andrew Sherburne's milk- and ice-peddling operations. In 1849, the town of Portsmouth adopted a city charter.

However, Portsmouth could not compete with the new mills of other cities. The coming of the railroad further outdated the city's seaward orientation, in that the iron horse linked the cotton mills and shoe factories of the Merrimack River valley and Manchester-Concord with a market primarily serving Boston. Ship-building operations ceased, and the wharves became lined with an iron foundry, small
shops, and houses. Neighborhoods began to swell with Irish and Italian immigrants who rented homes from absentee landlords. From one city directory to the next, new names are listed for the same address, signifying a rapid turnover in occupancy. Buildings shown on early maps (Hales 1813) as outbuildings--barns or warehouses--are depicted on Sanborn Insurance maps as "dwellings," or "tenements," as landowners reclaimed and converted the best of dwindling resources.

In the 1870s Portsmouth did attempt to industrialize and create new economic bases. The production of beer was a major source of income and employment along the Bow Street commercial district. The city did not, however, counter with textile mills or other kinds of factories. City reports outline the main expenditures for Portsmouth, and they include maintaining a poorhouse, road sprinkling, sewers, street lighting, and education. In 1886, the city entered into an agreement with Portsmouth Electric Light Company to convert street lighting from gas to electricity (Portsmouth 1886, 1889). In 1890, the mayor of Portsmouth felt the need to justify the city's expenditures for electric street lights as a means to "keep pace with the improvements and progress of the age" (City of Portsmouth 1890:9).

Pendery (1980:34) reminds us that with the severe economic restrictions of the nineteenth century, most
architectural construction ceased after 1850. Houses that were constructed in the eighteenth century by high-status members of the community were often occupied by immigrant tenants. Although William Cotton was known to have hired a crew of carpenters to maintain his tenant properties (Pendery 1980:30), other absentee landlords may not have been as responsible, resulting in the deterioration of these buildings over the second half of the nineteenth century.

During the first half of the twentieth century the Puddle Dock neighborhood was still occupied primarily by transient renters. If anything, it appears that the rate of turnover among tenants was much higher in the twentieth century than for the nineteenth century, when it was not uncommon for a single family to occupy the same house for 20 or 30 years. Along Bow Street (Wheeler 1990a) and for the Deer Street sites (Agnew 1989), houselots were owned and occupied by single families, while in Puddle Dock, several families often rented one building. In the Bow Street example, a former renter bought the rights to a landholding; the transmission in property was marked with architectural modifications that changed the former duplex into a single-family dwelling (Wheeler 1990b).

By the mid-twentieth century absentee landlordism, combined with the absolute age of the structures, resulted in a glut of residences and outbuildings too ramshackle and
fragile to survive. Many of these poorly maintained buildings were destroyed in the urban renewal of the 1950s and 1960s, which was an attempt to revive the city's economy with the development of new housing and commercial ventures. The same development program spurred a group of citizens to block the demolition of the city's oldest neighborhood in the South End. Taking its name from the original settlement, Strawberry Banke Museum is the culmination of this historic-preservation effort, a 10-acre urban and maritime museum with over 35 original structures. The museum is dedicated to the restoration and interpretation of the 360-year-old history of the area and is the locus of much of the archaeological research in the city.

To review, eighteenth-century Portsmouth, New Hampshire, follows a rise to an urban center powered by a mercantile capitalist economy. Pendery (1980) outlines this trajectory, which parallels the course of other New England seaport cities (Mrozowski 1987; Rubertone 1982a, 1982b). However, warfare with England--its primary trade partner--in the 1770s and again in 1812, a series of devastating fires in the downtown commercial district, and the failure to make an economic adjustment to supplant sea trade with industrialization led Portsmouth on a downward spiral through the first half of the nineteenth century. The archaeological history of nineteenth-century Portsmouth is
one of an urban center in decline. We can gain insights into this process by examining material traces and archaeological configurations of households in the Puddle Dock neighborhood.

ARCHAEOLOGICAL CORRELATES OF ECONOMIC DECLINE

In Chapter 1, I outlined some of the general characteristics of economic decline: a decrease in population growth rates, a decline in the production of specialized goods and services, and decrease in the effective political or economic control over a hinterland. A once powerful trade outpost could become usurped by or incorporated within the sphere of a rival center. Another measure of decline could be a lower standard of living for the occupants of a settlement. All of these characteristics describe nineteenth-century Portsmouth, as has been recounted by historical documents. The goal of the archaeologist is to find ways to detect the material traces of such a decline.

The rate of population growth is an important tool used by archaeologists to evaluate whether a site is in the process of growth or decline. Federal census records for the nineteenth century note that the population levels of Portsmouth, New Hampshire, rose sharply through 1810, but the growth rate slowed from 1810 to 1830 during the worst of
the economic depressions (Figure 3.4). By 1840, the population rate fell 1.8%. The second largest rate increase—23%—occurred through the 1840s, primarily due to the renewed shipbuilding activities and the influx of primarily Irish immigrants escaping the great famines of the late 1840s. For the second half of the nineteenth century, population levels hovered just under 10,000.

The decrease in population growth rates is more dramatically demonstrated by calculating growth rates over intervals. From 1800 to 1830, the population of Portsmouth rose more than 50%. Between 1830 and 1850, the growth rate rose 20.8% over two decades. For the second half of the nineteenth century, between 1850 and 1890, there was only a 1.3% increase in the population level (the role of the Civil War in the low rate of increase has not been examined in this study). While there is no evidence of a massive depopulation, it is clear that growth rates slowed tremendously over the second half of the century.

For the Puddle Dock neighborhood, the rate of population growth may have been higher than for the city at large. Historical documents suggest an overcrowding of the neighborhood, as unrelated families coresided in single-family dwellings converted to duplexes or multiple-family "tenements." It is fair to say that the growth rate for the indigenous group (i.e., the second- and
Figure 3.4. Population Levels in Portsmouth (after Federal Census)
third-generation inhabitants) dropped off dramatically, but in the Puddle Dock neighborhood, they were replaced by immigrants from Europe.

The second characteristic of decline—a general decrease in the production of specialized goods and services—is apparent from historical sources. City directories and federal censuses record higher and higher numbers of "laborers" over the skilled craftsmen and merchants of the eighteenth century. A 10% random survey of occupation listing in the 1851 city directory found laborers at 6.1% of the total. By 1883, the rate of laborers had increased to 9%.

However, finding evidence of these occupations at houselots, such as the ones I studied, could prove difficult. Most of the workers were employed in large-scale operations—the Portsmouth Naval Shipyard, at foundries, or along the docks—and little evidence of their occupation would transfer back to their homelot. On the other hand, in the eighteenth and early nineteenth centuries, most skilled labor and craftspeople performed their jobs at home, and archaeologists may be able to recover evidence of this. The absence of such on-site commerce could be construed as a decline in these kinds of operations.

History may be most forthcoming about a diminished effective control over a hinterland, but archaeology could
have much to offer in the way of reconstructing trade systems from consumer behavior. It is not clear how nineteenth-century Portsmouth fit into the regional market, but historical evidence suggests that the city had become a satellite of Boston, Massachusetts, located 40 miles away. No longer a major seaport, trade goods had to be routed from other sources. By the late 1840s, when the railroad route was established between Boston and Portland, Maine, increasing amounts of trade goods may have been entering the Portsmouth retail market via the railway from Boston. Advertisements in Portsmouth city directories feature large Boston outlets, with smaller ads showing unspecified "dry goods" available locally.

If Boston became the major importing seaport and incorporated the smaller city of Portsmouth within its economic sphere, it it possible that goods became more expensive to pay for this middle step of trade. Higher prices would affect household consumer behavior, especially if other factors like ethnicity, immigrant-status, household developmental cycle, and socioeconomic status are considered. Constraint in consumer habits might be manifested by increased reuse and reclamation behaviors, observed archaeologically in a lengthy time lag between manufacture and disposal of portable goods like glass and ceramics. If such behavior is noted at several households
over time, or at several households at the same time, decreased availability—in the form either of fewer items being accessible to the consumer, or higher prices making the goods inaccessible to the buyer—may be detected.

ARCHAEOLOGICAL INVESTIGATIONS IN PORTSMOUTH, NEW HAMPSHIRE

The following section acquaints the reader with the range and depth of archaeological research in Portsmouth, New Hampshire, across three different neighborhoods. I review the major projects along with their objectives, methods, general results, and the current disposition of archaeological materials (artifacts, fieldnotes, site photographs, etc.). Included is a discussion of the role that Strawbery Banke has played in donating facilities, funding, and personnel to the development of archaeological research in the area. Ultimately the combined efforts of a dozen or more researchers (Agnew 1981, 1983, 1985a, 1985b, 1986, 1989; Dupré 1990; Edwards et al. 1988; Follansbee et al. 1983; Graffam 1981; Harrington 1981, 1983, 1989; Ingersoll 1971; Pendery 1980, 1985; Pinello 1989; Roussel 1984; Weir 1985; Wheeler 1982, 1985, 1990b) have created a rich and varied data base that is amenable to the study of site formation processes. Figure 3.5 shows the location of the main archaeological projects in Portsmouth.

I only outline the history of the most significant
Figure 3.5. Areas of Archaeological Investigation in Portsmouth (after Portsmouth Chamber of Commerce 1981)
projects; details of salvage projects that regularly take place on the grounds of the Strawbery Banke Museum are not included in this overview. The data analyzed here have been drawn from several of the more extensive projects.

The South End: The Strawbery Banke/Puddle Dock Neighborhood

The first archaeological investigation in Portsmouth, New Hampshire, Roland Robbins, took place on the grounds of Strawbery Banke Museum in 1966. Robbins' objective was to articulate the nineteenth-century outline of wharves on the northern side of Puddle Dock. His method of excavation by backhoe evokes some concern from archaeologists who use more finely tuned tools of investigation (e.g., Harrington 1983:54). Some photographs of his findings are available, but at this time, I do not know the disposition of the fieldnotes or of the artifactual remains from his investigation. His findings have been incorporated in the museum reconstruction of the nineteenth-century wharf line, and are included in the general interpretation of Puddle Dock.

Daniel Ingersoll oversaw the second archaeological investigation at Strawberry Bank, and his work resulted in a Ph.D. dissertation from Harvard's Department of Anthropology (Ingersoll 1971). Ingersoll was interested in the use of Puddle Dock as a late nineteenth- and early twentieth-
century municipal landfill. He anticipated many of the concerns and methods of site formation analysis, in that he sought to delineate meaningful units of analysis (e.g., the association of households with refuse clusters), and he used refitting of ceramics as a means of identifying how the dump was formed. Ingersoll also showed great interest in the material culture of the nineteenth century--especially glass and ceramics--at a time when few archaeologists in New England were devoting much attention to such a late historical period.

The two volumes of Ingersoll's dissertation are available at the reference library of Strawbery Banke, but the whereabouts of his fieldnotes and the artifacts he studied are not known at this time. It is not even entirely clear where Ingersoll's excavations took place, in that a datum point for the excavation was not firmly established. We do, however, have an approximate idea of the location from references in his dissertation, and we can place his trenches on the southern side of Puddle Dock where it encountered segments of the wharf system and other architectural components.

Beginning in the fall of 1975, codirectors Steven Pendery and Helen Chase opened some test units at the Marshall site, location of a redware potter from 1736 to 1749. Once testing determined that the deposits were
relatively "intact," funds were secured for an extensive archaeological excavation to begin in 1976. The Marshall site excavation serves as a baseline study of the formation processes of the Strawberry Banke neighborhood. Its cycle of occupation mirrors that of other houselots on the grounds.

In the eighteenth century, the lot was approximately 40 by 200 feet, stretching down to the Puddle Dock waterfront. The grounds were organized in a tripartite system of land use: residence, gardening, and commerce (Pendery 1980). This pattern persisted--often through a second or third generation--until the economic decline of the nineteenth century. Beginning around 1812, lots were subdivided into much smaller parcels and functioned nearly exclusively as residential properties (Pendery 1980:34).

What also sets the Marshall site apart from other hand-excavated sites at Strawberry Banke is the sheer area--nearly 200 m²--and volume of earth excavated. A series of long trenches was dug across the entire length of the houselot in order to establish the site stratigraphy. Several smaller trenches were then dug off the main trench to follow the outline of major features. Once the architectural units were located, larger horizontal areas were exposed to learn more about the use of landscape between structures.

Pendery and Chase (1977) have put together a preliminary report on their findings, and Pendery (1980) has
written a short article on the site as it fits within the context of urban growth and decline in Portsmouth. Pendery and Chase (1977) were able to recognize several different kinds of deposits, and to relate them to the various households who occupied the site. When the southern portion of the lot was sold off, and the cellar hole for a new house dug, the remains of the redeposited fill were detected. In some areas of the site, sterile subsoil was reached at seven feet below ground surface, as it appeared the grounds were intensively utilized over time. The artifacts have remained at Strawberry Banke, while the fieldnotes and site maps are in the possession of Steven Pendery.

In the first half of the 1980s, there was a flurry of archaeological activity at Strawberry Banke. Faith Harrington undertook the first of two site investigations at the Follett site beginning in 1981 and continuing the following summer. Her preliminary report (Harrington 1981) outlines the objective of the project, which was to reconstruct the maritime activities of the merchant families who operated from the site in the eighteenth and nineteenth centuries. In addition to the preliminary report, all artifacts, site maps, and fieldnotes are retained at Strawberry Banke.

Archaeological excavation proceeded over two six-week seasons, with efforts concentrated at the southern end of
the site abutting on Puddle Dock. Extensive portions of the wharf system were exposed so that the construction techniques could be reconstructed. Evidence for the whereabouts of two nineteenth-century warehouses was also found (Harrington 1983:56). One square was opened at the southeast corner of housesite, where it intersected with Atkinson Street. Several other units were excavated on the western edge of the lot, and along the northern property border. A total of 26 square meters was exposed after two summers of excavation.

Because of the location of the site so near to the former tidal inlet, the water-table level was reached at less than one meter below ground surface. Excavators worked with sump pumps to remove standing water to extricate and record archaeological deposits. Dry screening of materials was not possible, requiring wet screening to extract artifacts (see photograph in Harrington [1983:55]). Although the resulting sample is small owing to the labor-intensive methods, one advantage is the tightly controlled sample and the recovery of small finds.

Also during the summer of 1981, a public-training excavation took place at the Rider-Wood site, codirected by Gray Graffam and Laura Pope. More than 120 volunteers turned out for the hands-on experience of field- and labwork. A preliminary report appeared (Graffam 1981), but
neither the codirectors nor the museum staff know the whereabouts of the excavation fieldnotes. Some notes from the lab-processing phase designating the provenience and matrix of materials are available.

Faith Harrington returned to Strawberry Banke in 1983 and 1985 as the principal investigator at the Sherburne House excavation, a project undertaken as a joint venture between the Archaeology and Horticulture Departments of Strawberry Banke. One objective of the research was to reconstruct the area and nature of the early gardens at the seventeenth-century housesite. As a student of James Deetz, Harrington (1989) also sought to corroborate Deetz's (1973, 1977) model of the great mid-1700 mindshift from the organic and natural worldview of the medieval period to the newer Georgian mindset that saw humans and nature in opposition to one another. Work was focused on the transformation of Joseph Sherburne's shop from an ell at the northwest corner of the house, to a central addition that conformed to Georgian principles of symmetrical architecture (Glassie 1975). Preliminary reports, photos, fieldnotes, and artifacts are all available for this site.

In the years between 1985 and 1990, archaeological excavations ceased, and the major emphasis at Strawberry Banke was placed on the curation and management of the tons of artifacts previously excavated. Any subsurface
disturbances such as the laying of underground utility lines, architectural modifications, or the digging of fenceposts required the presence of an archaeologist to monitor the disposition of remains and/or unknown features.

Finally, in 1990 and 1991, a second public-training field school was offered at Strawberry Banke at the Wheelwright House. Staff archaeologists Martha Pinello and Mary Dupre oversaw the training of a small group of new volunteers. Materials are abundant and derive from well-controlled stratigraphic contexts, despite the relatively small total area excavated. Both the original set and copies of fieldnotes are available at the Department of Archaeology. Work was concentrated mainly in the backyard of the housesite in an attempt to isolate and identify activity areas, such as paths, gardens, and fencelines. This houselot is north of the Marshall site and would be an excellent source of comparative evidence for site formation processes during the eighteenth and nineteenth centuries.

The North End: The Deer Street Projects

Beginning in 1981, several house sites were investigated along Deer Street (see Figure 3.5). A total of five separate investigations, each designated a "phase," was performed. The use of "phase" for the Deer Street projects is not consistent with cultural resource management
terminology, where each phase refers to a heightened level of intensity of research. For the Deer Street sites, each phase can be viewed as a distinct project with its own source of funding, personnel, and research objectives. There was some continuity between phases, but owing to the uncertain nature of funding sources and building permits, each phase was managed as a discrete project (Agnew 1989).

Steven Pendery oversaw Phase I in the summer of 1981, while Aileen Agnew directed the subsequent four phases between the fall of 1981 and the early winter of 1986. The objectives of each of the various phases are briefly reviewed below. The Deer Street projects were the result of required archaeological testing prior to the investment of federal funds in the construction of a Sheraton Hotel complex, and operated under serious time and money constraints.

The bulk of the archaeological excavation consisted of the monitoring of backhoe equipment to scrape away parking-lot overburden to expose underlying features. Once features were delineated, archaeologists excavated materials by hand and recorded their observations on the nature of the matrix and orientation of materials. Different phases allowed for varying degrees of luxury in removing and recording artifacts; the final project, Phase V, was particularly hectic and fraught with time restrictions as this project
just preceded the blasting of bedrock in the construction phase of the Sheraton Hotel.

The basic research orientation of all phases was to investigate the Deer Street house lots within a single neighborhood, or a network of households connected either by kinship ties or socioeconomic status. Project Director Aileen Agnew (1989:11) notes:

The North End of Portsmouth was an identifiable community by the time of the American Revolution. As with other areas of Portsmouth, the residents had strong familial connections. Along Deer and Russell Streets lived many members of the Hart family. The archaeological remains associated with substantial documentary information have enabled the performance of significant research into the history of a Portsmouth neighborhood. The collection of artifacts from the Deer Street sites span the entire occupation of the neighborhood. The features from which the artifacts were collected contained important and sealed deposits from a variety of households. Many of the features were precisely dated and can be attributed to specific households, something relatively uncommon in urban excavations. The true significance of the Deer Street projects lies in their action for further study and a deeper understanding of the way communities grow and change.

In the summer of 1981, Steven Pendery oversaw the backhoe monitoring of 36 trenches across approximately 40 house lots. Phase I served to demonstrate that the integrity of archaeological resources was quite high, and that further investigation was warranted (Cox et al. 1981). Specifically, entire features were discovered backfilled with massive collections of materials.
That same fall, Aileen Agnew returned to the Deer Street sites with a small crew to oversee Phase II. Two houselots, the Deer Tavern and the Hart-Shortridge sites, were the focus of investigation, although other sites were explored as well. Methods included backhoe monitoring and the hand excavation of features (Agnew 1981, 1989:7-8). A year later, the Phase III operations expanded to the 1705 House, the Richard Hart site, and the Richard Shortridge housesite. Methods were largely the same, although some areas between features were excavated (Agnew 1989; Follansbee et al. 1983).

In the spring of 1984, Phase IV (Agnew 1985a) continued with the objective of the complete excavation of the Richard Hart site and further testing of the Richard Shortridge lot. Finally, in the winter and early spring of 1986, archaeological monitoring took place during the construction phase of the hotel complex. At a dozen housesites forty features were uncovered, partially or totally excavated. Most of these features were deeply buried beneath the parking lot and twentieth-century overburden and would have been inaccessible to traditional archaeological methods of hand excavation (Agnew 1986, 1989).

Work at Deer Street largely focused on features; the stratigraphic connections between deposits were not determined, and correlations cannot be reconstructed.
Dating of the deposits was done primarily by the materials within the features (Agnew 1981, 1985a, 1989; Edwards et al. 1988; Follansbee et al. 1983). Pinello (1989) offered a slightly different view and interpretation by determining the rates of deposition through ethnobotanical and palynological analyses of sediments.

The Deer Street sites have been the focus of a great deal of archaeological research. All fieldnotes, photographs, and artifactual materials from the five phases are housed at the Strawberry Banke Museum, as are the reports and articles published on the materials.

**Market Street District**

The third Portsmouth neighborhood that has been investigated archaeologically is the Market Square business district. This neighborhood is a long strip bounded on the north by Hanover Street and on the south by Court Street. It includes the Bow Street arc of wharves, the heavily commercial State Street, and the wharves along Market Street that line the Piscataqua River (Figure 3.5).

The nineteenth-century fires of 1802, 1806, and 1813 destroyed much of the wooden frame architecture of this neighborhood, and city ordinances required that rebuilding be in brick. Most of the two-and three-story brick structures in the Market Square area date to the first
quarter of the nineteenth century, especially those visible along State, Daniel, and Congress Streets. The settlement pattern of the quarter differs from that of the North and South Ends, in that buildings were constructed shoulder to shoulder and fronted along the street edge. Very small enclosed backyard areas were available to residents, and the structures were largely involved in ground-floor commerce, with upper-floor residences. In some cases, shop owners ran businesses from the ground-level story and rented out the upper ones.

Today most of the ground-surface area of Market Square District is covered with brick architecture, streets and sidewalks, and attached outbuildings with tarmac back yards. For the archaeologist, there is little available space to conduct subsurface excavation, unless there is a call for the monitoring of heavy equipment or for some very small-scale testing. Steven Pendery had the opportunity to conduct a brief investigation at the site of the First North Church (Clark 1980:41). This was, however, a limited excavation area in the middle of a downtown sidewalk.

A preliminary archaeological survey also took place at the site of one of the few remaining open spaces in the neighborhood at 113 Bow Street (Wheeler 1990b). The lot explored was the site of two nineteenth-century wooden-frame houses that survived the several conflagrations. The two
house sites remained residential in a neighborhood that was primarily commercial and served as dwellings for immigrants and other laborers who found employment in the various businesses along the waterfront.

The archaeological survey was extremely limited in scope, but it traced the occupational history of tenancy, absentee landlordism, and overall decline that has been cited for other neighborhoods. A recommendation to return to the site for further study was overturned by the New Hampshire Office of Historic Preservation, owing to a lack of evidence justifying the uniqueness of the site. Because of the contractual agreement between the contractor and the archaeologist, all fieldnotes, artifacts, research notes, and photographs are in my possession. In the spring of 1991, the developers bulldozed the rest of the site to facilitate construction of the condominium structure. In fact, the entire sequence of fill and architectural levels was trucked away as fill to an undisclosed location, offering an extreme example of twentieth-century machine-powered subtractive formation processes.

SUMMARY

Chapter 3 reviews the historical background of the growth, decline, and recovery of an early New England settlement. Portsmouth, New Hampshire is an ideal location
for the study of urban site formation processes because of the richness and diversity of historical and archaeological resources, and because overarching social formations helped to create and preserve the archaeological record. Large-scale formation processes such as urban renewal, municipal landfilling, garbage-removal services, and others combined with settlement formation processes--urban growth, subdivision, heterogeneity of social composition, economic decline and urban decay--to create a complex and intriguing archaeological record.

The following chapter outlines the methods by which the archaeological data were analyzed at three sites in Portsmouth, New Hampshire. Archaeological deposits were organized by their location, artifact density and diversity, size of inclusive artifacts, ceramic ware and decoration, and other measures in order to establish the characteristics of deposits. All of these measures are considered significant components in the identification of the types of formation processes that resulted in the distribution of remains later recovered by the archaeologist.
Chapter 4

METHODS

The preceding chapter establishes the historical context of the settlement of Portsmouth, New Hampshire. It began as an important colonial outpost in the seventeenth century, developed into a thriving port city in the eighteenth century, and declined as a maritime center in the nineteenth century. This historical trajectory was mirrored in other New England port cities, such as Providence and Newport, Rhode Island, as new inland commercial centers developed along railroad lines (Mrozowski 1984; Rubertone 1982b). However, Portsmouth was slow to adapt new ways of supplanting lost revenues and failed to invest in local industry or retail establishment until the last quarter of the nineteenth century. The archaeological evidence from three sites in Portsmouth, New Hampshire, is examined to assess the effects of this economic decline upon nineteenth-century households.

In this chapter, I outline the methods used to evaluate and establish the spatial and temporal boundaries of archaeological deposits. I employed an amalgam of techniques devised from a variety of sources such as Desert Archaeology, Inc. (James Heidke, personal communication 1991), Harris (1979, 1989), Majewski and O'Brien (1987,
entering into a discussion of the various analytic techniques, I define some terms that are commonly used in Portsmouth archaeology. These definitions should resolve potential ambiguities associated with such terms as "stratum," "level," "catalog sheets," and "archaeological zones."

"Stratum" is also known as the "archaeological layer" and is meant to convey actual depositional units rather than arbitrarily defined archaeological contexts. Any change in color, composition, or compaction is assumed to correspond to a change in either cultural or natural depositional forces, hence a change in stratum. Strata are recorded in Roman numerals from top to bottom. In cases where change in any of the three criteria of color, composition, or compaction is slight, excavators may assign an upper case letter to distinguish variations within the same stratum, such as IIIA and IIIB. This was often done with nineteenth- and early twentieth-century depositional contexts composed largely of coal ash. Changes in color or inclusions of other sediments could signify a different episode of deposition contained within the larger process of regular disposal of coal-burning debris.

A "level," on the other hand, is a completely arbitrary excavation unit, commonly measured in 10-cm increments. The
use of levels often entails an excavation procedure that stresses horizontal surfaces over the delineation of the tilt or orientation of cultural layers. Details on changes on both the vertical and horizontal axes are often not recorded. As a method, the use of levels can offer sequential phasing of a site's deposits from top to bottom, but much detail, microstratigraphy, and artifact associations can be lost in the process.

At the Follett site, excavators recorded strata, levels within strata, and "zones." Zones referred to horizontal variations in sediment color, composition, or compaction, and in most cases signaled the edges of vertical interfaces cutting through layers. The term "zone" was employed when the stratigraphic relation of two deposits within a single stratum was not readily apparent. If a zone was later identified as a feature, the term "zone" was dropped.

In other cases, however, the boundaries of zones were associated with such features as postholes or outbuildings and corresponded to demarcations of activity areas. For instance, an outbuilding has obvious interior and exterior bounds marked by the wall line. Likewise, a fenced-in area might yield evidence of activities conducted on either side of the fence. Two zones in conjunction with a fencepost could correspond to livestock areas, gardens, or property lines, making zones an important archaeological designation.
Finally, I refer to "catalog sheets," the site inventory forms that identify and count artifacts. As part of the laboratory process at Strawbery Banke Museum, artifacts are washed, labeled with provenience information, and "cataloged," i.e., recorded as to type and number. Information regarding identification and quantity is summarized on catalog sheets. There are no standardized forms at the Strawbery Banke Museum; each principal investigator designs his or her own according to the needs (and research interests) of the project. Most catalog sheets for historical-archaeological projects in Portsmouth require four or more pages to register the complete range of classes of material. In my analysis, the data recorded on project catalog sheets were used to quantify deposit density and heterogeneity, and to arrive at a terminus post quem date for the deposit.

QUALITATIVE DESCRIPTIONS OF DEPOSITS

Archaeological deposits were assessed in two main ways to begin to identify which of them were formed in the nineteenth century. First, a simplified Harris matrix was created to establish the spatial boundaries of layers and features and to arrive at a relative sequence of deposits. Second, the deposits were anchored within a chronological framework through the identification of their inclusive
materials. Once the spatial and temporal boundaries were defined, the characteristics of the deposits required further determination, including the location of archaeological materials, especially in reference to structures, doorways, windows, and property lines.

**Harris Matrix**

Before the analysis of archaeological materials was undertaken, the stratigraphy of each of the three sites was reconstructed. Site plans, profiles, fieldnotes, and photographic materials were consulted in order to create a simplified Harris matrix (Harris 1979, 1989) for each of the excavated units, and to help establish correlations between units. The implementation of Harris matrices helped to confirm the location of discard activities on both the horizontal and vertical planes. Other historical archaeologists have found the Harris matrix useful in their examination of urban sites (Pinello 1989; Rothschild and Rockman 1982).

Harris (1979, 1989) has devised a system of recording archaeological data that captures the stratigraphic phasing of deposits (his "units of stratification") across an entire site. His method is extremely useful for sites with complex stratification, such as urban sites with long periods of occupation. Harris's method is based on the adaptation of
geological laws of stratification, modified to take into account existing land surfaces, forces of nature, and, especially, activities of people (Harris 1979:35). He articulates three main types of archaeological deposits—the horizontal layer, the negative feature (such as pits which cut into or take away layers), and the positive feature (such as walls which trap or form boundaries of new layers).

Features, not surprisingly, demand a great deal of attention, given that these are most often anthropogenic in nature, and least likely to operate according to natural (i.e., geological) laws. Features are further distinguished by Harris (1989:59-68) as having either horizontal interfaces (these are associated with walls and other positive, upstanding layers) or vertical interfaces, which are the surfaces formed when pits are dug. Harris also describes an "interface of destruction" that is associated with the disturbance or destruction of areas during excavation. Although he does not make this clear in his discussion, interfaces of destruction should also include natural forces like erosion or cultural events such as bulldozing, where parts of earlier strata are removed.

In historical archaeology, negative features are accorded an inordinate amount of attention, partly because the vertical interfaces of pits, privies, wells, or cellarholes are clearly visible disturbances in the
horizontal layers. Negative features are often considered "sealed," or datable to a single episode, but Dickens (1985) and Wilson (1985) reveal the complex depositional histories of pits that may be excavated for one purpose and reused for another.

Negative features are often the focus of archaeological fieldwork, yielding the greatest amount of trash under pressing time and financial constraints (Agnew 1989; Moran 1976; Mrozowski 1984). However, the practice of feature-oriented excavation overlooks the significance of horizontal layers. Rubertone (1989) applauds the efforts of Harrington (1989) and Beaudry (1989) who refuse to dismiss horizontal fill layers but instead treat them "as culturally meaningful artifact[s] for delineating previous historical landscapes" (Rubertone 1989:51-52). My study perpetuates the tradition of regarding horizontal layers as informative on past human behaviors, but stresses discard behaviors rather than gardening or landscape behaviors.

Following the delineation of geological laws of stratification, Harris reviews the history of archaeological recording. Ultimately, he believes that the importance of the archaeological profile is exaggerated, and that excavators should balance the inputs of vertical sections with horizontal plans, especially the single-layer plan that records each unit of stratification (1989:69,95-101). These
single-layer plans are composed of the boundary contour of each layer or feature, one to a page, with an appropriate set of elevations and coordinates to anchor it to an archaeological locus. From these, composite plans of more than one unit of stratification, or even profiles, can be generated.

Harris's technique of the single-layer plan makes sense conceptually, but in practical terms, it may be difficult to implement in northeastern American urban sites unless larger horizontal areas can be opened. When working in 1-x-1-m squares, the boundaries of deposits often extend beyond the limits of the excavation unit. The development of Harris matrices for the three Portsmouth sites across each entire site met with varied success, depending at least in part on the availability of adequate field records and the amount of total area exposed. Again, in pragmatic terms, it is difficult (for this excavator) to conceptualize how surfaces of deposits are isolated during the excavation process long enough to be mapped. This is especially problematic in the case of steeply inclined deposits that have a tendency to slump or collapse while excavating, causing a mixture of sediments and artifacts.

Once the location of deposition has been treated in spatial terms, the temporal boundaries of archaeological deposits had to be determined. This operation was performed
with the aid of decoration-based categories of ceramics, as well as an evaluation of the terminus post quem date through examination of all artifact classes.

Decoration-Based Categories of Ceramics

Nineteenth-century ceramics are often overlooked in northeastern historical archaeology or are accorded secondary importance. Given the long span of occupation in the American northeast, more recent materials are accorded less attention. Researchers in Portsmouth have focused on early settlement in the seventeenth century, or on other processes or events that occurred in the eighteenth century (Harrington 1983; Pendery 1980). Some works have breached the nineteenth-century barrier (Agnew 1983, 1985b; Durel 1984), but these often stress the early half of the century. In archaeological studies where research is invested in eighteenth-century processes, later materials are either lumped, ignored, or dismissed. Ceramic inventory or catalog sheets from projects in Portsmouth, New Hampshire, often manifest this bias by lumping whitewares, ironstones, yellowwares, and other British- and American-produced ceramics under the single heading of "post-1830 wares."

It is traditional in historical archaeology to identify ceramics according to ware types: redware, stoneware, porcelain, and refined earthenwares. The identification of
ware is based on body composition and color, vitrification, translucency, and surface decoration (Majewski and O'Brien 1987:112-115). Although these categories work well for eighteenth-century ceramics, several authors note that ware-based categories for nineteenth-century ceramics are, at best, ineffective and difficult to implement with any degree of general acceptance across a community of archaeological researchers (Majewski and O'Brien 1987; Miller 1980, 1991). Miller (1980:16-17) notes that nineteenth-century potters continuously adjusted the formula for pearlware with an increased tendency toward whitening. This continuum resulted in a product commonly called "whiteware" by archaeologists, but distinguishing one ware from the other along this continuum is difficult.

In the initial sorting of ceramics from the three sites, I did use ware categories. However, the large class of refined earthenware--pearlwares, whitewares, and ironstones--was further sorted by surface treatment, following a classification system that emphasizes categories of decoration (Majewski and O'Brien 1987; Miller 1980). Their decoration-based categories more closely correspond with the nineteenth-century context of manufacture and retail practices (Majewski and O'Brien 1987; Miller 1980).

Majewski and O'Brien (1987) have demonstrated that the nineteenth century was a period of technological
experimentation and innovation for British ceramic producers. In an effort to cut into the Chinese domination of the porcelain market, ceramic manufacturers experimented with new formulas for body composition, exterior glazes, and underglaze decorative techniques. New decorative techniques were introduced, such as the transfer printing of designs, the application of new colors beyond the basic cobalt blue, and "flow" transfer prints. New wares were introduced, including English bone china and ironstone.

Transfer-printed designs remained popular through the first half of the 1800s, but by the 1840s, decoration increasingly took the form of molded designs on unpainted vessels. To the unattentive, these may be seen as "plain," but decoration ranges from raised (embossed) flowers and grains to panels or ribs in vessels. These "plainer" wares were most popular through the 1860s and 1870s, after which time transfer-printed wares again became popular. These later nineteenth-century transfer prints stressed Oriental motifs, asymmetrical patterns, and used slightly different hues of brown, green, black, and red.

For the Portsmouth sites, I employed existing catalog sheets for ceramic remains to determine which proveniences I would examine in further detail. All bags that noted "post-1830 wares" were included in my study up through early twentieth-century deposits. Although the production of
pearlware began in 1780, it continued through 1830, so any deposits with pearlware were also selected for study.

To monitor differences in decoration, I developed a code sheet with flexible categories (Figure 4.1). The decorative categories were largely based on the works of Majewski and O'Brien (1987) and Miller (1980), who outline the various kinds of decorative practices commonly used in the nineteenth century. There are eight basic categories, similar in rank and ordering to the classification hierarchy depicted in Majewski and O'Brien (1987:Figure 1). The first category begins with those sherds that are completely plain and undecorated. The second and third are complementary in that both refer to the innovation of transfer printing, but category two is for sherds with unmodified surfaces, while category three refers to sherds the surfaces of which were first modified (embossed or molded), then transfer printed. Each of the categories is further divided on the basis of style of design and color.

Categories four and five follow the same format above as two and three, but they refer to the technique of underglaze or overglaze hand-painted decoration, both on unmodified and modified surfaces. As an example of how the code is used, a blue shell-edged sherd will be recorded as 5a.1. If edges are further noted as fluted, the category becomes 5a.d.1, thereby recording the complete range of
1. Undecorated

2. Unmodified Surface, Transferprinted

   **Motif:**
   A. Chinoiserie (Chinese style)
   B. Romantic
   C. Unknown
   D. Floral
   E. Other

   **Color(s):**
   .1 dark blue       .11 flow blue
   .2 black          .12 flow black
   .3 brown          .13 flow other
   .4 green          .14 with handpainted detail
   .5 yellow         .15 light blue
   .6 red            .16 orange
   .7 pink           .17 greenish-brown
   .8 lavender       .18 other
   .9 silver         .19 white
   .10 gold

3. Modified Surface, Transferprinted

   **Motif:** see above

   **Surface Modification(s):**
   a. press-molded/embossed
   b. incised
   c. paneled, ribbed
   d. scalloped or fluted edges
   e. other

   **Color(s):** see above

4. Unmodified Surface, Handpainted

   A. floral design          K. polychrome
   B. banded/annular         M. lustre
   C. sponge-decorated       N. engine-turned
   D. spatter wares          P. slip-trailed
   E. mocha                  R. thin-line
   F. finger-trailed         S. with gilt
   G. overglaze-painted      T. "clouded"
   H. thick-line             X. Chinoiserie motif
   J. thick- and thin-line    Z. other

---

**Figure 4.1. Ceramic Decoration Code Sheet**
5. Modified Surface, Handpainted

A. floral design  
B. banded/annular  
C. sponge-decorated  
D. spatter wares  
E. mocha  
F. finger-painted  
G. overglaze-painted  
H. thick-line  
J. thick- and thin-line  
K. polychrome  
M. lustre  
N. engine-turned  
P. slip-trailed  
R. thin-line  
X. Chinoiserie  
Z. other

Surface Modifications:

a. press-molded/embossed  
b. incised  
c. paneled, ribbed  
d. scalloped edges  
e. other

Color(s): see above

6. Unmodified Surface, Decaled

A. floral pattern  
B. geometric  
C. other pattern  
D. with handpainting  
E. with gilt

Color(s): see above

7. Modified Surface, Decaled

A. floral pattern  
B. geometric  
C. other pattern  
D. with handpainting  
E. with gilt

Surface Modifications:

a. press-molded/embossed  
b. incised  
c. paneled, ribbed  
d. scalloped edges  
e. other

Color(s): see above

8. Modified Surface, Nonpainted

Surface Modifications: see above

Motifs:

f. shell- or feather-edge  
g. naturalistic grains, grapes, flowers, or leaves  
h. Greek Revival motifs

Figure 4.1, continued
decorative modifications.

Categories six and seven are the complementary classes of decal-decorated wares on unmodified surfaces, and decals on modified surfaces. By the end of the nineteenth century, transfer printing was replaced by an overglaze surface decoration called decalcomania (Majewski and O'Brien 1987:147). Its early designs functioned somewhat like stencils, as monochrome outline decals were filled in with hand-painted detail; these decals may have been available by 1885 (Majewski and O'Brien 1987:147). Entire designs can be transferred without inpainting with decals, and these were available from European manufacturers in the 1890s. Decal designs commonly took the form of floral or geometric decoration and occurred in combination with gilt and molded designs (Majewski and O'Brien 1987:147).

Category eight is the one perhaps most overlooked in the analysis of nineteenth-century ceramics (Majewski and O'Brien 1987:153), in that these molded or embossed sherds are often classified as "plain" or "undecorated." However, the modified surfaces of these ceramics are definitely decorated. They are marked with scenes or naturalistic flowers or grains that were sold--and continue to be collected--by design name (Wetherbee 1985). The molded, often heavy-bodied white ironstones were popular in the mid-1850s through the 1870s, and so provide important
chronological information.

**Terminus Post Quem**

To assess adequately the temporal range of an archaeological deposit, one must examine the complete range of materials for other evidence that might offer diagnostic dates. For the Strawberry Banke materials, this was easily accomplished by examining catalog sheets that identified the entire range of finds, including architectural debris, glass, ceramics, plastic, among others. Important temporal markers include crown bottle caps (i.e., the metal bottle caps still available on beer and other beverage bottles), patented in 1892 (Jones and Sullivan 1985:163), and early plastic (celluloid--developed in the late nineteenth century, and bakelite--available after 1909).

The latest manufactured material--or *terminus post quem*--was an important chronological marker in dating the deposit. The *terminus post quem* for ceramics, in combination with the largest size range, was believed to be associated with the latest transformation of the deposit. This was important when trying to date tertiary deposits that had earlier materials mixed in with later ones.

Associated with the *terminus post quem* is the relative temporal homogeneity (or heterogeneity) of deposits. Materials were examined for their complete range of
manufacturing dates and, for ceramic decoration, its peak popularity period. The length of the manufacturing time range was considered one indication of the length of depositional episode, especially when these contexts were what might be identified as "sheet refuse" (sensu Moran et al. 1982). However, even rapid episodes of trash deposition could entail an assemblage with a long time range of manufacture, such as the case of wholesale cleaning of a house after a lengthy occupation.

Deposition Location

Although discard location is quantifiable in that a coordinate can be measured and mapped, its significance is always in relation to something else and is therefore considered a qualitative measure of deposits rather than a quantitative one. Several authors have elaborated patterns of trash location that correspond with ethnicity (South 1977a), commercial activity (King 1988; King and Miller 1987), and residential activity areas (Pogue 1988). Deal (1985) and Wilson (1991) find that discard location is most structured where activity densities are highest. This should be the case for urban settings like Portsmouth, where lot sizes were small and household domestic activities competed with commercial activities for space (Pendery 1980).
One brief caution is offered here regarding the distinction between deposition location and discard location. Archaeological provenience (i.e., findspot) does not always equal the discard location. Discard location refers to the specific behavior of throwing away primary and secondary refuse. Deposition location is a more inclusive term that can include primary and secondary trash, but more generally refers to any form of deposition, including disturbed (e.g., tertiary) deposits.

In nineteenth-century contexts in Portsmouth, deposition location can be seen in reference to houses or outbuildings, fence lines, garden spaces, or activity areas. For instance, at the Follett site, the greatest bulk of nineteenth-century kitchen refuse came from excavation units along the north fenceline. Units in the wharf area had considerably less domestic refuse, suggesting differential use of this part of the yard. Discard location may offer information on attitudes about the safety hazards of trash (Hayden and Cannon's [1983] value and hindrance potential), given its relative distance from main activity zones such as doorways, paths, and outbuildings.

The qualitative assessments of archaeological deposits are commonly accessible in the field descriptions of preliminary reports. Investigators may even include a table describing all deposits for easy reference and comparison.
However, these qualitative descriptions are often unwieldy and difficult to compare, or they may not be available to researchers who did not participate in the original excavation project. One main objective of the present study is to develop quantitative measures of the characteristics of archaeological deposits, to create analytical units that are more readily comparable between and among sites.

QUANTITATIVE STUDIES OF MATERIALS WITHIN DEPOSITS

McIntosh (1974, 1977) used ethnoarchaeological observations of mud-hut construction and decay in order to develop a suite of mechanical and statistical tests for identifying archaeological deposits from West African decayed mud mounds. Working from observations of a modern village, he identified several contexts: rapid interior and exterior accumulation (from wall fall), slow interior and exterior accumulation (resulting from natural erosional forces), and the various living-floor surfaces. Next, he devised a sequence of tests—gross fraction analysis, standard granular analysis, average deviation of sherd size, and relative volume of sherds within a deposit. He tested each of these at a recently abandoned village with one remaining informant and then again at a sixteenth-century archaeological site. He discovered there was a good deal of overlap in using the tests to identify architectural
contexts. McIntosh then assessed the efficiency of each of his four tests, recommending the gross-fraction analysis and sherds per cubic meter as easy to implement, cost-effective, and offering reliable results. One important conclusion from McIntosh's work is that no one test is sufficient; results from several tests are most reliable. Accordingly, several quantitative studies are performed here.

**Sizing**

Several investigators have demonstrated the importance of considering the relative size of archaeological materials in assessing the nature of archaeological deposits. The size of archaeological materials can help identify loci of primary and secondary trash disposal (McKellar 1983; Wilson 1991), high traffic areas and occupation surfaces (Nielsen 1991; Rosen 1986, 1989), wall fall from wall stubs (McIntosh 1977), and differences between secondary trash aggregates and redeposited materials (Heidke 1990).

McIntosh (1977) measured the longest dimension of sherds but found this process time-consuming and offering results of only 75 percent efficiency. Following Heidke and his colleagues at Desert Archaeology, Inc. of Tucson, Arizona, I employed a system of using size ranges rather than submitting ceramic sherds to individual measurement. This allowed me to process over 22,000 sherds fairly
The five size ranges were adapted from Desert Archaeology, Inc. of Tucson, Arizona, and are as follows: 0.1-5.0 cm² (the size of a quarter), 5.1-16.0 cm², 16.1-49.0 cm², 49.1-100.0 cm², and more than 100.1 cm². The size gradients can be measured in the field using nesting screens with the above-mentioned apertures; such a set of screens can be bought for $150. Integrated as part of the general screening of backdirt, size categories of all artifacts can be quickly gauged. This system could especially useful at Near Eastern tell sites where it is common to retain only diagnostic sherds and to discard the rest. Before the nondiagnostic materials are redeposited, a quick count within size categories can be taken, preserving an ordinal measure of the total number of sherds and offering percentages of materials along a size gradient.

In the current case, however, ceramics were sized in the lab using a template (Figure 4.2). This was a simple and cost-effective tool, but fairly time-consuming when using a large data set. Nonetheless, it is not nearly as time-consuming as the procedure used by McIntosh (1977), who measured the maximum dimension of each sherd. Sizing by range is also a task easily performed by devoted volunteers.

There is one cautionary note about this method. The size ranges are not necessarily coterminous with total area,
Figure 4.2. Ceramic Size Template
but represent the maximum dimension of any one sherd. If any dimension of a sherd exceeded the bounds of a size category, then it was included in the next size range. Elongated sherds were biased toward the higher size categories, while rounded or square-shaped sherds were biased toward the lower size ranges.

Refitting and Minimum-Vessel Counts

In essays about the quantification of ceramic materials, several authors have stressed the need to develop measures of meaningful functional units rather than simply relying on sherd counts to describe archaeological contexts (Fletcher and Heyworth 1987; Majewski and O'Brien 1989; Miller and Moodey 1986; Skibo et al. 1989). One way to do this is to determine minimum-vessel counts and to use the quantities in concert with sherd counts. An additional procedure that is important in assessing minimum vessel counts is refitting, which can also offer evidence of the formation and transformation of deposits.

Fletcher and Heyworth (1987) outline four different measures of vessel fragments, including sherd counts, sherd weights, adjusted sherd weights, and minimum vessel counts. They find that each of the four methods of quantifying vessel fragments has its biases, and researchers are well advised to use more than one method of counting. Majewski
and O'Brien (1989) offer four examples of both computerized and noncomputerized quantification methods for historical-archaeological ceramics and stress that vessels should be the minimal functional units rather than sherds. Miller and Moodey (1986) also articulate the importance of refitting and minimum vessel counts and offer a recording system that encapsulates crossmending across proveniences. In one illustration of how refitting contributes to revising conclusions about depositional contexts, Skibo et al. (1989) reanalyzed a sample of Hill's (1970) Broken K ceramics. Refitting efforts recovered 31 "missing pots," confirming Schiffer's hypothesis that many rooms were abandoned late in the occupation sequence and left behind with de facto refuse that previously had been recorded as sherds.

Refitting or crossmending of ceramics is an important indicator of formation processes. On the horizontal plane, crossmends are sought within the same stratigraphic level across contiguous or neighboring excavation units. Refitting measures the general expanse of area involved in discard and redeposition behavior, whether this is a "scattered deposit" or a confined secondary refuse aggregate. On the vertical plane, refitting across several levels can indicate the degree and sometimes the kind of mixture involved.
Heterogeneity

One relatively easy measure of the characteristics of deposits is the diversity (Kintigh 1984) or heterogeneity of materials within them. Diversity can be measured either as richness—the number of classes—or evenness—the relative proportion of classes one to the other (Jones and Leonard 1989). The diversity of artifact types and styles (e.g., Conkey 1989; Schiffer 1989) has been used as a measure of both intersite and intrasite variability (Conkey 1989; O'Connell 1987; Yellen 1977). Comparison between sites often focuses on site function, while intrasite comparison is associated with differences between activity areas. Variables said to affect artifact diversity include duration of occupation, population size, and seasonality.

Boone (1987) found that a measure of secondary refuse heterogeneity combined with deposit size illustrated that variations in the frequency counts of refuse types were associated with variations in activity structures for a medieval Moroccan site. The general hypothesis is that homogeneous deposits may be linked to single activities, while heterogeneous deposits could indicate secondary refuse aggregates or trash heaps. I employ this same model for the Portsmouth sites and assume differences in artifact diversity correspond to variations in depositional and postdepositional activities. For instance, deposits that
consisted only of architectural debris--nails, brick, wood fragments, and window glass--were thought to derive from different behavioral processes than deposits with ceramics and faunal materials.

Measuring diversity in archaeology has been elevated to a high form of statistical art (Kintigh 1984; Rindos 1989), but my objective was to develop simple analytic tools. To measure diversity among the Portsmouth deposits, I calculated richness by counting the number of artifact classes, and to calculate evenness I generated a "prevalence index." Both of these procedures are described below.

Classes were counted from project inventory sheets and included such divisions of materials as ceramics, bottle glass, lighting glass, metal, bone, shell, seeds, brick, nails, window glass, pipes, charcoal, and coal. Figure 4.3 is an example of the code sheet I used to record the range of archaeological classes. These classes are not necessarily equivalent to one another, but they fall into groups familiar to historical archaeologists. The total number of classes was a simple measure of the richness of the deposit, with few classes indicating low richness and many classes high richness.

The prevalence of a particular class or group of artifacts was hypothesized to be indicative of behaviors contributing to the formation of a deposit. For instance,
<table>
<thead>
<tr>
<th>Site: Follett site</th>
<th>Unit: N11W9</th>
<th>Phase no.: IA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bag nos.</td>
<td>691</td>
<td>913</td>
</tr>
<tr>
<td>Class of Material</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Folded lead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Window glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand-forged nails</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine-cut Nails</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wire nails</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unid nails</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortar/Plaster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalt shingle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flint</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe stem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe bowls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marbles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buttons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buckels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jewelry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leather shoe parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leather, other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal/Slag</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charcoal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeds/Pits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unid. Metal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottle/Table glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bakelite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Porcelain insulators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
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<td>0</td>
</tr>
</tbody>
</table>

*Figure 4.3. Sample Code Sheet Recording Archaeological Classes*
an assemblage of utilitarian or storage vessels, seeds, and bone could indicate kitchen refuse. The selective discard of such materials could indicate a propensity for sorting secondary refuse by room function or activity area. I developed a prevalence index to measure whether certain classes of materials were being selected for various deposits.

The prevalence index was used to calculate the proportion of three major groups of materials—ceramics, fauna, and architectural debris. The term group is in some ways misleading, given that ceramics is also a single artifact class. However, the faunal group includes mammal, bird, fish, and rodent bone, and shells (clam, oyster, and lobster). The architectural group summarizes several classes of materials that relate to the construction, maintenance, and razing of woodframe structures, and includes brick, nails, window glass, wood fragments, paint chips, and shingles.

Ceramics, faunal debris, and architectural materials are components to some degree of nearly all deposits and can be viewed as corresponding to various kinds of refuse, such as food preparation trash, food consumption refuse, and razing debris. At the Rider-Wood site, ceramics, fauna, and architectural debris were found to comprise about 85% of nineteenth-century deposits. The remaining 15% of artifacts
were divided among many classes, including bottle glass, metal, coal, charcoal, seeds, and smoking pipes.

Prevalence, then, refers to the relative proportion of each of the three artifact groups, ceramics, fauna, and architectural debris. In Appendices A, B, and C, I discuss how proportions of each material group compare to one another. I also used the prevalence index as an indicator of deposit evenness. Where one artifact group was prevalent at a high ratio while the other two were at moderate or low proportions, these deposits were characterized as uneven. When all three groups were present in moderate proportions, the deposit was said to be even.

**Deposit Density**

Wilson's (1991) attributes of clustering and deposit size were subsumed under my single category of deposit density, calculated as the total number of artifacts per cubic meter. All classes of remains were included in this figure. Artifact totals per deposit were adjusted for a ratio of one cubic meter. McIntosh (1977) found the measurement of deposit density a cost-effective and simple method that offered 100% reliability in results. Desert Archaeology, Inc. also employs this tool in their assessments of whether a deposit constitutes de facto refuse, secondary refuse, or transformed (i.e., tertiary)
refuse (James Heidke, personal communication 1991).

Wilson (1991) advocates the measurement of quantities of artifacts per deposit to obtain a relative assessment of its size. In this sense, it is akin to heterogeneity, which records the number of categories of artifacts. However, measurement of the size of deposits in urban settings is rarely possible, given that the full extents of trash deposits are rarely recovered in their entirety. It was considered more useful to use density as a proportion commensurate with the excavated sample deposit.

Wilson's (1991) concept of clustering, on the other hand, is an attempt to distinguish between sheet refuse and aggregates of refuse. He does not quantify the distinctions between the two categories but notes that sheet refuse is characterized by a low density of artifacts over a large area. It was hoped that this study could offer some quantitative guidelines for distinguishing sheet refuse from more concentrated trash deposits by comparing the density of a range of deposits.

Density was also calculated for the three main artifact groups, ceramics, fauna, and architectural debris, to provide another measure of prevalence. These figures offered amounts of materials per m³ rather than proportions for another form of comparison.
Other Quantitative Studies

In order to further inform on the formation processes of deposits, sherds, glass, and bone were examined for evidence of burning. A significant proportion of burned materials across several classes was thought to be a possible indicator of the practice of burning piles of trash. Before regulations were imposed on open-fire burning in the late twentieth century, piles of brush or leaves were often seasonally incinerated. Household trash was burned in 55-gallon drums to reduce the total mass of debris prior to its removal to town dumps. Evidence of this kind of behavior in the nineteenth century was sought with the quantification of burned materials.

A vessel-to-sherd ratio (Mrozowski 1984) was calculated for all deposits as a substitute for the measure of the completeness of vessels (Miller and Moodey 1986). The ratio was calculated by dividing the minimum number of vessels by the total sherd count and offered evidence of the general nature of refuse deposits. A ratio value approaching "1" was hypothesized as characterizing a deposit with a high degree of mixture and transformation with only fragmentary remains of vessels. That is to say, for every one sherd, there was one vessel. Lower values indicated higher degrees of vessel completeness corresponding to deposits with greater "intactness."
However, the significance of this ratio was strongly influenced by the relative sherd size. In undisturbed secondary refuse contexts where whole vessels had been deposited, a single sherd could represent a nearly complete vessel. In this case, the vessel-to-sherd ratio is not a good indicator of vessel intactness. The intersection of the two measures of sherd size and the vessel-to-sherd ratio is a far better way to assess the nature of the deposit.

Finally, faunal materials from selected contexts were analyzed by an outside consultant for information on species identification, body-part analysis, completeness of the specimen, and macroscopic evidence of trampling, burning, or gnawing. Bone and shell artifacts were chosen to help identify deposit formation processes because they have a relatively soft body surface that is susceptible to damage through breakage, erosion, or trampling. Conventional faunal analysis emphasizes the identification of species, calculating a minimum number of individuals, and deciphering butchering marks to identify consumer behavior trends or socioeconomic status (e.g., Bogucki 1981; Daly 1969; Grayson 1979; Schulz and Gust 1983; Singer 1985). However, this study of faunal remains was primarily used to characterize the type of deposit. Aspects of the study contributing to the understanding of formation processes are summarized in Chapter 6 and Appendices A, B, and C. An interpretation of
The findings from the faunal study is summarized in Appendix D and explored in Chapter 7.

PROCEDURE

The analytic techniques and their theoretical justification are reviewed above. In this section I outline the general procedures employed in the analysis of the ceramic materials from three sites in Portsmouth, New Hampshire.

The first step was to assess site stratigraphy through the examination of fieldnotes. Field records could consist of plans, sections, excavator's fieldnotes, preliminary or published reports, and photographic materials. Each site had different systems of recording, and I established some standardization by adapting a simplified Harris matrix for the three sites. This step was performed first in order to ascertain: (1) the general anthropogenic and geological nature of the site's makeup; (2) where features were located; and (3) how excavation units and levels within them were correlated across vertical and horizontal planes. As stated above, this initial step met with varied success depending upon the field records and the total size of the excavated sample.

Once a general picture of a site's depositional history had been obtained, project inventory or catalog sheets were
consulted to select which proveniences might be dated from the nineteenth century. Ambiguous contexts from either the end of the eighteenth century or the beginning of the twentieth century were often included in the analysis of ceramic materials. This was done both to ensure that I was not overlooking nineteenth-century contexts on the "edges" of my sample and to collect comparative samples for depositional behaviors over a longitudinal range.

Most materials from the three sites had been cataloged and recorded on site-inventory sheets. In fact, the degree of collection management was a factor in selecting which sites I used as part of my research; I had a strong preference for projects that had processed and cataloged the bulk of archaeological materials. Working from site-inventory sheets, I was able to select which proveniences were likely to have been nineteenth-century deposits, given the range of materials and the general disposition of the ceramics. Project catalog sheets also allowed me to quantify the heterogeneity and richness of deposits, and to assess a terminus post quem date. Archaeological materials from all sites at Strawberry Banke Museum are bagged according to provenience, that is to say, by locus or findspot. Several bags can correspond to a single deposit (unit of stratification), and these were examined together.

The sorting process combined three separate steps in
order to capture several different kinds of information with a minimum of handling. The ceramic contents of bags were emptied onto small trays, one bag at a time. Ceramics were first sorted by ware, e.g., redware, stoneware, creamware, yellowware, pearlware, whiteware, and ironstone. Next, each ware type was sorted by decoration type, following the general hierarchical treatment expressed in Figure 4.1. In cases of uncertain identification of ware, decoration often assisted in the sorting. Each distinct decorative category was recorded in pencil on a code sheet, with a total number of sherds corresponding to that category noted. Sherds were also sorted by the portion of the vessel they represented; i.e., rim, base, or body. Finally, each sherd within the vessel portion class was assigned to a size range, and the quantity entered in the appropriate column. Figure 4.4 offers an example of the kinds of data recorded after these three steps. Deposits could be then viewed in terms of the size range of ceramics, the number of sherds, and the proportion of rims, bases, and bodies of vessels in each size gradient.

The one exception to the above procedure was in the case of redware ceramics, where I did not try to evaluate the range of decoration found. All other measures were made, including the count of vessel portions and size ranges. However, I ignored the designation by decorative
<table>
<thead>
<tr>
<th>SITE NO. 556185</th>
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<th>Rims</th>
<th>Bases</th>
<th>Bodies</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Pearlware</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Handle</td>
</tr>
<tr>
<td>1</td>
<td>Whiteware</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Glass pl.</td>
</tr>
<tr>
<td>1</td>
<td>Ironstone</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Pitcher</td>
</tr>
<tr>
<td>2</td>
<td>Porcelain</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Pitcher</td>
</tr>
</tbody>
</table>

**Decoration Codes**

<table>
<thead>
<tr>
<th>Rims</th>
<th>Bases</th>
<th>Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1-5</td>
<td>6-1-16</td>
<td>51-1-16</td>
</tr>
<tr>
<td>0-1-5</td>
<td>16-1-16</td>
<td>40-1-100</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTALS**

| 36 | 22 | 54 | 1 | 1 | 3 | 4 | 3 |
category for reasons explained below. Redwares are coarse-grained, low-fired wares, often produced locally. They can be variously decorated with such techniques as slip trailing and molding, but are most often treated with either a clear or manganese-based lead glaze. The vessel forms are usually heavy and utilitarian, and include milkpans, mixing bowls, or storage crocks. Some redware tableware was produced and includes tankards and plates.

Determining the decorative elements of redware vessels from sherds can be a daunting task. The large size of the vessel, uneven wall thickness, uneven firing, and uneven surface decoration can make it difficult to determine which decorative category to employ in describing a single vessel. A milkpan, for instance, is generally always glazed with a clear lead glaze on its entire interior surface, while only a portion of the lip, rim, or exterior may be glazed. Overall, I decided that it was too time-consuming to class redwares by decoration; instead attention was focused on the refined, higher-fired earthenwares, such as creamware, pearlware, whiteware, and ironstone.

Once the contents of a single bag were thus treated, a subjective assessment of the minimum number of vessels was made. I was assisted in the development of a strategy for counting the minimum number of vessels by ceramic consultant Ellen Weir, who noted the advantage of performing vessel
counts as part of the sherd analysis. This saved the duplication of sorting by decoration type for first sherds and then vessels.

Three criteria were used in my subjective assessment of minimum-vessel counts: decoration, vessel portion, and size. In most cases, vessels consisted of more than one sherd, but if a single sherd satisfied the requirements of being distinctive in decoration and larger than the smallest size range, it was counted as a separate vessel. The single most important criterion for assessing minimum-vessel counts was surface decoration.

Each distinct decorative category was counted as at least one vessel, and notations were made where more than one vessel could be counted from the same decorative category. This was often the case for transfer-printed wares, where it was clear that characteristics of the quality of printing, motif, and color indicated more than one vessel. Vessel portion was also a significant criterion in determining the number of vessels; differences in rims, especially, were used to assess vessel counts. Sherds less than 5 cm² in size were generally ignored in the vessel counts unless there were differences in decoration that warranted inclusion as a separate vessel. Minimum-vessel counts were recorded in red pencil in the left-hand column of the code sheet, while information about crossmending and
vessel shape was entered in the right-hand section.

Sherd and vessel counts proceeded on a tray-by-tray basis. The trays themselves were arranged on a large table in approximately the same stratigraphic relations that they were retrieved from the ground, where they were visually scanned for crossmends. Desert Archaeology, Inc. of Tucson, Arizona, employs this method of layout in their refitting analysis, and I was strongly urged to try it (James Heidke, personal communication 1991). Crossmends between strata within the same unit were readily apparent by matching similarly decorated sherds. Likewise, crossmends among equivalent strata in adjoining or nearby units could be detected when the materials were so laid out. In samples with large quantities of sherds, it became a cumbersome method, but overall, it met with success.

Crossmends were of two different varieties. The obvious refit was two sherds whose edges fit together and conjoined; this constituted irrefutable evidence of a single vessel and was recorded as a "C" in the right-hand margin of the code sheet. A match, or "M," was more speculative in that all available information on decoration, ware type, and vessel form suggested that sherds came from the same vessel. However, a match could also refer to different vessels from a similar set, and the difference in conjoining and matching categories had to be considered when assessing stratigraphic
correlations between units of deposition.

All crossmends, whether speculative matches or conjoins, were recorded in the right-hand column of code sheets. Redwares were also examined for crossmends based on visual inspection of vessel form and general categories of clear lead glaze versus manganese glaze, or unglazed. The matching or conjoining vessel was counted only once, while all the bags that show signs of crossmending were noted. This assisted in showing the horizontal and vertical movement of portions of single vessels.

There were several obvious biases in the minimum-vessel counts reconstructed in this subjective assessment. Counting creamware vessels, for instance, was particularly difficult, in that a high percentage of the creamware assemblage for the Portsmouth sites was plain and undecorated. When sherds were very small and vessel form could not be determined, there was little to distinguish one plain creamware vessel from another. Therefore, diagnostic sherds from rims and bases were heavily relied upon for quantification. Overall, the number of creamware vessels is probably underrepresented. Redware vessels are likely underrepresented for the same reasons articulated for creamware.

Total vessel counts for transfer-printed wares, on the other hand, may be inflated, owing to the small sizes of
sherd material and the inability to reconstruct entire motifs. Where it appeared there were differences in the quality of the transfer-print or colors of the print, I distinguished more than one vessel. It is possible that several vessels were counted more than once. The counterpoint to the minimum vessel count for transfer-printed wares is that most of these vessels were sold in sets, and a single motif could be applied to several vessels of the same form. In most cases, a matching motif was counted as a single vessel, unless there was clear evidence of a different vessel form. This practice, however, deflated the number of vessels with the same form and transfer-printed surface. Between these two factors of overrepresentation and underrepresentation, I believe the minimum-vessel counts for transfer-printed wares are reasonably accurate.

On the other hand, the minimum-vessel estimates for such wares as English white salt-glazed stoneware and buff-colored coarse earthenwares are probably high. These vessels, usually represented by one or two sherds, were produced and used—and probably deposited—in the eighteenth century, but were recovered in nineteenth-century contexts. Nineteenth-century cultural formation processes incorporated materials from underlying soil horizons and probably scattered them in the redeposition process. Between the
underrepresentation of creamware and redware vessels and the overrepresentation of eighteenth-century vessels, I believe that, overall, the site estimates for the minimum number of vessels in nineteenth-century contexts are reasonable.

Once the analysis of ceramics had been completed, the materials were returned to their bags, and I quantified the heterogeneity and richness of deposits. I employed the existing summary sheets used by Strawberry Banke Museum to record the frequency of 36 artifact categories, (e.g., ceramics, bottle glass, metal, jewelry, pipes, fauna, architectural debris [window glass, nails, brick, mortar or plaster], and fuel [charcoal, coal, clinkers, or slag]). These categories are largely consistent with those employed by South (1977a, 1978) to describe the range of historical-archaeological materials. In later contexts, other materials can be added, such as bakelite, crown bottle caps, cigarette filters, and plastic. Heterogeneity was measured both by richness (number of classes) and prevalence (proportions of three main artifact classes).

The final step in the analytical procedure was to hire a consultant to look at the faunal materials from selected contexts to help identify the nature of those contexts. Jennifer Strand of the Department of Anthropology of the University of Arizona assisted in the identification of species and body part of animals and the macroscopic
inspection of bones for evidence of trampling and breakage. The results of her study and all other analyses are discussed in Chapters 6 and 7 and Appendices A, B, C, and D.

ARCHAEOLOGICAL DATA BASES

The remains of three archaeological sites were used in this dissertation to form conclusions about the formation of nineteenth-century deposits. The artifact collections and the history of their excavation and management were summarized in Chapter 3. The following section reviews the state of the assemblages and the difficulties I encountered in using the collections.

Rider-Wood Site

I began with the analysis of the Rider-Wood site, which, for reasons that are explored below, offered the least reliable sample. In 1981 Strawberry Banke Museum sponsored a public education archaeological excavation to introduce local members of the community to the research objectives and practice of archaeology. More than 120 volunteers, most of whom had no previous archaeological experience, participated in excavations at the Rider-Wood site over an eight-week period. Three supervisors oversaw this work, during which each four-hour shift was limited to 25 volunteers. Participants in the "Project Discovery"
program attended lectures on field methods, material culture analysis, and a general background history of Portsmouth, and spent a portion of their training time in the lab to learn to process and identify artifacts (Graffam 1981).

Analysis of the site is beset with problems for researchers unfamiliar with it, owing to inadequate fieldnotes and sections. Existing records include a field bag inventory, two profile drawings in the preliminary report, and a half-dozen xeroxed copies of profiles or fieldnotes that record horizontal contexts. It is not clear what happened to the original set of fieldnotes, whether they were lost, or removed from the Archaeology Department for analysis and never returned. The remainder of the fieldnotes apparently disappeared in a personnel shuffle in the early 1980s. The fact that all recording was done by one of the three supervisors and not by the people who were actually excavating may also have contributed to a general shortage of fieldnotes.

The one existing tool for reconstructing the depositional context of artifacts comes in the form of a field-bag inventory, which assigned a bag number to the excavation unit and an arbitrary level recorded in centimeters below ground surface. The supervisors emphasized excavation in 10-cm arbitrary levels rather than by cultural strata, perhaps to facilitate the training of
new excavators. The field-bag inventory also noted the 
Munsell color of the deposit, and in some cases recorded the 
nature of the sediment or the supervisor's assessment of 
stratum changes. The justification for the stratum change 
is not readily apparent from the field-bag inventory, and 
there is some obvious confusion and overlap when a 
stratigraphic profile is rendered from this source. 
Information regarding the supervisor's assessment of strata 
was not transferred to field-bag tags but was kept in the 
supervisor's fieldbook.

A reconstruction of stratigraphic relations, both 
horizontal and vertical, is difficult owing to the absence 
of descriptive information on sediment types and general 
notations on artifacts. The field-bag inventory 
ocasionally notes the sediment composition, such as clay or 
ash. However, information on the texture or compaction of 
deposits is nonexistent. Most cultural strata can be 
reconstructed with the clustering of bags of artifacts 
within horizons of similar color and their absolute depth. 
The arbitrary level system of recording fails when 
stratigraphy is not simple, and when features cut through 
levels.

For the 10 units examined here, four have surviving 
profiles drawn by the principal investigator. These section 
drawings portray the good state of preservation of
outbuilding remains. The profile drawing for the privy in Unit 9 also shows the complexity of the stratification, in that deposits slope and slump and do not form neat, level horizons. The excavation proceeded, however, by arbitrary levels, so several deposits were combined.

In 1981 14 one-meter squares were opened. Two units were excavated against the north foundation of the house, and two more were opened inside the dirt cellar at the western end of the house. Ten excavation squares (Figure 10) were placed in various parts of the backyard to ascertain the location and disposition of subsurface architectural remains, and to gather information on details of the built environment (Graffam 1981). Salvage operations in 1985 (Vogt 1985) and 1990 preceded repairs on the Rider-Wood house, but adjacent to the house, contexts were highly disturbed down to deep-lying levels from early twentieth-century renovations of the foundation. The 10 backyard units excavated in the 1981 season represent approximately a four percent sample of the total area not covered by the house and form the basis of my analysis of site formation processes. Subsurface features consisted of one eighteenth-century tanner's pit, and a nineteenth-century privy, stable, and an assortment of small pits.

Management of the Rider-Wood site collection has been a high priority for the Strawberry Banke Museum Archaeological
Figure 4.5. Location of Backyard Excavation Units at the Rider-Wood Site
Department since 1981. All artifacts have been washed, cataloged (i.e., identified and counted), sorted by material, and boxed by excavation unit. There are 708 field bags, which fill about 100 archival boxes. Most ceramics have been labeled, and some refitting has been done. Staff archaeologists have designated their own tentative stratigraphy and have assigned field-bag numbers to strata. For a portion of the collection, bone and brick have been weighed as well as counted.

For an investigator interested in the formation of deposits, there are three problems with the Rider-Wood site. First is the uneven quality of excavation and the nearly complete absence of fieldnotes that inform on the sediment composition, texture, orientation, or stratigraphic relations of deposits. With nothing but Munsell color designations, it is a leap of faith to reconstruct horizontal correlations across units, or to establish a profile. Neither is it altogether clear how to reconstruct the boundaries of individual deposits within units. This problem has been exacerbated in certain cases where the bag tag was printed in ink that has run or disappeared, so that it is impossible to assign a provenience to the artifacts. Because the stratigraphic relations were so unclear, I elected to look at nearly all the Rider-Wood materials, rather than trying to select only nineteenth-century
contexts. It was considered important to try to reconstruct this site from the bottom to the top.

A second problem stems from the sorting of artifacts by material type. Deposits have been separated and boxed by ceramics, glass, bone, "small finds," brick, and other such categories. This type of artifact management apparently is consistent with the interests of museums, in their desire to catalog and archive material types. As an archaeologist interested in the range, heterogeneity, and richness of artifact types, I was required to "reassemble" deposits. I did this by using catalog sheets that counted the kind and number of remains by field-bag number. In some cases, I handled only the ceramics and did not physically examine the other artifact classes.

A third difficulty in the analysis of the Rider-Wood materials also derives from the museum setting. One of the dramatic finds from the site was a privy full of ceramics, apparently dating from Mary Rider's occupation of the site. This rich deposit contained several hundred sherds and dozens of reconstructable vessels. Some of the vessels have been incorporated into a museum exhibit portraying the life and times of Mary Rider. Housed in a glass case, the collection of vessels was temporarily inaccessible at the time of my research, making it impossible to count and measure a substantial portion of the privy sample. The Mary
Rider display is not an isolated case and represents one obstacle in working with the Strawberry Banke collections. Archaeological examples are used in displays throughout the museum, and sometimes it is difficult for an outside researcher to track down their whereabouts.

Overall, however, the Rider-Wood collection is small, well labeled, and easy to access. Most of the remains from the 10 backyard units can be associated with meaningful depositional units with a fair degree of certainty.

The Follett Site

In 1981 while the Project Discovery program was under way, Faith Harrington began investigations at the Follett site. Using a small team of experienced excavators, Harrington sought evidence of the eighteenth- and nineteenth-century maritime operations at Puddle Dock (1981, 1983). She opened 10 units in a six-week season in 1981 and continued for a second season in 1982. I was a field crew member for most of 1981 and for the duration of the 1982 season.

Altogether a total of 26 one-meter squares was excavated (Figure 4.6), most of them to culturally sterile clay levels. Twenty-one excavation units were located to recover evidence of the kind and extent of wharf construction that fronted along Puddle Dock. Harrington
Figure 4.6. Location of Excavation Units at the Follett Site
traced the line of the wharf across several contiguous units to verify the southern and western edges of the Follett property line. One unit at the southeast corner of the house investigated the relation between the street and the residence structure; in the interest of time, I elected to focus on backyard deposits and did not look at this unit in my analysis. The three most important units for the reconstruction of nineteenth-century deposits were those that were placed to sample the backyard in areas north of the wharf, N11W9, N13W5, and N9W1.

One critical aspect of the Follett site project is that the excavation was well controlled, meaning that the stratigraphy does not require the same kind of elaborate and uncertain reconstruction as that of the Rider-Wood Site. With the excavation of several contiguous units, it is easier to create horizontal correlations (sensu Harris 1989), although the connections are not always obvious. From one season to the next, assessments of Munsell color and soil descriptions sometimes differed for units adjacent to one another. Excavators with different levels of experience also detected and recorded different numbers of strata.

The recording of the Follett excavation was the responsibility of individual excavators, requiring horizontal plans for each new cultural stratum, profiles of
"the most representative" wall, fieldnotes that characterized the color, composition, and texture of the sediment, and a verbal description of digging procedures and stratigraphic relations of deposits. The stratigraphy was recorded in natural or cultural strata, and arbitrary levels were only used in deposits that exceeded 10 cm in thickness. The horizontal plan for each new stratum closely approximates Harris's (1989) single-layer plan in that it recorded the depth, tilt, and orientation of deposits, but the bounds of the 1-x-1-m excavation units did not allow the description of the horizontal extent of deposits.

Most field records exist, both in the original and in xeroxed copies, along with an extensive photographic archive. Although the requirements of the recording system were standardized, the extent of recording was uneven. In particular, a newly trained recruit had the least complete records in two units that had a complex stratigraphic sequence. The reconstruction of the site stratigraphy was hampered by a lack of section drawings from all four walls. I discovered that for units that had more field records, there was a heightened understanding of the depositional processes, including the layering of lenses, the delineation of activity zones, and the downcutting of features. With adequate fieldnotes, some contexts missed in the excavation process could be reconstructed from the lab analysis.
Lowest levels of Follett site sediments were largely composed of heavy, dense clays, and the site's location adjacent to the now-filled Puddle Dock waterway meant that water-table levels were often reached at 60 cm below ground level. This required the laborious practice of water sieving each sample of excavated sediments. Five-gallon buckets were filled with excavated clay sediments, then sieved with water through fine-mesh window screen to extract any archaeological materials. The advantage of water sieving was the collection of small artifacts that would have been otherwise lost as backfill, such as beads, seeds, and fish spines. Two disadvantages were the time involved in both the sieving operation and the sorting of materials for cataloging. Approximately 30 to 40 percent of the site's field bags were wet sieved, and a sizable proportion of these materials have not yet been sorted.

In two seasons of work a total of 25 square meters of backyard deposits was excavated, representing a 4.8% sample of the roughly 600 square meters of the houselot. Thirty-six features were recorded in the field, most of them wharf beams and other architectural components related to the maritime activities of the southern yard area. Reexamination of the fieldnotes suggests that additional features, such as small pits or postholes, were overlooked in the excavation process and not assigned feature numbers.
The Follett site collection is still only partially processed. At the time of its excavation in 1981 and 1982, the museum staff was occupied with the Rider-Wood materials and the first two phases of the Deer Street projects. Harrington oversaw the washing, labeling, and cataloging of a substantial portion of the 1981 excavated materials, but funding and volunteer resources were rerouted to other projects. When I began work with the collection in June, 1991, I encountered 150 archival boxes of mixed contexts and material types. A computer list matched artifact bags with a box number, but the list was arranged by the content of the box and was incomplete. This meant that trying to find all ceramics for N13W5 Stratum III, for example, was an arduous and time-consuming task.

My first step required the sorting of the entire collection by excavation unit, and again by stratum. Forty hours of work were needed to rebox the artifacts. Harrington oversaw the cataloging of 1150 field bags, while I identified and inventoried the ceramics for an additional 200, resulting in a site total of 1350 inventory bags. This figure does not account for wet-sieve samples that still require processing and cataloging.

Problems with this collection stemmed mainly from its unfinished state of processing. Those deposits considered nineteenth-century needed additional washing, labeling, and
cataloging. Wet-sieve samples were sorted, and ceramics were removed for identification, counting, and sizing. Volunteers were employed in all aspects except the cataloging of the ceramics.

**Wheelwright Site**

The Strawbery Banke Archaeology Department sponsored two field schools in 1990 and 1991 at the Wheelwright site. The project combined intensive historical research and well controlled excavation to inform on households of the past. Of special interest was the resolution of the question of the date of construction for the Wheelwright house using archaeological data. Both the historical research and archaeological investigation continue today, and a preliminary report is forthcoming.

Unlike the Project Discovery program that saw 120 volunteers working at the Rider-Wood site, the Wheelwright field school was small. Approximately 20 excavators enrolled in the four-week program, during which time they were required to spend two weeks learning lab processing techniques. That allowed two field supervisors to oversee the training of 10 field workers.

In two seasons of work 16 excavation units were opened for a total sampling area of 13.25 m². Units were of variable size, corresponding with different research
questions (Figure 4.7). Large horizontal areas of the backyard were opened to retrieve data on yard use and activity areas. Fence lines were also tested with larger horizontal exposures, but smaller test pits were opened in areas most removed from the house. Approximately 30 features, most of them negative in nature (sensu Harris 1989), were recorded in the 16 excavation units.

Recording responsibilities were assigned to excavators; in fact, an integral part of the field school program was the teaching of proper recording methods. Two standardized sheets were given to excavators, one for horizontal layers and the other for features. Recording was done at arbitrary 10-cm levels and at the beginning of each new stratum. The horizontal plans were composite rather than single-layer, but they recorded depth, dip, and orientation of deposits at various elevations. Feature forms included information on their horizontal boundaries and elevation. There was some redundancy in the recording method, but it was useful to have the additional information.

The set of fieldnotes was complete, available in the original or in one of several backup copies. Profile drawings were done of more than one wall of a unit; in most cases, all four profiles were drawn. The principal investigators were accessible and helped to clarify misconceptions or confusing aspects of stratigraphy.
Figure 4.7. Location of Excavation Units at the Wheelwright Site
The project incorporated laboratory processing as a critical part of the excavation process, and as a result, the collections are well managed and ready for immediate examination. One volunteer performed refitting of ceramics for eighteenth-century deposits, and ceramics were cleaned, labeled, and made accessible for further analysis.

SUMMARY

Chapter 4 outlines the various analytic techniques employed to analyze ceramic materials from three urban sites in Portsmouth, New Hampshire. The goal was to develop procedures whereby depositional units could be characterized and differentiated from one another, so they could be used to describe nineteenth-century households. In the following chapter, I use archival evidence to reconstruct households for the three Portsmouth sites; I define nineteenth-century households in terms of national origin, composition, and developmental cycle. In Chapter 6, I establish the linkages between the archaeological deposits reconstructed by using the methods described here in Chapter 4 and the households reconstructed in Chapter 5.
Chapter 5

HOUSEHOLDS

As stated in Chapter 4, several factors combine to make Portsmouth, New Hampshire, an ideal location for the study of formation processes at urban sites. The city has been an active focus of archaeological research and excavation for a quarter century, it has an extensive historical resource base, and Strawberry Banke Museum has played an aggressive role in funding and administering archaeological research.

Several kinds of resources have been used here in the analysis of formation processes at Portsmouth sites, including archaeological and archival materials. In Chapter 5, I reviewed the methods by which the archaeological data were measured and counted in order to characterize the nature of archaeological deposits. A battery of qualitative and quantitative studies were performed to define deposits in terms of past human behavior. The emphasis was on trash deposits—Schiffer's (1989) cultural deposition—and the behaviors behind the formation and transformation of the various deposit types.

Here, I establish the boundaries of nineteenth-century households with which some of the archaeological depositional units may be linked. The justification for the linkages are more fully articulated in Chapter 6, while
Chapter 5 serves as the elaboration of the household types, their composition, and developmental cycles. The characteristics of at least 10 households at three houselots from the period 1800 to 1900 have been examined.

Households are reconstructed using a rich historical record housed primarily in Portsmouth, but also located at public facilities within a 20-mile radius at the neighboring towns of Durham and Exeter, New Hampshire. Beaudry (1984:29) stresses the need to consider historical documentation as a kind of "ethnographic" study of both the commonalities and variation in past human behavior.

Chapter 5 is organized in four major sections. The first part is a discussion of the anthropological and archaeological treatments of the concept of "household" and concludes with an operative definition for the context of nineteenth-century Portsmouth, New Hampshire. The second section offers a generalized model for the architectural developmental cycle of the houselot, which encapsulates the commonalities of the construction-maintenance-razing cycles that occurred at urban sites in the northeastern United States. Section three reviews each of the types of archival data available to historical archaeologists interested in the nineteenth century. There is also a discussion of how these were employed in the reconstruction of households. In the final segment, I outline the specifics of the households
THE HOUSEHOLD AS AN ANALYTIC UNIT

Households are social or behavioral units typically associated with fixed architectural features or dwelling units. The two are quite separate conceptually, with the first concerned with groups of people, and the second with the physical location of the activities of these people (Ashmore and Wilk 1988:6). It is this second aspect that receives the most attention from archaeologists, because the locus of human activities almost always entails the creation of residues from which the archaeologist can infer something about the behavioral unit. As a major building block of the social system, the household is a critical analytical unit in both anthropology and archaeology (Ashmore and Wilk 1988:1; Lowell 1986:6; Wilk and Rathje 1982:618).

Anthropologists have offered several definitions of the household (Fortes 1971; Goody 1972; Netting et al. 1984; Sanjek 1982; Wilk 1991; Yanagisako 1979) with no one option that works best cross-culturally. Following this lead, archaeologists have also had difficulties in establishing one clear definition. This work makes no claims about singular definitions, but rather offers some observations on shared characteristics of nineteenth-century households in Portsmouth, New Hampshire, an urban settlement whose
economic system increasingly tended toward industrial capitalism.

Following Wilk (1991:36), households are viewed here as being composed of three distinct dimensions: morphology, function, and culture. Morphology addresses the membership of the social group constituting a household, such as number of members, age distribution, and fertility and mortality rates. The function of a household is embodied in the shared activities of a domestic unit, such as production, distribution, transmission, reproduction, and coresidence (Wilk and Netting 1984). Households are cultural units that respond to cultural ideals of the expected and desired behaviors of members.

A recurring theme in the study of households is the developmental cycle. As archaeologists, Beaudry (1984:31) and Kramer (1982a) stress an appreciation of the expansion and contraction of households over time and the concomitant changes in the material expression of the different life stages of a household. The job of the archaeologist is to articulate household composition and activities from material correlates, especially architecture (Cameron 1991; Kramer 1982a; Lowell 1986; Wilcox 1975) and refuse (Agnew 1983; Beaudry 1984; Edwards et al. 1988; Ingersoll 1971; Moran et al. 1982; Mrozowski 1984; Wilson 1991). Schiffer (1989) has also illustrated how household developmental
cycles are involved in patterns of reuse, discard, and reclamation.

Given its role in nineteenth-century urban capitalism, households in Portsmouth were different from those in earlier time periods, both historical and prehistoric. Intergenerational transmission no longer followed a simple path that kept a property within a single family over several generations. This was the prevailing practice in Portsmouth in the seventeenth and eighteenth centuries, following the medieval cultural rules of primogeniture. The nineteenth century was an explosive period of revolutionary social, technological, and economic change. Rather than keeping family properties, sons (less so daughters) were more willing to exchange the paternal estate for cash. Transmission, then, became a method of transferring real estate out of the family for profit.

Increasingly there has been a focus on households as an adaptive unit (Lowell 1986; Mrozowski 1984; Wilk 1991; Wilk and Netting 1984). The household is not a closed, coherent system (Wilk 1991:37) but is open to internal and external forces of change (Lowell 1986:10; Mrozowski 1984:41; Wilk 1991:38). Lowell (1986:18-43) discusses seven factors that influence household morphology and function: economic considerations and labor requirements, developmental cycles, mortality and fertility, architectural constraints, the
extracommunity human environment, wealth and intracommunity household variability, and cultural value systems. All of these impact upon the household forcing its compromise or adjustment to varying sets of circumstances. Although the household can control some of the above factors, Mrozowski (1984:41) emphasizes that external constraints can greatly impose on households.

For instance, Mrozowski (1984) considers the effects of an economic shift in the northeastern United States from mercantile capitalism to industrial capitalism over the course of the nineteenth century. He suggests that women were removed from the public, income-generating arena (Mrozowski's "productive sphere" [1984:43]) and were increasingly identified with housework and family. An outcome of this was a shift in the decision-making processes within the household related to consumption. Marketing began to target female audiences with the lure of style and refinement (Mrozowski 1984:43). By the late nineteenth century portable goods discarded and recovered in the archaeological record may have increasingly been within the sphere of women who were largely responsible for the acquisition, use, and disposal of such materials as ceramics, glass, and other domestic items.

As used here, households are not equivalent to families, although in most cases, kinship is a factor that
unites most members of a household. Households in most cases in Portsmouth correspond to what Laslett (1972) referred to as a "houseful" in that activities such as production and consumption appear to have been shared by domestic groups. Of all the functions outlined by Wilk and Netting (1984), coresidence is a characteristic common to all 12 Portsmouth households examined here. Other functions such as production, distribution, reproduction, and transmission were not shared equally among the households examined here. Where these activities could be reconstructed from documentary resources, I indicate which of them apply to individual households described in the final section of this chapter.

The size and composition of the 12 Portsmouth households also evidence a wide range of variation. Household organization was primarily reconstructed from federal census records with some reference to church records (MacLennan 1985). The size of households ranged from a minimum of one resident to a houseful of ten. The composition of some households included both kin and nonkin members. Some household functions could be inferred from census records; for instance, family names and ages were used to form ideas about reproductive behaviors, e.g., age of onset of childbearing, fertility rate, and birth spacing.

One of the interesting contributions of my study is the
long-term view of household configurations at several sites over a century. Generalizations can be drawn about changes over time enacted at the level of both the household and the neighborhood, perhaps as a response to external economic and demographic factors. At the beginning of the nineteenth century, households tended to be dominated by "families," or groups related by kin, but by the end of the century, more and more nonkin personnel were included under the same roof. These households may be described as "premises" (Laslett 1972) or coresidential groups (Ashmore and Wilk 1988:6) whose members jointly participated only in the sharing of space. Just what kinds of other activities multiple-family renters shared is unclear from documentary evidence and may be clarified with archaeological evidence.

At the root of my discussion of Portsmouth households is the developmental cycle. The notion of the developmental cycle is based on Goody's (1971) concepts of expansion through procreation, fission or dispersal through marriage, and replacement by the succeeding generation. It also takes into account some of the basic ambiguities of the cycle as articulated by Mitterauer and Seider (1979:267-270), such as the remarriage of spouses and the departure of grown children who later return to their natal household. Inherent in the notion of the developmental cycle is the sense of morphology and functions that change in patterned
ways over time. The resolution of nineteenth-century documents can also delineate the range of variation in developmental cycles as individual households adapt to economic, social, and demographic influences.

Lowell (1986:54) reviewed the efforts of anthropologists and social historians to define households and observed that the work of the latter, especially, was disembodied from the tangible materials aspects of dwellings. Ethnoarchaeology has been one means of associating social units with dwelling units (Horne 1982, 1983; Kamp 1987; Kramer 1982a) or depositional units (Deal 1985; Hayden and Cannon 1983). Another way is an historical-archaeological approach that undertakes a kind of ethnographic study using methods of social historians in conjunction with those of archaeology. Ashmore and Wilk (1988:6) caution against such an approach, suggesting that archaeologists maintain a focus on activity areas that can be associated with activity groups.

I feel my work can be an important contribution by examining census records for sites that have excavated samples and standing architecture. The houselot boundaries can be articulated, activity areas excavated, and the houses visited to reconstruct room functions and traffic patterns that can indicate the relations between household members (Kramer 1982a). The historical data can inform on household
morphology while the archaeological interpretation focuses on household function. The combined study can then delineate changes in composition and activities over time at the individual household level and the community (i.e., neighborhood) level.

One of the unresolved procedural questions in defining households derives from the synchronic view archaeologists enjoy. Household developmental cycles are embedded in the studies of archaeological occupancies that linger more than 20 years. Over the course of time, household compositions change, leaving open the question of when a particular household begins and ends. For instance, if a head of household who arrived at a site in 1840 is still living at the same site 20 years later, it is highly likely he does not preside over the same constituency. Children for whom he provided food and shelter would have grown and left. Yet, from 1840 to 1860, documents list him as the occupant of the same address. If the household morphology has changed dramatically during his 20-year tenure, can we make reference to a single household? Is there a change in households when there is a change in the household composition, or when there is a shift in the head of household?

For the purposes of this research, I have noted a change in households when there is a change in the household
head. For nineteenth-century Portsmouth, this most often entails the end of the occupation of one family and the beginning of another. Changes in household heads also arise at the death of male spouses, when widows take over the responsibilities of maintaining a household.

THE HOUSELOT DEVELOPMENTAL CYCLE

The purpose of the following section is to acquaint the reader with the general pattern of houselot development—or how architecture fits within a "grammar of space" (Sutro and Downing 1988)—in nineteenth-century Portsmouth. Although the examples draw mainly from Portsmouth, commonalities in the architectural developmental cycle can be found for other parts of northeastern America (e.g., Beaudry 1987d; Mrozowski 1987; Rubertone 1982a). A model of site use is established here with a stress on the common architectural features of sites; a discussion of the use of open spaces will follow in Chapter 6. The model will depict the commonalities of houselot development (Beaudry 1984; Kramer 1982a) for the dwelling house and the assortment of outbuildings one usually finds in northeastern America.

Urban sites are stratigraphically and horizontally complex units of analysis. In the Near East, the complexity of these sites has resulted in the development of two approaches to stratigraphic analysis, either a stress on
architecture or on debris layers (Dever 1973; Henrickson 1984:56-61). In the American northeast, a similar opposition has occurred, with a great emphasis placed on the location of features (cellarholes, privies, or pits) and less interest in the fill layers between them. The following discussion describes the role that these features play in shaping the houselot.

One of the most critical aspects of nineteenth-century urban life in Portsmouth, New Hampshire, and in other urban areas, is the physical boundaries that constrain human activities. In Portsmouth, the nineteenth century was a period when houselots were becoming highly subdivided and when most lots took on their present size and configuration (Pendery 1980). Physical area was circumscribed by lot boundaries, which are portrayed in maps and described in deeds.

Space was also limited by the architectural structures that stood on the lots, in this case, the main house and outbuildings. Archaeologists interested in the nineteenth-century occupation of the city have available to them an abundant source of maps that document the size, location, and configuration of architecture from 1813 to the second quarter of the twentieth century. Detailed discussions on the cycle of architectural modification for individual houselots can and do follow from interpretation of these
maps. However, we can also talk about common patterns of lot size, lot configuration, and the outbuilding form and location.

The Strawbery Banke neighborhood was originally owned by a few wealthy landowners, whose heirs subdivided the large parcels into rectangular lots. The average lot size was about 15.25 x 24.4 m (50 x 80 feet) or 372 m² (4000 feet²). A typical 30-x-36-foot house would cover a little more than a quarter of the ground surface of such a lot, while other outbuildings could decrease the available ground surface by another five to 10%. Overall, then, as much as 30 to 40% of a houselot can be taken up with architectural structures at any one point in time, validating archaeologists' concern with the recovery of architectural features. With as much as one-third of available ground surface covered with architecture, activities of site occupants were restricted. Moreover, archaeological investigations face these same limitations when excavating at sites with standing architecture.

The physical houselot undergoes a steady transformation with continuous occupation, which is called here a developmental cycle. In a later section, the household developmental cycle will be discussed as it relates to the changes in the composition of groups of people over time. The houselot developmental cycle has been articulated by
several authors in both specific (Agorsah 1985; Cameron 1991; Ferguson and Mills 1987; Goitein 1969; Horne 1983; McIntosh 1974; Pinello 1989; and theoretical terms (Henrickson 1984). The work of Henrickson forms the basis of the houselot developmental-cycle model.

In its simplest terms, the cycle consists of the following stages: site preparation, architectural construction, use and maintenance of the structure, abandonment, destruction or razing of the structure, and reclamation of the site for another use. This cycle is meant to be viewed as continuous with few or short periods of abandonment, as is often the case for congested, long-occupied settlements. Also inherent in the developmental cycle are the decision-making processes required for the implementation of each stage of the cycle (McGuire and Schiffer 1983). Each of the main architectural types--houses, barns, sheds, privies or outhouses--found in nineteenth-century Portsmouth will be discussed below in terms of this continuous cycle.

New England Woodframe and Brick Architecture

Beginning in the eighteenth century, most residential architecture took the form of wooden-frame houses erected on fieldstone foundations over cellarholes dug beneath all or part of the main house. The site preparation--leveling,
consulting a contractor, collection of materials—became an intensive process, with large houses constructed by professional builders (Garvin 1971). House cellarholes were usually excavated in steep-sided pits, and fieldstones were placed against the walls from the inside of the cellarhole. These cellarholes leave unequivocal archaeological footprints; houses abandoned in heavily wooded rural contexts are highly visible 100 to 200 years later as unmistakable depressions (Baker 1985; Wheeler and Baker 1991).

The building materials for the eighteenth-century wood frame house included lumber, window glass, hand-wrought nails (often locally made by a blacksmith), and brick for a chimney. Maintenance of such structures involved the painting of exterior surfaces to preserve against dry-rot, wind, and rain; the regular replacement of rotten clapboards, sills, shingles, or broken window panes; and the upkeep of the main chimney. Paint chips, window glass, nails, and brick fragments are regular inclusions in archaeological deposits from these maintenance processes.

Unlike packed-earth floors that capture small debris within tamped occupation zones, New England wooden floors often stood over cellarholes or, on the second floor, over rooms. Evidence of primary de facto refuse (sensu South 1977a) is rarely recovered; at the abandonment of houses,
the wooden superstructure is often pushed or collapses into the cellarhole, making it difficult to separate primary de facto refuse from other materials. Archaeologists may want to be aware of small objects in the basal levels of destruction debris that could have sifted through floorboards as have been discovered beneath floors where there was no cellarhole (South 1977b, 1978b; Tordoff 1979; Wheeler 1985).

Woodframe architecture lends itself well to expansion with the addition of extra rooms or ells. A basic rectangular house can become L-shaped with an extension of a room at one end of the structure. Both maps and archaeological evidence (Wheeler and Agnew 1989) portray the kinds and intensity of architectural modification, with perhaps the most common kind being the addition of new kitchens.

A second kind of major modification was the transformation of Georgian-style houses to late-eighteenth-century Federal-period architecture. This often entailed removing a single central chimney and replacing it with multiple chimneys (Garvin 1971:32-43). Demolition—or even maintenance—of brick chimneys results in the production of brick and mortar debris, while redecoration of house interiors creates wood and plaster demolition debris.

According to both documentary and archaeological
evidence, eighteenth-century houselots in Portsmouth were continuously occupied, so abandonment processes should not be prevalent here. The buildings were, however, subject to fire, insect infestation, and dry rot; in some cases, land deeds indicate when new houses were erected, presumably as a result of some of these processes of degradation. In general, however, the houses within the Strawberry Banke Museum were continuously occupied throughout the nineteenth and twentieth centuries.

In the nineteenth century, relatively few new woodframe houses were built. Maps from 1813 to 1850 indicate that in Strawberry Banke the quantity of houses did not alter greatly in 37 years. Moreover, on a site-by-site basis, the form of most houses remained the same for this period. Some houses destroyed by accidental fire were replaced with a dramatically new outline, but often on the same site as the original. For the most part, residents of Puddle Dock neighborhood lived in old houses.

Meanwhile, in areas of the city with large-scale fire damage, the construction material of choice—and official city design—was the more fire resistant brick. When these brick buildings were constructed, they were massive in size and rose three and four stories. With a greater need for structural stability, deeper, more substantial footings were excavated, disturbing earlier levels of occupation.
archaeological point of view, it is fortunate that large sections of the city were spared from fires, leaving intact much eighteenth-century wood-frame architecture.

Maintenance processes continued as in the eighteenth century, with the addition of a practice of raising the woodframe structures upon higher foundation walls. This is thought to be a way of contending with rising ground-surface levels and an effort to keep the wooden sills above moist soils. Many foundations seen in Portsmouth today have hewn granite blocks placed on top of the original dry-laid fieldstones. Apparently, the wooden underpinnings were jacked up mechanically to allow the placement of these foundation stones, elevating wooden sills an additional foot above ground level.

Given the age of the Puddle Dock buildings, nineteenth-century maintenance must have been an ongoing affair. Pendery (1980:32) notes that Leonard Cotton, as the owner of 39 houses, employed a full-time crew of carpenters for the upkeep of his rental properties. These maintenance behaviors must have had some measure of success, for a majority of the buildings constructed in the eighteenth century were still residential structures for the first 60 years of the twentieth century.

Again, in the twentieth century, few new woodframe houses were added to the landscape. Houses that were
destroyed in localized fires were not replaced, but the lots were abandoned and left vacant (Sanborn 1892, 1904).

Maintenance processes after two hundred years of habitation often required the stabilization of foundations with the cementing of fieldstones, granite blocks, and cinder blocks; foundation faces were often exposed several feet below ground surface to perform this repair (Vogt 1985).

Electrification, running water, and telephone lines also resulted in the excavation of trenches near or along foundation walls to run lines and pipes into dwellings. With this kind of disturbance, one form of evidence that is almost always completely destroyed is the ephemeral construction trench. However, the effects of twentieth-century disturbance processes near houses can be described as regular and predictable and do not necessarily eradicate all archaeological information. This and other formation processes will be discussed further in Chapter 6.

The Development Cycle of Outbuildings

The residence building was usually one of several structures that occupied space on the urban houselot. One of the more common outbuildings was the barn, a large, often two-story structure that functioned to house animals, hay, and grain and also served as a general-purpose storage area. A visitor to the city of Exeter, New Hampshire, can still
view these multipurpose buildings in conjunction with dwellings. Barns often underwent a complex cycle of development, later becoming stables, carriage houses, or garages.

The construction of barns could involve the excavation of a cellarhole (Wheeler 1990a), or it could be seated on a foundation wall consisting of a single course of stones (Wheeler and Agnew 1989:37). In the first instance, such site preparation leaves an unmistakable archaeological trace, while the latter could be easily overlooked or destroyed by disturbance processes. The size of barns was often comparable to residences, as even in urban contexts, barns served multiple functions important to the maintenance of households. It is assumed that maintenance processes were less intense than for residence structures, resulting in an overall shorter period of survival for the barns. If left unused and completely without repair, a woodframe structure can deteriorate and collapse within 20 years. At this stage, residents can simply leave a pile of architectural rubble and allow it to deteriorate naturally, or they can salvage building materials for other purposes. Wood can be reclaimed for firewood; unclenched nails can be salvaged and used again. If the former barn site was needed for new activities, demolition remains could be burned or removed.
Another large outbuilding is the warehouse, most common in the early quarter of the nineteenth century. These structures are usually associated with water access along wharves at Puddle Dock or the Piscataqua River. Warehouses functioned to store merchandise but declined in prominence after the 1813 depression. As the majority of warehouses were built near or on docks, subsurface remains such as wall lines or cellarholes are few. In the delineation of the wharf structure at the Follett site, Harrington (1983) found a large sill beam believed to have been part of an abandoned warehouse.

It is commonly suggested that warehouses were razed after the 1813 depression when merchants were put out of business (Graffam 1981; Harrington 1983). Indeed, judging by map evidence (Hales 1813; Walling 1850), warehouses do seem to decline in number between 1813 and 1850 in the Strawberry Banke neighborhood. However, it seems unreasonable to assume that all warehouses were systematically destroyed when the economic tide turned. The 1840 tax assessment for Joshua Jones mentions a house, a stable, and a four-year-old cow (Portsmouth 1840); it is likely that the stable is one of the two warehouses depicted on the Hales (1813) map. I believe that other buildings formerly serving as warehouses were reclaimed, modified, and put to new uses; these outbuildings may not have been
included on the 1850 map (Walling 1850). Abandonment or demolition processes would be similar to those described above for barns.

A third outbuilding type is the privy or outhouse. Most commonly, the construction of privies comprised the excavation of a deep shaft and the erection of a wooden superstructure around the hole to provide users with protection from the elements and privacy. Privies in Portsmouth were often wood lined, probably for purposes of easy maintenance. City ordinances as early as 1851 required annual cleanings of houselot privies (City of Portsmouth 1851).

At the Deer Street sites the full dimensions of at least nine privies were recovered; they came in a range of sizes (Agnew 1989). The smallest was a nearly square 1.35-x-1.4 m, while the largest was 2.5-x-1.8 m. Netting (1982) found a correspondence between household wealth and household size (generally measured as the number of persons), with relative wealth also associated with physically larger houses or compounds. The relative size of privies in nineteenth-century Portsmouth is also probably an indicator of household size.

In a sample of 17 Deer Street privies, more than 58 percent of them were located 10 m or more away from the house; 12% were found within 3 m of the residence, and 29 %
were between 5 and 6 m away. In Puddle Dock, privies tended to be located along the back property lines and at the northwest corner of the lot, suggesting that prevailing winds could be a factor in locating these aromatic structures.

Outhouses functioned as receptacles for human waste but also served to collect household garbage, including faunal debris, ceramics, and demolition debris. Privies were regularly maintained with annual cleanings and could be reused for long periods of time. They were also abandoned and backfilled, most often apparently when a family concluded its occupation cycle at the site (Agnew 1989; Edwards et al. 1988). At the Deer Street sites, abandoned stone-lined cellars were also reclaimed for use as privies (Pinello 1989). More is offered in Chapter 6 about the selective use of these features for the discard of household refuse.

A fourth kind of outbuilding is the shed, often noted on early twentieth-century Sanborn insurance maps. Sheds are commonly smaller than barns or stables, standing one or one-and-a-half stories high, and served as storage facilities for coal, firewood, tools, and gardening equipment. Twentieth-century sheds are often depicted as standing over the sites of former privies; in the case of the Rider-Wood house, the family privy was inside a shed
near the southeast corner of the house. Because of their relatively small size and lack of an underlying cellar, sheds do not leave vast imprints on the archaeological record, but their remains may consist of modern wire nails, well-preserved wood, and plastic.

The fenceline is a kind of architectural improvement that bounds urban space and is readily detected archaeologically with the regular placement of postholes. Fences were mandated as early as 1730 in the town of Portsmouth (Pinello 1989:15), and each housesite should have remnants of at least one fence type. Strawberry Banke horticulturist, Ann Masury, has documented changes in fence styles over time, but picket and other wooden fences dominated the landscape (Ann Masury, personal communication 1990). Archaeological evidence of fencing activities abounds along property lines (Agnew 1981, 1985a, 1989; Harrington and Pendery 1983), but considerably less attention has been paid to postholes within sites that may demarcate activity areas such as animal pens, clotheslines, or garden spaces.

Finally, chicken coops, doghouses, beehives, pig sties, and other such surficial structures will take up space within the urban landscape. The locations of these buildings may not be readily detectable archaeologically (except for the presence of demolition debris), although
archaeologists may discern remnants of behaviors associated with them. Chickens are notorious for scratching (low-level disturbance); pigs root and create small craters or ditches; dogs and pigs tend to crunch faunal remains in fairly regular ways (Greenfield 1988). Archaeological traces of these activities may be found in the slight mottling of sediments, slight concavities in the strata, and in the distribution and condition of faunal materials.

The houselot developmental cycle has been articulated for the architectural types commonly encountered in nineteenth-century Portsmouth and, indeed, for most urban contexts in the northeastern United States. Architecture leaves a regular residue in the form of wood scraps, shingles, nails, window glass, brick fragments, mortar, and plaster. While wood is an artifact class that can entirely decompose and disappear from the archaeological record, the other classes of architectural debris are more enduring. Some architectural types are associated with "footprints"—cellarholes, foundation trenches, or stone walls—that facilitate their detection. At any one point in time, architecture could encompass 30 to 40% of the total area of houselots. Moreover, disturbances associated with construction, razing, and rebuilding can underlie a significantly higher proportion of an urban archaeological
site, and it is for this reason the architectural developmental cycle has been explored in such detail. Discussions in Chapter 6 outline the uses to which open areas were put.

HISTORICAL RESOURCES AND THEIR LOCATION

The section below enumerates the documentary sources used in reconstructing the nineteenth-century cultural contexts of Portsmouth, New Hampshire. Documents are also used in establishing meaningful social units such as households (Deetz 1982) or neighborhoods (Durel 1984; Pendery 1980). Historical resources have been divided into primary and secondary sources. This section also describes the location and accessibility of these resources.

**Primary Documents**

Primary documents include maps, photographs, family genealogies, land deeds, probate records, city directories, city records, tax records, and federal census records. Some of the functions of these resources are self-evident, and their value in defining aspects of household units does not require elaboration. A brief word about data bases peculiar to Portsmouth can demonstrate the utility of these records.

Maps are an important sources of evidence in historical archaeology. They offer a quick shorthand for the kinds and
intensity of land use, and indicate the state of the built environment. Maps for Portsmouth go back to the late eighteenth century (one each for 1777 and 1799) and include three for the first half of the nineteenth century (Akerman 1839; Hales 1813; Walling 1850) and an 1892 county atlas (Hurd 1892). For the last quarter of the nineteenth century and the first quarters of the twentieth, Sanborn insurance maps (1878, 1887, 1892, 1898, 1904, 1910, 1920, 1939) document the complete range of types of buildings and their arrangement on the landscape. Maps generally show the outlines of structures, property boundaries, and the configuration of buildings on individual lots. Analysis of these can indicate the kind and intensity of land use and how it changed over time. One can also trace the nature of architectural modifications over time where these exist.

Fewer maps include the names of the owners (not necessarily the resident) living at the houses at the period when the map was drawn up (e.g., Chace 1857; Hurd 1892; Walling 1850). The map in this case duplicates the information from land deeds but does not yield information on the names of inhabitants of houselots. This is especially true for the 1892 map, which records the names of owners of rental properties.

Mapping conventions sometimes permit discrimination between different kinds of land use or building function.
For instance, a hatching mark on Hales (1813) indicates an outbuilding, while horizontal parallel lines indicate garden space. For the Sanborn insurance maps, building functions are often noted. Dwellings, tenements, grocer's shops, stables, and automobile garages are distinguished from one another. Other kinds of outbuildings, such as storage sheds or privies, are drawn in although the functions might not be noted.

Another important nineteenth-century resource that captures land-use practices is the photograph. Garland Patch was a photographer who documented with film much of downtown Portsmouth in the waning years of the nineteenth century. He emphasized building facades in his work, but the careful eye can note the layout of buildings and the kind of space between and behind them. His extensive collection is available at Strawberry Banke Museum.

The genealogies of major families in Maine and New Hampshire have been elaborated by Libby (1928). This genealogical dictionary enumerates patrilineal kin lines, listing marital relations, year of birth, marriage, and death, and the names and lineages of male children. In some cases, the names of female children are also included. Genealogies are most useful for seventeenth- and eighteenth-century families, although some work has been done for nineteenth-century descendants. The lineages of later
immigrant families are partially preserved in genealogical data gathered by the Church of Latter Day Saints. Church records often document the marriage dates, births, and deaths of church members, but limited time prevented an adequate use of this resource. Birth and death records of the Catholic Church can be especially useful for the nineteenth-century arrival in Portsmouth of Irish and Italian immigrants. Individual families can also submit the results of their own genealogical research to such institutions as the Strawberry Banke Museum (Henrickson 1990) and the York Historical Society.

Land deeds are a basic tool in historical archaeology used to trace the ownership of land parcels. Out-of-family land sales are cataloged in legal documents filed with the local county courthouse. Portsmouth land records have been well preserved with little loss at the Rockingham County Courthouse in Exeter; other towns and cities have not fared as well and have seen the catastrophic loss of such documents in wars or fires. The nature of land deeds changes over time, in the type and amount of information they include, but for the nineteenth century, most deeds include a linear measurement of the outline of the parcel and note the names of abutting neighbors. Work with land deeds over an area of several blocks usually serves to reproduce the dimensions of lots, their location in terms of
major waterways or streets, and the names of a neighboring
cluster of landowners.

Probate records come in two basic varieties, the will
and the probate inventory. Wills are legal documents drawn
up by persons who designate how their property is to be
divided after their death. Nineteenth-century wills can
provide detailed descriptions of properties, buildings, and
personal possessions, and often list heirs by their kinship
relation to the deceased.

Probate inventories are drawn up in situations where no
wills have been prepared, or where wills are contested.
Inventories are taken to identify and assess the value of
the entire range of possessions of an individual so that a
judge can determine the ultimate delivery of a deceased's
material goods to the heirs. Probate inventories consist of
a listing of possessions, occasionally naming the location
of the materials by building and room, and their appraised
value; this is especially common in the seventeenth century
(Brown 1973). However, even where rooms or buildings are
not designated, they are sometimes easily reconstructed on
the basis of the clustering of different types of materials.

For instance, Figure 5.1 is a copy of the widow Rider
probate inventory. From it we can see the range, type, and
value of Mary Rider's possessions. Although belongings are
not labeled by room, it is apparent how materials cluster in
An Extended Inventory of the Estate of Mary Rider, late of Portsmouth of Rockingham County, New Hampshire.

Real Estate
1 dwelling house on Jefferson Street 92.56
1 lot of land on Jefferson Street 33.36

Personal Property
1 pew in St. John's Church 5.00
Cash on hand 26.89
St. John's Church note and interest 1060.00
Gas Company note and interest 1012.00
John L. Bolles note 400.00
3 shares gas company stock 345.00
26 shares Bank of New Hampshire 1560.00
120 shares Rockingham Bank 7200.00
1 feather bed, 1 bolster, 3 pillows 15.00
1 husk bed 20.00
1 bedstead 1.50
1 light stand and 2 tables 2.50
4 baskets .50
1 rocking chair and cushions .50
7 check window curtains and 1 trunk 2.00
1 carpet 2.25
1 table cover and 3 cushions .50
1 carpet 10.00
1 sofa and 6 chairs 12.00
1 rocking chair 1.00
1 clock 1.00
1 silver watch 4.00
1 silver ladle, spoons, and sugar tongs 15.00
1 looking glass .75
2 tables 3.00
Lot books 1.50
Pictures 1.00
2 brass candlesticks, 1 bell .75
1 Franklin stove, andirons, and tongs 4.00
Lot crockery 2.50
Sundries 1.25
Entry carpet and stair carpet 2.00
1 desk 3.00
1 cook stove and utensils 10.00
1 pine table and cover .50

Figure 5.1. Probate Inventory of Mary Rider (after the handwritten original at the Rockingham County Courthouse in Exeter, New Hampshire)
<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 chairs</td>
<td>2.25</td>
</tr>
<tr>
<td>1 brass kettle</td>
<td>3.00</td>
</tr>
<tr>
<td>Lot cookery utensils</td>
<td>1.00</td>
</tr>
<tr>
<td>1 oilcloth and 3 mats</td>
<td>5.00</td>
</tr>
<tr>
<td>1 brass skillet, 1 copper kettle</td>
<td>2.00</td>
</tr>
<tr>
<td>sundry utensils</td>
<td>2.00</td>
</tr>
<tr>
<td>trunk and wearing apparel</td>
<td>3.00</td>
</tr>
<tr>
<td>1 feather bed, 1 bolster, 2 pillows</td>
<td>12.00</td>
</tr>
<tr>
<td>1 husk bed</td>
<td>2.00</td>
</tr>
<tr>
<td>6 quilts</td>
<td>6.00</td>
</tr>
<tr>
<td>6 blankets</td>
<td>6.00</td>
</tr>
<tr>
<td>11 sheets</td>
<td>5.50</td>
</tr>
<tr>
<td>15 pillow cases</td>
<td>3.75</td>
</tr>
<tr>
<td>Lot window shades and curtains</td>
<td>1.00</td>
</tr>
<tr>
<td>dish towels</td>
<td>.50</td>
</tr>
<tr>
<td>2 table cloths and 1 box</td>
<td>4.00</td>
</tr>
<tr>
<td>1 easy chair</td>
<td>3.00</td>
</tr>
<tr>
<td>1 arm chair and cushion</td>
<td>1.50</td>
</tr>
<tr>
<td>6 chairs</td>
<td>3.00</td>
</tr>
<tr>
<td>1 pair bellows</td>
<td>.25</td>
</tr>
<tr>
<td>1 bureau</td>
<td>3.00</td>
</tr>
<tr>
<td>1 looking glass</td>
<td>1.00</td>
</tr>
<tr>
<td>1 bed stead</td>
<td>1.25</td>
</tr>
<tr>
<td>1 carpet</td>
<td>10.00</td>
</tr>
<tr>
<td>1 table</td>
<td>1.00</td>
</tr>
<tr>
<td>Lot carpeting</td>
<td>3.00</td>
</tr>
<tr>
<td>1 husk bed and 1 bedstead</td>
<td>3.00</td>
</tr>
<tr>
<td>7 chairs</td>
<td>1.17</td>
</tr>
<tr>
<td>1 bureau</td>
<td>3.00</td>
</tr>
<tr>
<td>2 bedsteads</td>
<td>2.25</td>
</tr>
<tr>
<td>1 water pot</td>
<td>.50</td>
</tr>
<tr>
<td>1 (?) iron stove</td>
<td>1.00</td>
</tr>
<tr>
<td>Sundries</td>
<td>3.00</td>
</tr>
<tr>
<td>1 cord wood</td>
<td>7.50</td>
</tr>
<tr>
<td>1 wheelbarrow</td>
<td>1.50</td>
</tr>
<tr>
<td>1 axe and lot garden tools</td>
<td>.75</td>
</tr>
<tr>
<td>1 looking glass</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Appraisers: John Harrat  
Daniel Binders  
A. M. Odiorne

Figure 5.1, continued
the sitting room, kitchen, or bedrooms. The wheelbarrow and garden tools listed at the end of the inventory were likely stored in the small shed southeast of her house. Mary Rider's inventory also contains information about the value of her real estate, her stock holdings, debts, and cash on hand.

One interesting aspect of Mary Rider's inventory is the extremely limited reference to ceramics, where they are summarized as a "Lot crockery" with an appraised value of $2.50 in 1864 dollars. This is in marked contrast to eighteenth-century documents where notations about ceramics are lengthy and detail the number, kinds, and location of wares (Brown 1973; Deetz 1973). Perhaps this is a statement about the relative worth of ceramics in 1864, or it may be a reflection of the value of female portable goods as perceived by nineteenth-century male appraisers.

Publication of Portsmouth city directories began in 1821 and were issued sporadically throughout the nineteenth century. An important resource, directories functioned as modern telephone books do, providing the name or names of residents at particular addresses. Portsmouth directories were organized both by names listed in alphabetical order and by a list of residents on a particular street. Whereas maps and land deeds often pinpoint the owner of a site, directories are often the one available form of evidence for
detecting the presence of tenants at sites.

The early directories of 1821, 1827, and 1834 published inhabitants only in alphabetical order, making it difficult to reconstruct neighborhoods without exacting and careful poring over the name lists. In addition, these early directories did not include street numbers, only the names of streets, so that an exact assignment of a resident to a particular houselot is sometimes speculative. By 1850, directories were published by street with a house address, facilitating the archaeologist's job of tracking down the names of inhabitants for various parcels. City directories not only associated residents with housesites, but gave information on residents' occupations, had marketing advertisements for retail establishments, and published the names of city officials and important city ordinances.

At the Portsmouth Public Library, city directories were consulted for the years 1821, 1827, 1834, 1839, 1851, 1857, 1861, 1867, 1884, 1886, 1892, 1895, and 1899. Directories apparently were not printed for the 12 years between 1839 and 1851, while those printed in the 1870s were in a fragile state of preservation and largely unavailable. Fortunately, all three sites were characterized by continuity in residence for both of these periods.

Cities and towns commonly have records of municipal expenses and proceedings printed in annual reports.
Embedded in these are references to city ordinances, the initiation of public services (such as conversion to electric street lights from gas lamps or city-sponsored garbage removal), and the results of important court proceedings. Tax records are another source of information for the socioeconomic status of households. Property taxes in New Hampshire are assessed on the value of real estate or stock in banks or businesses, and the city tax assessments are compiled every year. The city annual reports and tax records are cumbersome and time-consuming to use and were consulted only briefly for this study.

Finally, one major reference in the reconstruction of meaningful social units is the federal census records taken at the end of each decade. The first one was taken in 1790, and researchers can extract information on household composition, economic wealth, and other evidence. Census questions change from decade to decade, thus changing the kinds of information available to investigators.

Federal census records for Portsmouth, New Hampshire, are available for the years 1790 to 1990, with the exception of the 1890 records, which were nearly totally destroyed in a fire. The original handwritten documents have been preserved on microfilm, and the microfilm collection is accessible at the Portsmouth Public Library. I consulted the census records for the years 1810, 1830, 1840, 1850,
1860, 1870, 1880, and 1900.

Each of the Portsmouth census records has its own peculiarities or drawbacks for the researcher. Early censuses are not published with a street address and therefore can only be consulted if the name of the household head for a particular site is known. The 1840 census lists names in a rough alphabetical order, making it easy to pinpoint names one is looking for. However, the 1840 census is not useful for reconstructing linkages between families within neighborhoods; it gives only the full name and occupation of the household head, and all other occupants are checked off in age groups by gender. This allows a reconstruction of the household composition strictly along residential criteria; the archives do not give unequivocal information on kin relations.

The 1850 census began with a format that was to continue with both the 1860 and 1870 censuses, in that all names of household residents are given, along with their occupations and ages. The state or country of origin identifies the ethnicity of immigrants, while the family name helps to identify the kinship relations between members of the household. The 1850 census for Portsmouth is perplexing to work with, given that the penmanship is difficult to read, and the whole text is faded, bordering on illegible. By contrast, the text for the 1860 census was
bold and vivid, with a handwriting style easily deciphered. In 1870 there was some fading of the print, but the calligraphy is clear and easy to read.

Another cumbersome aspect of the census records is that addresses are not recorded. Beginning in 1850, the census records simply list the households in the order in which they were visited by census takers. Households were numbered consecutively as the recorders moved from house to house. The approximate path of the census taker can be reconstructed, but it requires prior knowledge of the population of the neighborhood.

Secondary Sources

Secondary sources are those compilations, treatments, or evaluations of historical documents that result in an author's interpretations of an historical process or event. Curiously, there have been no histories of Portsmouth that are inclusive of the earliest days of its settlement in 1632 to the present day. Most histories of Portsmouth are embedded in state or regional analyses (Belknap 1812; Clark 1984; Daniell 1970, 1981; Heffernan and Stecker 1986; Hunt 1970), or they focus primarily on eighteenth-century developments (Brighton 1979; May 1926). More importantly, a comprehensive treatment of the nineteenth-century city of Portsmouth has not yet been compiled, although several
contemporary accounts of local events and landscapes do exist (Adams 1971 [1825]; Belknap 1812; Brewster 1869; Dwight 1969; Gurney 1902).

Two dissertations do deal with specialized aspects of the city for parts of the nineteenth century. Durel (1984) outlines the rise and decline of the Strawberry Banke-Puddle Dock neighborhood throughout the eighteenth and the first half of the nineteenth centuries and offers speculations on the causes of its deterioration. Durel contends that the reason the Puddle Dock neighborhood fell into decline was because it was not touched by the devastating fires of the early nineteenth century. The downtown area was destroyed several times over, requiring large-scale razing and rebuilding over several blocks. Older, dilapidated structures were torn down and replaced with modern brick buildings. Moreover, entire blocks were relaid along straightened and widened streets. For the Strawberry Banke neighborhood, however, the old seventeenth-century houses remained along the original dirt tracks and mud lanes. By the mid-nineteenth century, when Durel's study closes, Puddle Dock was an unimproved, run-down section of the city.

Another major study of the nineteenth-century neighborhood is Ingersoll's (1971) archaeological investigations of the former Puddle Dock. Once a tidal inlet supporting an active gundalow shipping trade
(Harrington 1983), Puddle Dock gradually became filled in, the probable result of combined natural and cultural causes. (Figures 5.2, 5.3, 5.4, 5.5, and 5.6). By the late 1890s, the city elected to complete the filling process by hauling city garbage to the area and using the waterway as a municipal landfill.

The closing of Puddle Dock as a waterway (Figures 5.4 and 5.5) seems to have been a fairly rapid process. An 1898 Sanborn insurance map shows the outline of Puddle Dock south of the Follett site just as it had appeared since 1850. By 1904, however, the entire waterway is gone, and a wide new street connects Washington Street and Marcy Street. In another six years, new houses have been built along the north and south sides of Newton Avenue.

Ingersoll (1971) examines the archaeological impact of this municipal landfill project. His excavations at the southern edge of the Puddle Dock dump isolated separate depositional units that he believed could be associated with households. His landmark work featured vessel counts and refitting to define the boundaries of individual deposits. His pictorial catalog of late nineteenth- and early twentieth-century bottle glass and ceramics provided a terminus date for the range of vessel forms and decoration for my study.

Nineteenth-century archives provide a rich assortment
Figure 5.2. Outline of Puddle Dock in 1813 (after Hales 1813)
Figure 5.3. Outline of Puddle Dock in 1850 (after Walling 1850)
Figure 5.4. Outline of Puddle Dock in 1898 (after Sanborn 1898)
Figure 5.5. Filled-In Area of Puddle Dock in 1904 (after Sanborn 1904)
Figure 5.6. Current Configuration of Puddle Dock Area (after Strawberry Banke 1990)
of documents from which an ethnographic context can be elaborated. However, uncritical use of these resources can not necessarily name the residents of sites. The resources be deceptive or outright misleading. For instance, land deeds document the legal ownership of parcels of land but do reviewed above were used in concert to arrive at the recreation of households.

THE NINETEENTH-CENTURY HOUSEHOLDS OF PORTSMOUTH

All three sites reviewed here fall within a four-block area of a single neighborhood, now encompassed within the Strawberry Banke Museum. Figure 5.7 shows the location of the three sites, with the Rider-Wood site at the southwest corner of the intersection of Whidden Place and Jefferson Street; the Follett site at the western end of Atkinson Street fronting along Puddle Dock; and the Wheelwright site at the southwest corner of Jefferson Street and Horse Lane. Each of the three sites is discussed in turn below in terms of their occupation cycles, the functions and activities of households, and the delineation and arrangement of architecture on the landscape. Table 5.1 summarizes the occupational history of the sites.

Although the archaeological research focused on nineteenth-century deposits, a complete site history reconstructed from land deeds and maps is presented here.
Figure 5.7. Location of the Sites Within the Strawberry Banke Neighborhood
<table>
<thead>
<tr>
<th>Year</th>
<th>Rider-Wood</th>
<th>Follett</th>
<th>Wheelwright</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>Mrs. John Hubley</td>
<td>Crosby Edmunds</td>
<td>Joseph Jameson</td>
</tr>
<tr>
<td></td>
<td>Samuel Shields</td>
<td>Crosby Edmunds</td>
<td>John S. Hubley</td>
</tr>
<tr>
<td></td>
<td>Alfred Meredith</td>
<td>Reuben Randall</td>
<td>Elbridge Riley</td>
</tr>
<tr>
<td>1890</td>
<td>John Sullivan</td>
<td>Frank Elliot</td>
<td>Charles Jonson</td>
</tr>
<tr>
<td>1880</td>
<td>James Wood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1870</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1860</td>
<td>James Mahoney</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1850</td>
<td>widow Jones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1840</td>
<td></td>
<td></td>
<td>B. Barri, 2nd</td>
</tr>
<tr>
<td>1830</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1820</td>
<td>Mary Rider</td>
<td></td>
<td>B. Barri, 1st</td>
</tr>
<tr>
<td>1810</td>
<td>John Rider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1790</td>
<td>Samuel Jackson</td>
<td>Joshua Jones</td>
<td>Abigail Leslie</td>
</tr>
</tbody>
</table>

Table 5.1. Timeline for Households at the Three Households
Nineteenth-century residents built up sites left by eighteenth-century occupants, and were in turn transformed by twentieth-century inhabitants; underlying and overlying ground surface and architectural modifications are important considerations in understanding nineteenth-century site formation. Within the urban contexts of Portsmouth, features backfilled with refuse in the eighteenth century often attracted trash in the succeeding century. In the twentieth century, activity areas associated with new technology—in indoor plumbing, electricity, automobiles, and the introduction of machine-powered earth moving—had a vast impact on underlying deposits; the effects of such innovations are explored below and in Chapter 6.

**Rider-Wood Housesite**

The archival study for the nineteenth-century occupation of the Rider-Wood site focuses primarily on three households, the nuclear household of Mary and John Rider (1809-1819), the flexible solitary and extended household of widow Mary and extended kin (1819-1864), and the nuclear household of James Wood and his family (1864-1902). The archaeological study, outlined in Chapter 6 and Appendix A, includes the late eighteenth- and early nineteenth-century Jackson household.

The houselot has seen a long period of occupation,
beginning with a 1698 construction of a dwelling by James Hill. Eighteenth-century dwellers included tanner George Walton and Samuel Jackson; the latter is credited with building the house that currently stands today. The Jackson family remained on the property through the first nine years of the nineteenth century.

Land deeds put the ownership of the property in the hands of John Rider in 1809 and his widow in 1819. The city directory of 1821 establishes that Mary Rider (given as Mrs. John Rider to indicate her widowhood) was indeed residing at Jefferson Street; subsequent publications of the directory (City of Portsmouth 1834, 1839, 1851, 1857, 1861) also locate her at 1 Jefferson Street.

The 1850 federal census establishes her ethnicity as English. Mary Mullis Rider and her husband John immigrated to Portsmouth in 1794; they had been married in Devon, England, the same year they emigrated (Henrickson 1990:ii, 1). The Riders moved into the house at 1 Jefferson Street when both were fairly advanced in age (Mary was 41 years old in 1809). Mary and John Rider did not produce any offspring, and for the first 10 years of the Rider occupation of the site, the household can be characterized as nuclear, consisting primarily of one set of married spouses with no children. The Riders did, however, receive newly arrived members from both the Rider and Mullis
families from England (MacLennan 1985).

The developmental cycle of Mary and John Rider's household manifests a flexible expansion and contraction, governed by the outside needs of extended kin in England. Family members from England were included as constituents of the Rider household until they could establish themselves with jobs or homes of their own (MacLennan 1985); to some of the family, John Rider gave jobs in his trading business. Upon John's death in 1819, his widow Mary continued the practice of making her home available to family members. The 1850 census notes the presence of 27-year-old Sarah S. Rider, and family genealogies record that several nieces and nephews were given in marriage at the home of Mary Rider (Henrickson 1990:ii; MacLennan 1985).

Upon Mary Rider's death in 1863, James Wood gained possession of the house. The Wood family, consisting of two parents and a two-year-old daughter, immigrated to Portsmouth in 1852; in 1853, Charles was born, followed in 1858 by Albert. City directories do not indicate the whereabouts of James Wood during this period of adjustment, and it is possible the young family lived at least part of the time with James's aunt Mary.

Mary Rider's probate inventory suggests at least three bedrooms, one downstairs, and two upstairs; certainly there was room for two parents and three young children to reside
at the house. By 1867, James Wood is listed as a tailor with a home address at 1 Jefferson Street and a separate business address (City of Portsmouth 1867).

The developmental cycle of James Wood's household encompasses early marriage, childbearing, childrearing, and advancement to retirement years. His three children matured and left the house to pursue gainful employment as a schoolteacher, a tailor, and a printer, respectively. The two eldest married and formed separate nuclear families; the third child remain single. In 1880, however, two grown children are noted as members of his household, daughter Elizabeth, and son Albert (United States Government 1880). In the final years of James Wood's life, Elizabeth is still living with her father and mother (United States Government 1900). At the turn of the century, James Wood was a noted local celebrity for his advanced age of 104 years; his wife was 84 years old herself. It is not clear, but Elizabeth (aged 50 in 1900) may have returned home to assist in the care of these elderly parents. Upon the death of James Wood in 1902, the Rider-Wood property was sold out of the family.

Map evidence (Figure 5.8) suggests a shrinking of physical resources during Mary Rider's tenure. An 1813 map shows the house at the northeast corner of the property and a long, 30-foot-wide outbuilding at the southwest corner of the lot, abutting the edge of Puddle Dock. This latter
Figure 5.8. Nineteenth-Century Architecture at the Rider-Wood Site
building is often interpreted as a warehouse, used by John Rider in his business as a trader. By 1850, the long outbuilding has shrunk in size to about one-third its length portrayed in 1813. Some interpret this to be an entirely new structure (Graffam 1981), but I believe this represents the remains of the earlier structure, scaled down to accommodate the needs of the 1850 owners. It is possible the building is no longer associated with the Mary Rider occupancy but with the houselot to the southwest of the Rider site.

During the Wood occupancy, two outbuildings run along the eastern property line (Sanborn 1878), and the shop on the western side of the house from which Mary Rider ran her business is clearly depicted. The two outbuildings consist of a small shed and a longer, narrow outbuilding to the south. This configuration remains largely the same until 1892 when it appears that the long narrow outbuilding is widened, and changes again in 1910 when a single shed replaces the two others. By 1920, the single shed is labeled "Auto," and its function as a garage is fairly certain. The map evidence, then, helps to establish that the eastern portion of the lot was covered with a succession of small buildings, while the area just south of the house appeared to be open.

To summarize, the nineteenth-century occupation of the
Rider-Wood site is characterized by three main households, those of John and Mary Rider, the widowed Mary Rider and extended kin, and the household of James Wood, nephew of widow Rider. The household functions for three groups involved owner occupation and included most household functions articulated by Wilk and Netting (1984); while John and Mary Rider did not produce any children of their own, their behavior mimicked that of parents in terms of providing food and shelter and transmitting property to kin. The two generations of the Rider-Wood family resided at the site from 1809 until 1902, for 93 years of familial continuity.

The Follett Site

The archaeological site is named for Nicholas Follett and his heirs, who were the first to own the site from 1695 to 1754. Two other owners were attached to the property during the second half of the eighteenth century, until the land and buildings were bought by Joshua Jones, the man for whom the two-story, six-room house is named. Jones lived there until his death after 1840, at which time the estate passed to his daughter Louisa and son-in-law Aaron Mudge.

Title chains reconstructed from land deeds record a simple line of ownership from Joshua Jones in 1790 to his daughter and son-in-law at his death, to John E. Sullivan in
1876. The Sullivan family owned the property until 1892, when there was a dramatic devaluation; in 1876 the lot sold for $1200, but in 1898, it was priced at one dollar. The 1898 title to George Byers was also valued at one dollar despite an additional strip of land that came with the backfilling of Puddle Dock, as expressed in the following clause:

There is also conveyed under this deed whatever land may be added to the southerly side of this lot its full width in accordance with an agreement between myself and the city of Portsmouth whereby I allow it to fill in said dock and it agreed to give me land filled in to the line of the proposed street [Rockingham County Records 563:388].

Nineteenth-century households number at least four: Joshua Jones, the widow of Joshua Jones, James Mahoney, and John Sullivan. The 1810 census portrays the household of Joshua Jones as a large nuclear family, with four sons and four daughters between the ages of one and 16. Jones's occupation is listed in the 1827 directory as "truckman," operating his trade from the long warehouses visible on the 1813 map (Harrington 1981, 1983). By 1827, the household of Joshua Jones is bigenerational with Jones's widowed mother also listed as a resident (City of Portsmouth 1827) and in an advanced stage of development.

In 1834 the city directory lists Jones as a grain
measurer, and it is not clear if this was an operation conducted from home or if Jones had to seek outside employment. It is perhaps noteworthy that none of the grown sons are recorded as boarding with their father in either the 1827 or 1834 directories, as was the case for other households. The final record examined for Joshua Jones is an 1840 tax assessment (City of Portsmouth 1840) for one cow, a house, stable, and one lot of land on Atkinson Street. His household developmental cycle captures the entire process of young adulthood, marriage, raising of a family, and death. The 46 years of occupation should be well represented archaeologically.

The 1845 tax assessment (City of Portsmouth 1845) records the Puddle Dock property as belonging to the heirs of Joshua Jones. This begins the occupation at the site of the widow of Joshua Jones, who is noted as a resident until at least 1851 (City of Portsmouth 1851). The widow Jones occupied the site for approximately 10 years between 1845 and 1855.

In a peculiar departure from the practice of primogeniture, land deeds note that the transmission of the property went to a daughter, Louisa, and her husband Aaron Mudge. Although the land title was held in the names of Aaron and Louisa (Follett) Mudge, city directories indicate the houselot was occupied by sawyer James Mahoney beginning
in at least 1856. The total length of occupation by James Mahoney and his family is at least 20 years, from 1856 to 1876. Mudge and his wife resided at 12 Penhallow Street (City of Portsmouth 1839, 1861) and probably augmented their income by renting the former Joshua Jones house.

The Mahoney occupation is documented by city directories of 1861 and the 1870 census. The census depicts the Mahoney household as small with a married spouse and two daughters aged 17 and 13 who were born in New Hampshire. There is no record of additional boarders coresiding with the Mahoney family. James and Ann Mahoney both gave their ages as 50 and their country of origin as Ireland. James Mahoney, at least, was present in Portsmouth as early as 1851 (City of Portsmouth 1851), with his first address at a rental property along the wharves of Bow Street. James Mahoney probably emigrated after the great famines of the late 1840s (Adams 1967; Byrne 1969).

Both city directories and the federal census show Mahoney's occupation as sawyer for the nearby Portsmouth Naval Shipyard. The 1870 census further notes that wife Ann "kept house," Katy was "at home," and younger daughter Mary was "at school." It may be important to note that nearly 20 years after immigration, the Mahoneys enjoyed high enough socioeconomic status to send their younger daughter to school. Other Irish families in the 1870 census listed
several teenage daughters working in button mills or as domestics in other households.

The 1870 census also listed three unmarried Mahoney females, aged 29 to 55, who served as domestic servants in neighboring households. It is possible these women were kin of James Mahoney, and that they spent some time in his home before finding work to support themselves. This would have given the Mahoney household the same kind of flexible expansion and contraction seen at the Mary Rider household.

The Mahoney household can be viewed as a small nuclear family, with two daughters born of Irish immigrant parents who waited until they were both past the age of 30 to produce offspring. This waiting could be associated with the tentative and ambiguous status of immigrants in their early years of arrival in a new homeland.

Shortly after the two daughters reached marriageable age in 1876, the Mahoneys no longer lived at the site. It is not clear who or what precipitated the departure of the Mahoneys from the Follett site. Two possibilities are that Mudge decided to capitalize on his investment by selling at this time, or that the middle-aged Mahoney parents elected to establish another household at this stage in their lives. Altogether, the Mahoney occupancy at 12 Atkinson Street should reflect a 20-year process of raising two children from infancy to young adulthood.
In 1876, Aaron Mudge sold the property to John E. Sullivan, an Irish immigrant who first appears in the historical record in 1856 as a cordwainer or leatherworker at a rental property on Anthony Street (City of Portsmouth 1857). Two John Sullivans were listed in earlier directories (City of Portsmouth 1851), but it is not clear which of the two, if either, is the one who eventually bought the Jones house site. The Sullivan household was recorded in the 1870 census within the Strawberry Banke neighborhood, so they were probably familiar with the area before they purchased the lot at 12 Atkinson Street.

The 1870 census depicts a nuclear household, consisting of two parents from Ireland and five children born locally. The eldest child, Harriet, was born in 1850, suggesting that the Sullivan family, like the Mahoneys, immigrated to Portsmouth some time late in the 1840s or early in the 1850s after the great famines of 1846, 1847, and 1848 (Adams 1967; Byrne 1969).

The 1870 census further records Sullivan as working in a shoe shop, with his wife and two eldest children (Harriet, aged 20, and John W., aged 17) at home, two middle children at school (Mary, aged 14, and James, aged 11), with a youngest girl (Edith, aged 8) also at home. By 1876, when Sullivan acquired the Jones housesite, the three eldest may have been old enough to leave home. In the 1880s, when his
children were grown, directories show Sullivan with a business at 6 Atkinson Street and his residence at 12 Atkinson. The nature of this business is unclear, as the directories simply note him as a laborer. Given past references to his shoemaking, it is likely that cordwainer John Sullivan maintained a business in leather working, but it is curious that no mention of his skill is given.

The 1880s may have been a period of declining fortune for John Sullivan. The 1883-1884 city directory notes the presence of a boarder, fisherman Josiah Haley, while in 1886, another fisherman, Charles O. Johnson is listed as boarding at 12 Atkinson. Also in 1886, John Sullivan, Jr. is shown boarding with his father; he would have been an adult of 33. John Sullivan and his son John are listed again at that address in 1892; at age 39 it is highly likely the younger Sullivan had a family of his own, making the household an intergenerational extended one. In 1892, Sullivan's widow supervised the sale of the property out of the family to John O'Neil.

John Sullivan was an agemate of James Mahoney, both of whom gave their ages as 50 in the 1870 census. John and Anna Sullivan's historical trajectory appears to mirror that of the Mahoneys. Like the Mahoneys they arrived in Portsmouth sometime prior to the birth of their eldest child in 1850, and both parents were 30 or approaching 30 when
their first child was born. One obvious question emerges: were both households deliberately waiting to establish themselves both financially and socially before producing children?

By the time John Sullivan established his residence at 12 Atkinson Street, his household was in the later stages of nuclear-family development. One interesting contrast between Sullivan and Mahoney is that John Sullivan actually owned the house he lived in, while Mahoney only the rented the property. Perhaps this difference derives from the same force that moved Mahoney out of his longstanding residence; the children were all grown, and it was time to make a move. The difference between ownership and tenancy could also relate to socioeconomic status; in the later stages of his childrens' lives, Sullivan could perhaps afford to buy a house for himself. By 1876, Sullivan would have been in Portsmouth at least 26 years and may have had the opportunity to develop more and more business connections with each succeeding year, while at the same time, his family expenses were diminishing.

The household developmental cycles for the Mahoney and Sullivan families manifest a richly textured complexity associated with ethnicity, immigration, family stages, and socioeconomic status. Archaeological deposits from each of these two family households may offer insights on how these
variables are related to one another.

After the occupation of the Sullivan family, city directories for the last decade of the nineteenth century indicate short-term tenancies for the site. Most residents were laborers or widows who lived at the Jones house for two or three years. Interestingly, one widow in 1899 bore the name of a tenant who lived at the Wheelwright House in 1892, suggesting that certain neighborhood properties functioned as short-term rental units.

Map evidence (Figure 5.9) indicates the Follett site maintains roughly the same 80-x-80-foot configuration bordering the north side of Puddle Dock throughout most of its existence. On all maps, the house is characterized as an L-shaped building. On the 1813 map, the lot's western boundary was delimited by two adjoining warehouses, abutting end to end. To the northeast of the warehouses, in a small jog in the lot, a garden is indicated. In 1850, the two warehouses are gone, perhaps mirroring the effects of the economic depression that affected the Rider building. In 1878, a small one-story outbuilding is visible at the northwest corner of the lot and is still standing on maps dated 1887, 1892, 1898, and 1904. In 1910, there is a major revision in the number and configuration of outbuildings, as four sheds are erected along the west side of the lot. These remain standing until 1939, when the sheds are
Figure 5.9. Nineteenth-Century Architecture at the Follett Site
modified into a single garage structure.

Maps (see Figures 5.2 to 5.6) show the changing line of Puddle Dock over time. The most dramatic alteration was in the period between 1813 and 1850, when a small inlet on the west side of the two warehouses was apparently filled in, perhaps in conjunction with the razing of these structures. At the southern edge of the Follett lot, between 1813 and 1850, the wharf line became oriented parallel to the streets and house facades, perhaps in a conscious effort to square off the natural edges and shape Puddle Dock into a more rectangular layout. After 1850, there is relatively little change in the outline or orientation of Puddle Dock, especially in regard to the Follett site.

In summary, the Follett site was home to at least three long-term households during the nineteenth century. The first was that of truckman or trader Joshua Jones from 1790 until his death in the first years of the 1840s. His widow next occupied the site, perhaps maintaining a solitary household. Beginning in 1856 or earlier, Irish immigrant James Mahoney and his wife raised his two young daughters here, while in 1876, Irish immigrant John Sullivan arrived when his children were grown and ready to leave home. Sullivan spent 16 years of his later adulthood at the Follett site until his death in 1892.
Wheelwright Site

The Wheelwright site at 14 Jefferson Street takes its name from the family who occupied the lot from 1750 to 1784. John Wheelwright is credited with building the two-story, eight-room house that stands today, and it is by his name that the Strawbery Banke Museum identifies the house. The construction date for the house is still open to question, and it was hoped archaeology could help address this issue. As at the Follett site, land deeds and city directories differ in the history of ownership and the record of residency.

Land deeds record the transfer of the 50-by-80-foot lot through several hands beginning in 1695 when Samuel Cutt sold the land to Mark Ayers. No building is mentioned in this initial deed, although there is a reference to trees (presumably an orchard). The 1714 transfer records a dwelling house, outhouse, garden, well, and the trees going from Mark Ayers to Captain Robert Walker. The daughter of Walker, Sarah Farrow, sold the land "with all the buildings thereon" to Jeremiah Wheelwright in 1750. Upon Wheelwright's death in 1768, the property passed to his widow Damaris, and then to his son John Wheelwright in 1780. John Wheelwright died intestate a mere four years later, and his inventory suggested the house was still in an unfinished state. The house and land were bought by widow Abigail
Leslie at a public auction in 1785.

Abigail Leslie owned the property for 33 years until she sold it to John Davenport, Esquire, in 1818. Interestingly, widow Leslie mortgaged the property three times, in 1805, 1808, and 1814, to John Rider for various sums of money, suggesting that her economic situation may have been precarious. John Davenport owned the property for 20 years, before selling in 1838 to John Clark. Clark held the title until 1877, when it was transferred four times in three years, until it was sold to John Conlon in 1880. The Conlon family owned the lot through two generations, until the heirs sold it in 1918. In the twentieth century, three owners held the lot until 1962 when it was transmitted to the Portsmouth Housing Authority.

City directories provide an entirely different occupational history, however. Abigail Leslie owned the Wheelwright site for the last 15 years of the eighteenth century and the first 18 years of the nineteenth century. Although documents such as city directories were not available for these early years, it seemed reasonable to assume the widow was residing in the house she owned and mortgaged to John Rider. I believe the mortgages reflect the behavior of an owner struggling to maintain her dwelling and that ownership of the property was not simply a business investment. Little is known about the Leslie household;
censuses for 1800 and 1810 were searched for Abigail Leslie, but her name was not located. Minimally, one should view the Leslie occupancy as solitary and female dominated.

In 1818, John Davenport gained possession of the property, but records indicate he never resided at the site. City directories give his address at a boarding house in downtown Portsmouth, while Bartholomew Barri is listed as an occupant on Jefferson Street (City of Portsmouth 1821, 1827). Directories through the 1860s continue to list Bartholomew Barri as the resident of 14 Jefferson Street.

The 1839 city directory designates Barri as a baker and locates his "bakery rear door" at his home address. In the 1850s and 1860s, Barri maintains his home at 14 Jefferson Street while expanding his business across from his house at 13 Jefferson Street (City of Portsmouth 1851, 1857, 1861, 1867). In 1867, the city directory records that Floron Barri, clerk, boards with Bartholomew Barri.

Three federal censuses were consulted for the Barri family, to reconstruct the household development over a 30-year period. Beginning with the 1830 census, the Barri household consisted of an adult male and an adult female, both between the ages of 30 and 40. Three male children between the ages of one and 15 were members of the group, which fits the profile of a nuclear family in the stages of childbearing and childrearing.
Ten years later, in 1840, Bartholomew Barri headed a household of nine, consisting of one male under five, two males 10-15, two males 20-30, two females under five, one female 15-20, and one female 30-40. If all household members are kin, the age distribution suggests an intergenerational spread, with five young children under the age of 10, three clustering between 15 and 30, and one female older than 30. It is not clear from the census in which age group Bartholomew Barri falls; as head of household, it is most likely he is one of the two males in the oldest age category between 20 and 30 years old. It should be emphasized that this represents a second generation of Barris at 14 Jefferson Street. Like his father, Barri's occupation is given as "manufacturing/trades," which is consistent with the designation of baker.

Data on the state or country of origin were not collected in the 1840 census, so the ethnicity of the Barri family could not be determined. In various documents, the family name was alternatively given as "Berri," "Berry," or "Barri," possibly suggesting a non-English (i.e., Italian) origin for the name.

Twenty years later in 1860, the federal census put Barri as the head of a household of eight. Members were given as follows: Bartholomew (58), Clara (44), and four
children between the ages of four and twelve. All of the Barri family were born in New Hampshire, leaving unresolved the national origin of the elder Bartholomew Barri. Additional members of the household included a domestic servant (19-year-old Lydia Hutchins) and William Tate, a 16-year-old apprentice baker.

Interpreting the data from the three census records offered some difficulty. A speculative reconstruction of the Barri household suggests an elaborate and complex developmental cycle. In 1830, Bartholomew Barry, aged 30 to 40, headed a single-generation nuclear family with three sons. By 1840, Bartholomew Barri headed the family as a young man between the ages of 20 and 30, perhaps as an eldest son taking on the responsibilities of a deceased father. This Bartholomew Barri could well have been the eldest son listed between the age of 10 to 15 in 1830. Barri's widowed mother may have been present in the 1840 household, as well as one younger brother. It is possible that one of the Barri adult males was married to the young female adult, and they had three young offspring under the age of five. This would have required quite an early age of marriage and reproduction for the woman, with very little birth spacing between the children. It is also not certain how the two male children between the ages of 5 and 10 fit within the intergenerational scheme.
Twenty years later, in 1860, Bartholomew Barri was listed as 58 years old, coresiding with Clara Barri, aged 44. They were assumed to be the parents of the four Barri children, although Bartholomew was advanced in age and Clara would have been past 30 when the eldest, Floron, was born. Census records frequently offer conflicting evidence on the ages of household members over time; from decade to decade, ages can be misrepresented by more than 10 years. I believe that the ages given in the 1860 census for both Barri adults are inflated. If Barri was a young man between 20 and 30 in 1840, he should have been no more than 40 to 50 in 1860.

If, however, the 1860 census offers the true age of Bartholomew Barri, both he and Clara were elderly when they had children. The advanced age of the parents may be one of the reasons Barri included a domestic servant in his household, to help with the care of the children. None of the children was born before 1848, and they were not represented in the 1840 census. The 1860 census gives all appearance of a nuclear family (albeit with elderly parents), with coresiding nonkin members, that has very little overlap with 1840 household composition with the exception of Bartholomew Barri himself.

Although complete details for the Barri household composition and development cannot be reconstructed from the three federal census records, it is clear that the Barri
household enjoyed flexible membership over three generations. Further work with censuses from 1850, 1870, and 1880 might offer more evidence of the growth and reduction cycles within this one extended family.

Given the information as currently outlined, we can say this about the Barri occupation at the Wheelwright site from 1821 to 1877: the household size was fairly large and involved a wide age distribution including several children; members included kin and nonkin; for most of the tenure at the site, both Bartholomew Barris were involved in the bakery business and, for an undesignated length of time, the younger son operated the business from his residence.

Following the 1877 sale of the property, the city directories note a longstanding period of transient tenancy persisting until the end of the nineteenth century. Given the good stratigraphic control over deposits from the 1990 and 1991 excavations (see Appendix C), the Wheelwright site may yield important information about the nature of tenancy in the years 1880 to 1900. The 1890 census information was unavailable, having been largely destroyed in a fire, and the 1900 census was not consulted for the Wheelwright site occupants.

The composition of the tenant household for 1880 was reconstructed from the federal census, and it was discovered that two distinct families occupied the site at that time.
Other group consisted of a nuclear family with two young children under the age of three. The father was a Danish-born fisherman married to the daughter of an Irish immigrant. The second group making up the 1880 tenant household was another married couple; the male was a fisherman born in Massachusetts, and his wife was from Nova Scotia.

Renters apparently did not reside long at the Wheelwright house. In 1884, Charles O. Johnson was listed at 14 Jefferson Street, but by 1886, two new male heads of household were recorded for that address (City of Portsmouth 1884, 1886a). Incidentally, in 1886, Charles O. Johnson was boarding with John Sullivan at the former Joshua Jones house, presumably along with his young family of sons.

Beginning in 1892 and continuing until at least 1899, Crosby Edmunds occupied the site, although he shared the residence with other boarders. One of these, in 1892, was John S. Hubley, whose widow was found at John Sullivan's former residence on Atkinson Street in 1899. The occupants for the Wheelwright house tenants are variously listed as fisherman, mason, and, most commonly, laborer.

Short-term tenancy raises interesting questions about the impact transient households will leave on the archaeological record. One of the first questions to resolve is, how were domestic materials owned or used? Did
tenants bring their own household goods onto the site, or did they depend on the landowner to provide basic household goods, such as dishes, tableware, and furniture? Can they be characterized as a non-sedentary group with few material possessions? If there was a single kitchen, did different families use it at different times, or was there an effort to function as a single household, combining food preparation and consumption activities? If families cooked and ate separately, were there different sets of utensils corresponding to each family's needs, and can we detect them archaeologically? Finally, if tenants are viewed as a migratory population, will there be a higher frequency of discarding elements at the locus of use (Murray 1980), possibly resulting in a less formalized or more random distribution of trash? In the discussion in the next chapter, I attempt to address these questions.

Map evidence (Figure 5.10) for the Wheelwright site portrays a fairly uncomplicated sequence of architectural modifications upon the houselot. The house is always portrayed at the southeast corner of the lot. In 1813 and 1850, it was shown as a rectangular wood-frame structure, but by 1878, there were two small additions, one each at the northwest and southwest corners of the house. Both of these ells appear to have been single rooms that did not significantly increase the floor space of the house. The
Figure 5.10. Nineteenth-Century Architecture at the Wheelwright Site
one at the southwest corner likely was a "mud room" at the main entrance, while the other was a small expansion to the kitchen. The house maintained this basic outline until some time after 1962 when Strawberry Banke Museum razed the ells.

In the second decade of the nineteenth century, a long narrow patch is depicted as a shaded area covering the northern third of the houselot (Hales 1813). This has been interpreted as a long outbuilding or warehouse stretching across two properties (Martha Pinello, personal communication 1990). It is not visible on the 1850 map, and to date there has been no archaeological confirmation of a building on this location. I suspect the mapmaker may have been indicating garden space for the houselot rather than architecture.

The Sanborn insurance maps for the last quarter of the nineteenth century show a single-story outbuilding at the northwest corner of the property. It maintains the same outline and configuration until 1904 when it becomes a one-and-a-half story structure sited directly along the west property line. On the 1910 map, it is labeled "Shed." Such backlot structures are often interpreted as privies, and indeed, archaeological testing revealed at least one such feature in the northeast corner of the property.

If this shed did indeed house a privy, the outhouse probably went out of use some time between 1898 and 1904
when the shed was demolished and replaced by a larger outbuilding (Sanborn Insurance Company 1904, 1910, 1920, 1939). By 1939 the shed was converted to a garage with an attached shed to the south of it. One of the interesting and unresolved questions for these early twentieth-century garages is the automobile's access to them. They are often built on the site of former privies or sheds in remote corners of the yard, requiring driveways to stretch across long lanes behind or alongside houses. The movement of automobiles in and out of such garages could be responsible for the crushed and pulverized artifacts in twentieth-century deposits.

To summarize, the Wheelwright site in the nineteenth century was home to at least two long-term households. The first was the ownership and occupancy of widow Abigail Leslie; her residence may be characterized as financially troubled, given the periodic mortgaging of her property to John Rider. In 1818, John Davenport next acquired the lot, but he never lived at the site; rather, he rented to baker Bartholomew Barri. Two generations of Barris rented the site, for a total of 56 years, until its sale in 1877. Archaeological data for this bigenerational, long-term, large household should be abundant. After 1877, residency is characterized by short-term tenancy, although the last decade of the nineteenth century did see some continuity in
at least one head of household. Archaeology will be put to the test in trying to assess the nature of these late nineteenth-century households, as this was the period when municipal garbage services were initiated, and it was more common to transport household refuse off site to a community landfill.

Although this section was devoted to the individual houselots and households, examination of sites as a group contributes to an awareness of processes at the neighborhood level. Sanborn insurance maps for 1878 and 1887 indicate that city water lines were brought into the Puddle Dock community during this time. A private aqueduct company piped fresh water to homes beginning early in the nineteenth century, but by the fourth quarter of the century, water lines had become a city utility (Portsmouth 1871, 1881, 1890). Connections to the city water line required the excavation of trenches and the installation of pipes to kitchens.

A second observation is that for all three sites, it appears the privy housing was changed or razed between 1898 and 1910. On a neighborhood level, this might signal a transition to indoor plumbing, complete with running water and flushing toilets. Several of the Strawberry Banke Museum houses have architectural remnants of cramped water closets tucked away in obscure places that do not correspond to
modern bathroom locations or a sense of privacy. For example, in the Jones House, an old toilet is located at the top of the front stairway between the two eastern bedrooms. It is not entirely clear what kinds of septic systems were used, but installation of indoor toilets probably involved some backyard excavation for the piping or containment of human wastes.

We may also talk about ownership and occupancy trends for the Strawbery Banke neighborhood from 1800 to 1900. Early in the century, houses tended to be occupied by the persons who owned them, and the household configuration was generally that of a nuclear or stem family. At the midcentury mark, it was not uncommon for landowners to rent properties to members of the mercantile class, i.e., artisans, bakers, or persons involved in manufacturing and trades. Rental periods were lengthy, lasting long enough for adults to raise their offspring and reach retirement age. By the end of the nineteenth century, houses in Puddle Dock were increasingly taken up for two- or three-year intervals by immigrant laborers increasingly disenfranchised from the means of production.

One other important factor to consider is the impact on women of increasing industrialization. In the early nineteenth century, two widows singlehandedly maintained their households; one of these, Mary Rider, ran her deceased
husband's retail business from her home. In the second half of the century, censuses often recorded women as "at home." For poorer immigrant families, young, unmarried females in their teens and early twenties could be found in factories, while married women tended to be found within the domestic sphere.

At two of the sites, either resident household heads or owners were Irish, including James Mahoney and John Sullivan at the Follett site, and John Conlon who owned the Wheelwright site. These three men represent a group who arrived in Portsmouth in high numbers in the 1840s and 1850s. These three families may delineate the trajectory of Irish inclusion in Portsmouth society, and from their documented histories, I offer some tentative statements about the evolving status of Irish immigrants in nineteenth-century Portsmouth.

Arriving in the 1840s and 1850s, Irish couples postponed childrearing until they were in their early 30s. In the early stages of household development (i.e., the rearing of young children), Irish citizens tended to rent homes. James Mahoney, a sawyer with regular employment at the Portsmouth Naval Shipyard, rented his home for ca. 20 years and apparently moved when his children were grown. Later, John Sullivan bought and lived in the house Mahoney had rented, after Sullivan's children had left his care.
Sullivan's ownership possibly derived from the intersection of two factors: the relatively less costly stage of household development of post-reproductive middle age, and the higher social and economic standing the immigrant may have enjoyed following his 20 or 30 years of networking in Portmsouth.

Finally, there is the case of John Conlon, owner of the Wheelwright site beginning in 1880. In the 1870 census, John Conlon was listed as born in Ireland ca. 1835, some fifteen years later than both Mahoney and Sullivan; Conlon may be viewed as the succeeding generation of Irish immigrancy. The eldest of his six children was born in 1864, with the remaining five children born at regular intervals two years apart. Like his compatriots Mahoney and Sullivan, Conlon was almost 30 before he began his family. Unlike them, however, Conlon owned several properties, one that served as a residence for his large family, and another--the Wheelwright House--that functioned as a capital-generating rental unit.

The first overt Catholic worship took place in 1836, but it was another 16 years before the first Catholic Church was erected in 1852 (Brighton 1979:131-132). Church construction takes place when there is a sufficient number of members who can financially sponsor such a project; the erection of an edifice often marks the establishment of
permanence, wealth, and status of a group within the larger community. Mahoney and Sullivan probably arrived in the waning years of the 1840s after the great famines, when Irish Catholics were still struggling to gain prominence in their new homeland. John Conlon, on the other hand, arrived some 15 years later, when the Irish had built up good standing in the community. In the 1850s Mahoney rented his home; by 1876, Sullivan could afford to buy his, but in 1880, Conlon was able to purchase a property he could afford to rent.

SUMMARY

The above chapter outlined the nature of households in nineteenth-century Portsmouth, New Hampshire, drawing from anthropological and archaeological theory and from local documentary resources. Households were defined in the same way the federal census records envisaged them: as a single coresiding group of people who at least shared a common dwelling and possibly other activities as well. Members were most often kin, but multiple-family households were apparent in nineteenth-century Portsmouth, especially among laborers who boarded together. A change in households was indicated with a change in the household head, whether this entailed a new family, a new generation, or a widowed spouse. A total of 11 long-term households for three sites
was reviewed.

The following chapter uses the characteristics of archaeological deposits to describe the refuse-generating behaviors of the nineteenth-century households. Each household is described in terms of preferred locations and modes of trash deposition and the general composition of garbage aggregates.
Chapter 6

ANALYSIS

This chapter aims to interpret the archaeological data I examined in the context of time, space, and depositional behaviors. Chapter 4 outlines the various methods by which archaeological data were measured in order to answer questions on site stratification, location of deposits, chronology, size, and other characteristics of materials within deposits. Chapter 5 provides synopses of the various households—behavioral units—that occupied the sites during the nineteenth century. Here, I merge the two bodies of information, linking the archaeological evidence (sediments and artifacts) with the historical data (information on households) to develop models of depositional behavior associated with the various households.

This chapter takes the quantitative values generated from the methods of Chapter 4 and attempts to offer interpretations of human behaviors related to the formation of deposits. Full details of the characteristics of nineteenth-century deposits at each of the three sites are provided in Appendices A, B, and C. Appendices A, B, and C also provide a chronological framework for deposits through the dating of ceramics and an assessment of the terminus post quem date of materials. Dating of deposits is further
assessed with the size of ceramics, as the largest-sized ceramics of the latest manufacturing date are believed to be indicative of the most recent transformation of the deposit. The main focus of Chapter 6 is the development of models of discard and deposit formation that can be linked to the Portsmouth households.

**THE DISCARD EVENT**

I have used the term "transformation" to correspond to the change in the form of the used object to the recovered artifact. Transformation refers to depositional processes from the systemic context to the archaeological context and includes all modifications in the size, location, or shape of an object that transpire in systemic context prior to deposition. The degree of fragmentation—whether in the size or quantity of fragments—can tell us something about the formation processes of the deposits in which the artifacts are found.

In describing artifact sizes, values are taken from the measurement of ceramics. Five size categories were employed, as was described in Chapter 5. In general, sherd sizes were consistent with sizes of other artifact types, such as bones, shell, and brick fragments, but future research should quantify the relationship between sherd size and the size of other materials. In the discussion that
follows, the size category of greatest importance is that of the very small category; variations in this value are viewed as a factor in the degree of transformation between primary deposition and excavated state.

The following discussion develops several modes for the discard event, ranging from the primary deposition of objects discarded where they were used to the highly disturbed contexts that may be described as quaternary. Each level of magnitude--primary, secondary, tertiary, and quaternary--can be described in terms of different models of behavior involved in their formation. Before the models are presented, several terms should be discussed, including de facto refuse, provisional discard, and mass deposit.

De facto refuse, as defined in Chapter 3, consists of trash left behind when a site (or in this case, houselot) is abandoned. In nineteenth-century Portsmouth, de facto refuse could be the entire material inventory of a house or could represent certain items no longer desired by the vacating household. In either case, the problem or responsibility of the discard of de facto refuse will fall to the succeeding household, but the acquisition and use of the materials themselves will be associated with the departing group.

Depending on the size of the de facto trash load--a house full of goods or more selective abandonment of items--
newly arriving households will have several options for the disposal of unwanted goods. They may elect to pick over and reuse some materials for use in the maintenance of their own household, whether this is the lateral cycling of dishes in the kitchen or secondary use of large containers for animal feeding. This strategy may be one for incoming households with few material goods of their own, as might be the case for immigrant families just beginning a household stage of early marriage and childbearing. I believe that, in most cases, the arriving household will discard the de facto refuse in a single-episode mass deposit to make room for their own effects.

A single-episode mass deposit unaffected by postdepositional disturbance should be characterized by a moderate to high density, large sherd size, and a vessel-to-sherd ratio that indicates vessel intactness. Richness may only be moderate or less than moderate, as there may be some selection for one or two material types. One example is a single-episode mass deposit of de facto ceramics and bottle glass upon the cleaning of kitchen cupboards. At the death of a household head, a mass of ceramics can be discarded in a single event. Or a collection of demolition debris can be dumped in a single mass deposit.

Another kind of trash type that will be discussed in the cases below is that of provisional discard. This refers
to trash that has approached the end of its use life, but users may temporarily store it in a waiting area until it is discarded in a secondary-refuse aggregate. Provisional discard can consist of materials that could see some form of reuse, or it can be refuse that collects in small loads in a convenient location until a large pile is assembled that requires a more permanent solution. In nineteenth-century Portsmouth, chipped or broken ceramic vessels may have been set aside in a barn or shed for secondary use as storage containers for tools or nails or reused as animal pans.

One other distinction of terms should be addressed here, and that is the difference between a "scatter deposit" and what I will call a "scattered deposit." Both can have low densities and are characterized as thin layers of trash over a wide horizontal area. Historical archaeologists frequently refer to scatter deposits, especially in seventeenth-century and early eighteenth-century contexts, as the end result of a particular kind of discard behavior. Related to medieval practices of throwing trash out of doorways and windows in an apparent lack of concern with sanitation, the scatter deposit is associated with thin lenses of artifacts that cover wide areas. However, I believe a distinction should be maintained between secondary deposits that were created by such a behavior and tertiary deposits that emerge when secondary deposits are moved and
deliberately spread to reduce the size of the refuse aggregate. This latter can be described as a scattered deposit and will be further articulated in the section below on tertiary trash.

**Primary Deposition**

Schiffer (1987) describes primary deposition as the on-site discard of trash in the locus where the objects were used. Several factors are related to the discard of primary garbage, including the size of the trash, the diligence of maintenance activities, the nature of the discard location, and the degree and kind of traffic occurring in the discard area. McKellar (1983) discovered that in modern outdoor contexts, pieces of trash less than 5cm² tended to be left behind as primary refuse. Small items can be lost as primary refuse. In his ethnoarchaeological study of Eskimo hunters, Binford (1978) found that several varieties of refuse were discarded as primary refuse, including abandoned articles of clothing, ammunition shells, and remains of fauna. The hunting stand as a locus of discard did not undergo scrupulous cleaning, and trash was left to fall beyond the most immediate traffic zones or was thrown within a physically prescribed zone from where the men were seated.

In the urban context of nineteenth-century Portsmouth, New Hampshire, it was expected that maintenance processes
would tend to reduce dramatically the kind of primary deposition seen at the Eskimo hunting stand. Interior floor surfaces were probably swept regularly, and small items as well as larger ones redeposited in a secondary refuse aggregate. Ground-floor wooden surfaces might allow the trapping of very small items like pins, marbles, or coins through knotholes in the wood; the excavation of crawlspaces or areas beneath floors has recovered such items (South 1977a; Tordoff 1979; Wheeler 1985). Primary refuse might also be retrieved from outdoor activity areas, such as butchering areas, laundering areas, or dairying areas.

For the Portsmouth sites examined here, primary refuse was not detected. The excavation units analyzed from the three sites derived from outdoor contexts, and none of the units clearly could be associated with specific activities, except for secondary trash disposal. The kind of resolution required for the detection of primary refuse was probably not achieved in either the excavation or the analysis of the Strawberry Banke sites. I believe that the formulation of models of activity areas needs to be researched further from ethnographic and historical sources before primary trash can be sorted out from the general background noise of tertiary deposits. It is also possible that for the sample analyzed, there were no intact primary deposits.
Secondary Deposits

This level of transformation from use to artifact refers to the discard of an object in a location different from the locus of use. Most of the trash generated in nineteenth-century Portsmouth was probably discarded as secondary refuse in the day-to-day maintenance of constricted space and high-traffic areas. In other words, after an item was deemed no longer suitable for use, it was transported and discarded. Factors affecting decisions related to the formation of secondary refuse aggregates include location, perceptions of hazard, and general size of the trash load. Secondary trash deposits include open-air middens, privies, and provisional discard areas; the characteristics of each are explored below.

The open-air midden may be discerned as a "nonfeature" deposit that does not downcut into lower-lying sediment horizons but exists as a collection of trash with a wide horizontal distribution. In its entirety, such a refuse aggregate may have a concave or convex profile, although it is probably infrequently excavated entirely. The open-air midden is characterized by a moderate to high density with selective inputs of food preparation and consumption items, such as ceramics and fauna. A trash heap of demolition debris can also be characterized as an open-air midden. Richness may therefore be low to moderate.
completeness may be high, as articles are transported directly from the breakage event to the discard locus. The identification of an open-air midden may be indicated by the location of the deposit in reference to known doorways and paths; open-air middens were probably conveniently accessible.

In the examination of fauna from open-air middens, the effect of weathering may be readily obvious. Faunal remains left exposed to the elements will be heavily degraded and pitted. Artifact size upon deposition into open-air middens should be large; downsizing may occur in the actual gesture of throwing away ceramics and glass upon previously discarded remains. Artifact size can also be affected by postdepositional processes such as the traffic of humans, animals, and machines over the midden.

Privies, on the other hand, are downcutting features, par excellence. Their horizontal extent is often bounded, but they can have deep profiles extending several meters down below ground surface. In Portsmouth (and doubtless in other urban areas), privies were further enclosed within outbuildings, offering artifacts a highly protected environment. The acidity from the nightsoil can act as a negative formation process by causing organic remains, such as vegetable scraps, eggshells, or small bones to degrade or decompose. Larger and more dense bone will remain intact in
privy fills.

Privies are first and foremost associated with the disposal of human body wastes, but in archaeological contexts, these features are often found to be filled with ceramic, nonhuman faunal, and architectural debris. In most cases, artifact densities associated with nightsoil deposits range from the moderately high to very high. Richness is and ceramic intactness is also high. The behaviors associated with privies are complex and include selective or nonselective discard of materials, cleaning processes, and abandonment.

Selective discard entails the use of privies for dumping certain classes of residues to the exclusion of others. In other words, the prevalence index and density amounts of various classes should indicate whether this kind of selection was going on. Some households may have preferred to discard only organic materials in their privy; some may have selectively discarded kitchen trash, while others may have thrown everything down the privy shaft. Decisions about what to discard in the privy are likely related to the volume of the privy, the volume of human waste generated (related to the household size), and maintenance processes. A small household with a large privy and regularly scheduled cleanings might opt to discard most or everything into the family outhouse. A larger household
with a small privy would have to compensate in other ways, perhaps by frequent cleaning or selective disposal of materials down the shaft. At the time of abandonment, all previous notions about selectivity could be overlooked while provisional discard is gathered up and thrown away, or the succeeding houselot resident could use the privy to dispose of de facto materials left behind.

The opportunistic midden can be described as the backfilling of pits or trenches dug for one purpose that are used secondarily for the disposal of trash. Opportunistic middens are often presented in archaeological literature as "trash pits." Pits may be excavated to install fenceposts, to inspect house foundations, to lay drainage or sewer pipes, or to dig a well. Dickens (1985) emphasized that garbage-filled pits could and should be distinguished from the pit originally dug for some other purpose, such as a roasting pit; the two separate behaviors should be articulated for the complete understanding of the site formation processes.

In historical contexts, the same procedure is appropriate—the archaeologist should understand that energy invested in digging can be maximized if a secondary purpose of trash disposal is realized. This may be of particular importance when new residents arrive at a site, and they are responsible for the clearing of their predecessor's
provisional and de facto refuse. Such an opportunistic midden consisting of de facto trash may be characterized as a single-episode mass deposit.

The opportunistic midden for de facto refuse should entail a high degree of vessel completeness, large sherd size, and moderate to high densities. These aggregates may be highly selective and related to the disposal of household goods left in houses, such as ceramics and glass. De facto refuse may be further characterized by the range of vessel forms; materials abandoned in a cellar or attic should be different from kitchen cupboard items.

One type of opportunistic midden should be emphasized, and that is the privy shaft of an abandoned privy. When a household departs, and the incoming household decides to either dig a separate privy or to adopt indoor facilities, the privy shaft becomes an ideal location for the opportunistic discard of trash. "Old trash," related to the departing household as either provisional discard never removed or de facto refuse, can be conveniently dumped into the old privy. This serves the dual purpose of closing the shaft with fill and removing from the houselot the abandoned trash of the previous residents.

**Tertiary Deposits**

Tertiary deposits are the modified assemblage of
artifacts that arise from the disturbance of either primary or secondary deposits. By their nature, tertiary deposits are characterized by evidence of transformation, such as very small sherds and a tendency toward higher vessel-to-sherd ratios. However, the identification of a tertiary deposit does not necessarily imply that remains are disturbed beyond the point of meaning. Tertiary deposits were probably created by the residents of nineteenth-century houselots in an effort to manage their own accumulations of trash. For instance, if open-air middens became too large or unsightly, loads of trash could be shoveled and redeposited to a more out-of-the-way location. Open-air middens were probably maintained in a manner similar to privies; when the assemblage of garbage covered too much area, or the pile of trash became too dense, it could be periodically reduced and relocated to another part of the yard. This tertiary deposition could be associated with the discarding household.

Tertiary deposits, in some cases, can be characterized as scattered deposits, especially if there has been an effort to redistribute over a wide area what had been a dense accumulation of trash. However, I believe that most redeposited open-air middens will retain some of their integrity in terms of relatively low vessel-to-sherd ratios and a tight temporal range that spans the occupation of a
single household. In terms of sherd size, the transport and second phase of dumping will probably involve downsizing to moderate or moderately high ratios of very small sherds.

Similarly, privies were required by city ordinance to be cleaned out annually. In an effort to keep costs low, landowners could conceivably perform this activity themselves. While privy nightsoil could be trucked offsite and used in rural contexts as fertilizer (Bell 1989:60), it could just as easily have served as fertilizer in city gardens in Portsmouth. Such redeposited privy fill would become a tertiary deposit.

**Quaternary Deposits**

Quaternary deposits constitute a fourth level of magnitude of deposit formation. These deposits should be marked by at least two phases of redeposition; at the very least, the quaternary deposit can be identified when a negative feature downcuts through a tertiary deposit. Archaeological deposits can also be identified as quaternary when it is clear that tertiary deposits have been further subjected to postdepositional disturbances such as plowing. Redeposited privy fill that has been worked as a garden area will be a quaternary deposit.

At this scale, it may be very difficult to associate artifacts with an individual household, as various trash
loads become mixed to form a single deposit from heterogeneous sources. The proportion of very small sherds will range from moderately high to high. Most scattered deposits, those with low densities and a wide temporal range, are probably tertiary deposits. In rural contexts, this may not be the case at all.

**DISCARD BEHAVIORS AT THE RIDER-WOOD SITE**

Appendix A reviews in detail the characteristics of each nineteenth-century deposit for the Rider-Wood site, including richness, prevalence index, degree of transformation as indicated by sherd size, location, and stratigraphic relations to articulate the behavioral aspects of the archaeological deposit (Table A.1). The chronology is also elaborated, so that by fixing a time range, a household can be linked to the deposit. In this section, I review the behavioral aspects of the formation of the archaeological deposits.

Three households are associated with occupation and deposition at the Rider-Wood site throughout the nineteenth century. Henry Jackson lived at the site beginning in 1780, and his widow and son remained there until 1809, when the property was transferred to British immigrants, John and Mary Rider. John died in 1819, but his widow survived him until 1863. Mary Rider's occupation at the site apparently
was not as a solitary resident but included extended kin members who came to live with her and work at her shop upon their arrival from England. When Mary Rider died, eighteen relatives received a share of her estate, executed by a nephew of her deceased husband who had married one of her nieces. Mary Rider's nephew, James Wood, came into possession of the house, where he lived to the advanced age of 104.

By far, the lengthiest stay at the site was that of Mary Rider, who lived at 1 Jefferson Street from 1809 to 1864. Born in 1768, she arrived in Portsmouth as a new immigrant around 1795, the year after her marriage to John Rider. She was in her early 40s when she arrived at the Rider-Wood site and died there at 96 in 1863. Not surprisingly, a sizable proportion of the nineteenth-century deposits are associated with her 54-year tenure.

The household of James Wood occupied the site for the next most lengthy period of time. Wood immigrated to Portsmouth in 1852 with a wife and young daughter and gained possession of his aunt's house 12 years later, when Wood was 68 years of age. It is not inconceivable that between 1852 and 1864 Wood, his wife, and three young children resided at least part time with Mary Rider. In Mary Rider's probate inventory (Figure 5.1), mention is made of five bed frames, two feather beds, and two husks bed; these would have
provided adequate sleeping arrangements for the extended household of Mary Rider and her nephew's family. During Wood's 36-year ownership of the lot at 1 Jefferson Street, James Wood made a few improvements, including a long shed along the east side of the property.

The shortest overall occupation examined for the Rider-Wood site was that of Henry Jackson, who purchased the property in 1780 and lived there until his death in 1804. His wife and son owned the lot for an additional five years until the land was sold to the Riders. Henry Jackson is credited with the construction of the Rider-Wood house that presently sits on the lot, and it appears from documentary and archaeological evidence that Jackson was also the builder of the long outbuilding visible on Hales (1813). Although Jackson's occupation spanned the last twenty years of the eighteenth century and did not last the first full decade of the nineteenth century, the deposits associated with his household were examined to provide comparative data for the research.

The Landscape of Garbage for the Jacksons

Remains from the Jackson occupation are concentrated in two locations, the open-air midden directly behind the house in units 7A-C and along the eastern edge of the property. In terms of artifact density and the minimum number of
vessels, the heaviest concentration of trash was located in units 10A, 10C, and 11C. A total of 69 vessels was retrieved from units close to the house (7A-C), while a combined total of 162 ceramic vessels was collected from various refuse deposits along the east side of the property.

The two phases of 8A and 8B in unit 10A have characteristics of open-air middens. Values for the overall density, total number of artifacts, and the minimum number of vessels were higher in 10A than for phase 6 in units 7A-C, suggesting that Jackson preferred this more distant location for trash disposal. The prevalent artifact group is fauna; more than 25% of ceramics consist of redware, a ware type associated with utilitarian functions such as food preparation or dairying. Given the proximity of unit 10A to a building that may have housed livestock, phase 8 may represent the secondary disposal of materials related to dairying and butchering.

Phase 10 was also related to the Jackson occupation and can be described as an open-air midden with a prevalence of architectural debris. The overall density was moderately low and the aggregate may have begun as a a pile of rubble from a razed outbuilding, which subsequently attracted the location of phase 8 on top of it.

The ratio of very small sherds in both units 10A and 10C suggest that transformation was minimal (low to
moderately low) and that the deposit was secondary trash rather than a tertiary deposit. However, the four deposits relating to Jackson in unit 11C all were marked by moderate to high levels of transformation; these trash fills were probably redeposited from other secondary-trash aggregates.

In units 7A-C Jackson was responsible for the opportunistic placement of an open-air midden in a part of the yard where sediments had settled to form a slight concavity in the ground surface; Jackson located his trash aggregate over the site of his predecessor's backfilled tanner's pit. Faunal materials were the prevalent artifact type of Jackson's open-air midden, confirming that proximity to the kitchen may have been a factor in choosing the location of this secondary-refuse aggregate.

Finally, in the units most removed from the house, 15A-C, deposits for both Jackson and Rider may be considered scattered and tertiary. The tendency to minimize energy investment in discard behaviors argues against the identification of these deposits as secondary open-air middens, because they so far removed from the back door. It is curious that the prevalent artifact group in all four nineteenth-century deposits is architectural debris and that ceramics and faunal remains are nearly nonexistent. Perhaps some selection for hazardous building materials was in operation, while the disposal of more mundane kitchen trash
was relegated to the deposition locations detailed above.

The overall pattern of trash disposal for the Jackson household appears to be a preference for middens located about 15 to 20 m from the back of the house along the east side of the property. These deposits of trash were associated with the long warehouse building, a corner of which could have housed the Jackson privy. One secondary aggregate was located in an opportunistic concavity 5 m from the house, but the densest collections of both secondary and tertiary trash were in the deposits described above. All in all, it seems that the Jackson family worked to keep trash cleared in a wide zone from the back of the house and selectively deposited it along the north and east sides of an outbuilding.

The Landscape of Garbage for the Riders

Unlike the Jackson household, John and Mary Rider concentrated their trash-disposing behaviors near the house. Possibly taking advantage of the opportunistic midden begun by the Jacksons, a huge open-air midden at least 3 meters long was maintained within a 5-m distance from the back of the house. Five levels of open-air middens were detected, spanning the occupation of the Riders and the Woods. These secondary-refuse deposits were characterized by high density, higher overall richness, low vessel-to-sherd ratio,
and a location near the house. More than 600 ceramic vessels were discarded over a 54-year period, averaging about 12 vessels a year. The prevalent artifact group, however, was fauna, present in both high proportions and amounts (see Table D.1).

Proportions of ceramic types indicate that phases 5B and 5A are two distinct periods of use for the open-air midden by the Rider household (see Table A.2), and the differences between them may be associated with the death of John Rider in 1819. Phase 5B contained a high proportion of faunal remains, compared to 5A where ceramics were more prevalent. Phase 5A may represent a very long-term rate of deposition because of the high minimum number of vessels found in the deposit—245. It would appear that Mary Rider did not redistribute trash from her open-air middens but allowed it to collect in a single massive secondary aggregate.

The open-air mass deposit of phase 4 represents a long-term accumulation associated with the last years of Mary Rider's occupation. The Woods emigrated from England ca. 1852 but did not own the Jefferson Street house until after the death of Mary Rider in 1864. The records are silent on the whereabouts of the Wood family upon their early arrival in Portsmouth, and it is entirely possible that James Wood, his wife, and their three young children lived with James'
aunt Mary. The relatively high amounts of ceramic vessels could derive from the expansion of the Rider household to include the Woods and three children.

The depositional sequence of unit 9C is dominated by the northeast corner of a privy that occupied the southern half of the excavation unit. The complex history of deposition ranges from secondary refuse directly discarded into the privy shaft to the opportunistic disposal of de facto trash. The sharp chronological discontinuity between phases 7 and 9 is an important clue in the interpretation of the use, abandonment, and backfilling of the Rider-Wood privy. Several behaviors are involved, including the opportunistic discard of the provisional and de facto refuse of James Wood (phase 7); the demolition debris associated with the razing of the privy superstructure (phase 8); and the multiple phases of maintenance and secondary refuse during the Rider occupation (phases 9 to 12).

The interpretation of the phases of the privy requires some imagination. The single highest proportion of ceramic types is pearlware, produced in England between 1780 and 1830. Based on ceramic evidence alone, the time period for the ceramics of phases 9, 10, and predates 1830. Graffam (1981) believed that the ceramic evidence indicated that Mary Rider ceased the purchase of household ceramics shortly after the death of her husband in 1819, because she was a
poor widow who did not have the same purchasing power she did when her husband was alive. However, when Mary Rider's estate was evaluated in her probate inventory, her estate was valued at over $9300 (Figure 5.1). How do we account for what happened here?

I believe that what the excavators encountered is the remains of a cleaned-out privy, where only the lowest levels contained refuse that dated from Mary Rider's occupation. The privy shaft backfill clearly dates from the early twentieth century with the decal ware and remains of porcelain electrical fixtures, leaving a considerable time lag between that and the next depositional horizon, phase 9. Any explanation for the depositional history of the privy must incorporate this time lag between circa 1830 and 1904.

Although the privy was excavated in arbitrary levels that separated remains into three distinct phases, the depositional sequence is likely to have been more complicated than that portrayed from the fieldnotes. Excavators dug through what would have been the northeast corner of the privy box. Cleaning of privies often leaves residue along the sides of the walls, as nightmen scoop out materials from the top or remove nightsoil from a trap door on the side of the structure. Figure 6.1 shows a profile of a privy (Feature 169) from another site at Strawberry Banke
Overlying deposits:
1. 10YR 5/2 Loamy, sandy topsoil with small pebbles
2. 10YR 5/2 Grayish brown compact matrix mollified with 10YR 6/6 brownish yellow clay particles, small rocks, coal refuse, brick, mortar, and glass fragments
3. 10YR 4/2 Sandy soil heavily mollified with 10YR 6/6 large clay particles and mortar
4. Coal ash
5. 10YR 4/2 Silty soil with brick fragments and coal particles
6. Mixture of silty soils 10YR 4/3 dark brown and 10YR 4/1 dark gray with flecks of charcoal, brick, mortar

**F. 169:**
7. Moist, but mollified clayey deposit 10YR 4/1 matrix mollified with 10YR 5/3 clay
8. Compact mixture of clays 5Y 5/2 olive gray and 10YR 5/4 light yellowish brown and beach sand
9. Mottled deposit of sandy clay 4Y 4/2 and coarse sand 10YR 3/3 with granules 10YR 7/2
10. Very loose mixture of sands 10YR 4/2 and 5Y 3/3
11. Very dark loamy matrix 10YR 2/2 mollified with 10YR 3/2 - decomposed wood
12. Human coprolite 4Y 3/2 dark olive gray, wood
13. Charred wood ash black matrix 7.5YR 2/0 with clay 10YR 6/0
14. Blush-gray dense clay 7.5YR 4/0

Figure 6.1. Profile of Privy Feature 169
whose contents were excavated stratigraphically rather than in arbitrary levels. Although the general profile of horizons may be said to be fairly horizontal, at least one phase (phase 9) is vertical and clinging to the wall of the privy. Analysis of the artifacts revealed that phase 9 was a separate and early residue; had the privy been excavated in arbitrary levels, the earlier materials of 9 would have been incorporated into phases 8, 10, 11, 12, and 13.

The Rider-Wood privy likely had such a history of deposition, cleaning, and new deposition. During cleaning, privy corners may have been particularly inaccessible, and nightmen may have consistently left earlier residue along the sides. Excavating in the middle of a privy might uncover fairly horizontal levels of debris. The fact that a corner of the privy was intercepted in Unit 9C heightens the possibility that excavation by levels did not reflect the sequence of deposition.

Further observations of the depositional history of the Rider privy are that phases 9 to 11 have characteristics of a mass deposition of materials, i.e., whole vessels disposed of in large numbers apparently in one episode. Sherds were large, and the vessel-to-sherd ratios were among the lowest for the entire site—indicating relative intactness of the vessels. Crossmending of nearly complete vessels occurred through levels incorporating phases 10, 11, 12, and 13.
Phase 9 had large sherds and some nearly complete vessels but few crossmends with materials in the lower phases. In other words, Phase 9 has a depositional history separate from the lowest levels of privy fill.

Without this analysis of the crossmending, it might appear that all the vessels were thrown into the privy at the same time; typically, the transfer of property or death would be an occasion for such a mass deposition. However, it seems that there were at least two episodes of disposal of large pieces of ceramics. For phase 9, this involved only 20 vessels and cannot be considered a "mass" deposition. On the other hand, phases 10 to 12 do seem to be related, and a minimum of 82 vessels are implicated. Such a number might correspond with an episode of purging after the death of a spouse.

Graffam's (1981, 1984) interpretation of Mary Rider's economic status from the privy remains reveals the danger of relying too heavily on negative features without considering their formation processes. His focus is on remains from the privy without taking into account the other types of deposits on the site that date from the same period such as the rich open-air deposit behind the house.

In Units 7A-C, dense concentrations of ceramics and fauna contradict the notion that Mary Rider was poor. The distribution of ceramic types indicate a slow but steady
replacement of wares over time. Faunal remains are richly varied from expensive cuts of beef to sheep/goat to various fowl. It is important to keep in mind that, in 1830, Mary Rider was already 62 years old, and her household may be described as being in an advanced stage. Family genealogies record that she sponsored new arrivals from England, who probably resided with her at least temporarily.

Graffam also overlooks the possibility that objects found in negative features like privies have undergone some form of transformation or disturbance. However, historical documents (Bell 1987; Portsmouth 1861; Roberts and Barrett 1984) clarify that owners and users of privies in urban contexts were required to maintain them and describe in detail how privies were cleaned. Graffam (1981:18) does acknowledge that privy cleaning likely did take place but does not associate the maintenance process with the disposition of the ceramics in the feature. Neither does he invoke the cleaning process as an explanation for the disjunction between the last phase of fill and what appears to have been the last (i.e., archaeologically preserved) use phase of the privy.

Reconstruction of the Rider privy development includes a mass deposition some time before 1830 (possibly associated with the death of John Rider in 1819), and then continued use and cleaning until after 1902. The mass deposition of
whole vessels in phase 10 could correspond with the death of John Rider or it could have served the more mundane function of drainage, as described by Roberts and Barrett (1984:110-111). Faunal remains were recovered in low to moderately low amounts and densities in phases 10 to 13. Graffam (1984) argues that the few faunal remains represent the poor fare of the widow Rider. I contend that Mary Rider could afford better food and also could afford to pay nightmen to clean out her privy. With repeated cleanings, few remains of foodways would persist for archaeological analysis. The artifacts encountered by the 1981 excavators probably represent the earliest, least-touched debris buried in the lowest levels of the privy.

A surprisingly high density of materials was found outside the privy in phase 16, the assemblage of trash deposited against the north side of the privy. This area provided the highest concentration of artifacts second only to units 7A-C directly behind the house. This high concentration of trash probably represents provisional discard stored in the shed just adjacent to the privy. High densities of ceramics and architectural debris could be discarded periodically as percolation fill for the privy to help drainage during the long use phase of the outhouse.

At the lowest level of unit 9C, phase 17 is a good example of a scattered deposit. Phase 17 was the ground
surface into which the privy feature was cut, and its final date of deposition is linked to the Jackson household. The low artifact concentration shows further evidence of a high degree of sherd downsizing. The time range represented by the artifacts spans the time of the earlier households of Hill and Walton. The latter households may have been responsible for a thin scatter of materials in this part of the yard, when landowners had access to large and pristine areas for trash deposition. The entire deposit of phase 17 recovered archaeologically could be a palimpsest of such scatters but is just as likely to represent a tertiary scattered deposit.

Along the east edge of the property, the Rider household apparently utilized an open-air midden in association with the long outbuilding built by the Jacksons. It is perhaps significant that the highest percentage of redware and the lowest percentage of refined earthenware for all of the Rider deposits were recovered in unit 10A. This appears to be a different kind of refuse--more oriented toward utilitarian vessels rather than tableware--and it is possible that it is related to barn activities such as milk processing or animal tending.

Along the street side of the property in Unit 11C, a deposit of moderately high density was composed of predominantly ceramics. A minimum number of 158 vessels was
assessed, but evidence suggests that the origin of these very fragmentary vessels was from the open-air midden just behind the house. It is possible this deposit was the tertiary removal of trash away from the house when the surface midden grew too large. The range of ceramic types is very similar to that of phase 4 in units 7A-C; the high ratio of very small sherds ressembled that of materials in unit 7, and density was moderately high, which is again consistent with the characteristics of the open-air midden from unit 7.

At the southernmost end of the property, tertiary scattered deposits prevail, but in low densities. The single most frequent ceramic type in units 15A-C during the Rider occupation is redware, suggesting that food preparation rather than food consumption activities may be represented by this trash.

The Landscape of Garbage for the Woods

The second generation of the extended Rider lineage consists of continued use of the open-air midden behind the house and most likely the privy as well. A total of 128 ceramic vessels was retrieved from Wood deposits in units 7A–C, while the de facto refuse from the privy shaft indicated an additional 80 ceramic vessels, for a total of 208 from the two refuse aggregates nearest the house.
However, density levels for the open-air middens of units 7A-C decrease over time, suggesting that the Woods explored other options for trash deposition.

The shed in which the privy was housed was standing during James Wood's tenure on the land as evidenced from Sanborn insurance maps from the 1880s to the early twentieth century. Artifacts do not indicate that the Wood household used the privy; i.e., there is an absence of materials that date from this occupation period. However, the complete depositional history as discussed above for the Rider occupation suggests a discontinuity between the last use phase and the abandonment of the privy. All recovered phases of nightsoil contexts contain materials manufactured before 1830. It seems logically inconsistent to assume that in 1864 Wood discarded his aunt Mary Rider's old dishes in the privy and left the shaft open, without ever having used it for the deposition of his refuse, whereupon it was closed after his death in 1902.

A more likely explanation is that the Woods used and regularly maintained the privy, constantly removing refuse from this context. If the privy had gone out of use at the time the Wood family residence, we should expect the privy backfill to date to the 1860s and 1870s and not the 1900s.

The three units along the eastern side of the lot are all characterized by a high degree of transformation because
of building construction activities but may be described as active areas of trash disposal for the households of the nineteenth century. In unit 10A, phases 4, 5, and 6 all apparently date to the Wood occupation and are probably locations for provisional discard up against the north side of the long shed. Ceramic vessel intactness was high with a vessel-to-sherd ratio that rivaled that of the open-air midden in unit 7. The density was moderately low to moderate with a prevalence of ceramic materials.

Tests along the east side of the property suggest an expansion of the use of areas more removed from the house for the disposal of trash during the Wood tenure. While a total of three deposits was isolated from the Wood occupation in units 7 and 9, seven lenses of trash were linked to Wood in the three units of 10A, 10C, and 11C. Long-term disposals are represented by stratified remains in all three eastern units, as opposed to single layers of trash, as was the case for the Rider refuse in these units. A minimum number of 224 ceramic vessels was recovered from Wood deposits along the east side of the property, suggesting that effort was made to move or remove trash farther from the house.

The Wood household, then, represents continuity in some patterns (i.e., use of the nearby open-air midden) and new behaviors of greater investment of energy in schlepping
trash farther away. It is of interest that the one Rider deposit in 11C so closely shares the characteristics of phase 4 in unit 7; this is the phase where the Rider household may have been expanded by the presence of the Wood family. Wood may have influenced the pattern of trash disposal from the beginning of his stay on the property.

The Landscape of Garbage after 1900

Following the death of James Wood, the house was divided into a duplex and tenants resided at the site. Because of time constraints, few deposits dating after 1900 were examined. Overall, however, the most concentrated area of post-1900 trash was along the east side of the property in units 10 and 11.

DISCARD BEHAVIORS AT THE FOLLETT SITE

At least three main households occupied the Follett site during the nineteenth century. The first of these was that of Joshua Jones and his family, who first arrived at the site in 1796. He was living at 12 Atkinson Street until at least 1840 according to city tax assessment records. By 1845, the land had been surrendered to his widow (City of Portsmouth 1845), who continued to occupy the site until at least 1851.

The occupation of James Mahoney and his young family of
daughters followed that of the widow Jones. Mahoney and his wife immigrated from Ireland in the early 1850s, and he was listed at 12 Atkinson Street by 1856. The Mahoneys lived at 12 Atkinson Street for 20 years, allowing their daughters to grow from infancy to early adulthood.

In 1876, Joshua Jones's son-in-law, Aaron Mudge, sold the houselot to John Sullivan, another Irish immigrant. Sullivan was an owner-occupant for 16 years until his death; his widow sold the lot in 1892, at which time the property became home to tenants who resided there for periods of three or four years. This latter short-term residence cycle continued into at least the first decade of the twentieth century.

The three long-term households of Joshua Jones, James Mahoney, and John Sullivan are emphasized in the reconstruction of the nineteenth-century occupation history of the Follett site. The later, post-1892 tenancy phases are elaborated to some degree to provide comparisons with the other two sites.

The full range of deposits and details of stratification is explored in Appendix B; here I focus on the main backyard deposits associated with the Jones, Mahoney, and Sullivan households. As described in the appendix, tenancy occupation levels are many at the Follett, especially in the thick build-up of the ground surface area.
in the southern part of the houselot. These early twentieth-century levels cover fills associated with the Jones occupation; the disjunction is believed to be associated with the landscaping involved in removing the wharf structure and filling in Puddle Dock.

The formation of the north wharf units was affected by the wharf structure, even though the water line was shown on maps to be 12 m south of the excavation baseline. In general, the upper 60 cm of fill were related to twentieth-century landscaping, and the lower levels were taken up with the eighteenth-century wharf construction, creating a discontinuity for nineteenth-century trash aggregates. In isolated cases, however, small localized (mainly opportunistic) trash deposits dating from the nineteenth century were recovered. Some of these had been created in the process of excavating features or filling in the dock area.

The discontinuity of deposits is related to the dismantling of the wharf; i.e., the demolition of the wooden docks and wharves that covered this part of the Follett site. However, I believe that subtractive formation processes were also in operation. During landscaping operations relatively higher areas of ground were pushed or transported to create a surface level with the filled-in waterway. In N9W1, mid-nineteenth-century materials were
exposed in the top levels, as if later deposits had been scraped off and redeposited in the more southerly part of the yard.

If the wharf area alone had been excavated, investigators would be hard-pressed to recover evidence of the nineteenth-century occupation at the Follett site. The sequence of deposition of wharf units demonstrates how cultural transformations can create discontinuities in the archaeological record. This can be especially true of twentieth-century contexts, when mechanized labor can move heavy loads of trash-laden dirt. When these subtractive formation processes are not identified, researchers can be led to interpretations of occupational gaps.

For the Follett site as a whole, the backyard units offered the greatest amount of information on the nineteenth-century occupation. Here, secondary-refuse aggregates were located, including privy fill and open-air middens. With the possible exception of N9W1, landscaping associated with demolition of the wharf largely left this northern part of the property untouched.

Along the western edge of the property in the west wharf units, archaeologists have recovered evidence of the filling process of a small jog of Puddle Dock at the end of the first half of the century. This process was characterized as a selective concentration of ceramic refuse
within a coal ash matrix that covered the old wharf.

The Landscape of Garbage for Joshua Jones

To the Jones occupation is attributed the buildup of marine sand in the wharf units (phase 19) as well as the lowerlying deposits of Str. VI and VII in S10W7. Jones' deposition of materials in this part of the yard was sparse, perhaps owing to the active use of the space adjacent to his warehouse in the operation of his trucking business.

Greater evidence of Jones' occupation was found in the unit closest to the house, N9W1. High concentrations of creamware, pearlware, and some whiteware were found in two levels of a secondary-refuse open-air midden. Located just beyond the dooryard area, N9W1 was immediately accessible from the back kitchen door 6.5 m away. In a pattern reminiscent of the widow Rider's trash-disposal activities, high densities of kitchen debris--both faunal and ceramic--were found near the house.

In the uppermost phase of the open-air midden, ceramics predominated within a highly dense concentration of remains. Ceramics were moderately transformed, but probably from post-depositional trampling, given the location of the midden in relation to probable pathways from the dooryard to the west side of the lot. In the lowerlying phase, fauna was the prevalent artifact group; this earlier phase was
characterized by only a moderate density and may not have been used as heavily in the younger days of the Jones household. However, as the two elder Joneses aged, access to this open-air midden would be preferable to a longer walk to a privy or other secondary-refuse area.

In N13W5, scattered tertiary-trash deposits were found that were linked to the Jones household, in the garden area as depicted in Hales (1813). As described in Appendix B, it is conceivable that care was taken to avoid the disposal of hazardous trash like ceramics, nails, or glass in the vicinity of the garden. More than three-quarters of sherds (80%) were in the very small size range, and ceramics were mixed, further indicating that surficial disturbances like gardening were in operation here.

Two deposits in N11W9 were associated with the Jones household, including the gravelly lens of Str. VI that covered the organic sediment of Str. VII. This latter deposit had all the characteristics of nightsoil in terms of coloring, texture, and odor, among a prevalence of bone and shell. Ceramic vessels were characterized by a low level of intactness and a moderate ratio of very-small sherd size. The high density of remains probably was a tertiary redeposition of privy fill, possibly related to an instance of privy cleaning. Str. VI, on the other hand, had a low level of transformation and may have been deposited directly
on top of the nightsoil to cover it.

Both deposits were high in architectural debris, as if associated with a razing episode. While the artifacts were clearly dated to the Jones household, it is possible that the Str. VI and VII fills represent the demolition and clearing of the old Jones privy box. It would not be unexpected to find that the Jones privy was located within the northern warehouse. In a parallel example, the Rider privy was not left as a freestanding structure, but was contained within a storage shed. If the Jones privy had been within the stable (City of Portsmouth 1840), the dismantling of this structure would entail the demolition of the Jones privy as well. The two tertiary deposits in N11W9 linked to the Jones occupation could be redeposited nightsoil from the razed privy.

In the wharf area, scattered "pockets" of trash were discerned in tertiary contexts. These were not considered of great importance because of the relatively high level of transformation of the sherds and the fragmentation of the vessels. Two other deposits linked to the Joshua Jones occupation were opportunistic pits located in the central wharf area filled with mixed and highly transformed debris.

Overall, it can be said that the Jones household discarded trash near the house in an exposed open-air midden adjacent to the dooryard, or in closed privy settings.
Scattered remains from the Jones occupation were retrieved from the wharf area, but it does not appear that trash disposal was a major activity in this part of the houselot. Future research related to the Jones household probably should concentrate on the backyard area closest to the house within the dooryard.

The Landscape of Garbage for the Widow Jones

The archaeological presence of the widow Jones should not be highly distinctive from that of the household previously headed by her husband, Joshua Jones. However, in two backyard units and along the western edge of the lot, some traces of the latest years of the widow Jones occupation between 1841 and 1851 were detected. Most of the widow's discard practices stress continuity with those from the time Joshua Jones was alive.

The refuse of widow Jones was represented by a moderately low density of materials in N9W1 just beyond the dooryard area. The widow continued the practice of discarding kitchen refuse in an open-air midden just adjacent to the dooryard, and in fact, may have increased the amount of faunal trash she threw away here the more advanced in years she got.

A considerably denser aggregate of refuse was recovered in N13W5 Str. XIIA, deposit which offered the highest
density for the site. A rich collection of floral, faunal, and ceramic debris was found in a moderately transformed state, with 43.8% of sherds less than 5 cm² in size. This collection was recovered in a nightsoil matrix that may have represented the lowest levels of a new privy. Maps for this period (Walling 1850) do not portray any outbuildings for the Follett site, suggesting that the stable mentioned in the 1840 city tax assessments was no longer standing. It is possible that once the warehouse-stable was razed, an inclusive privy was also demolished, requiring the excavation of a new shaft for the widow.

The dismantling of the outbuildings along the west side of the lot co-occurred with a change in the outline of Puddle Dock (Figures 5.2 and 5.3). Once these buildings were gone, and the outline of the water course was altered, the widow Jones may have begun to claim this low-lying land by filling it with household trash. In Phase 11 of S1W15, a high density of ceramics with a wide temporal range from the eighteenth century to the mid-nineteenth century was retrieved, suggesting a tertiary deposit that incorporated earlier materials. However, the dating of the deposit can be pinpointed with the examination of the largest and latest ceramics. About two-thirds of the vessels manufactured after 1825 consisted of sherds greater than 5.1 cm².

No unambiguous evidence of the widow Jones household
was recovered from the other wharf units.

The Landscape of Garbage for the Mahoneys

The Mahoney household was composed of two adults and two daughters who lived at the Follett site from at least 1856 until 1876. No trace of the Mahoney household was found in N9W1, as it appears that the uppermost stratum was an amalgamation of several time periods. It is possible that the Mahoneys did discard trash in this area as well, but that the accumulation was landscaped and redeposited when the wharf was dismantled.

In the backyard units, the Mahoneys were probably responsible for the installation of a water pipe through nightsoil deposits in N13W5. Evidence suggests that this was the location of secondary privy deposits, and the stratigraphic profiles (Figure B.1) indicate that a privy stayed in operation even while the water pipe ran through accumulated levels of human compost. Debris dated to the Mahoney occupation was retrieved from the nightsoil beside and beneath the water pipe.

A larger assemblage of vessels dated to the Mahoney occupation was recovered from N11W9, Str. V. Both subphases--VA and VB--contained moderately high levels of architectural refuse; this debris may have been residual trash from the dismantled warehouse that stood on this
A very high density of faunal remains was found in VB in very good (only slightly weathered) condition. N11W9 Str. V offers the only stratified materials for the Mahoney household that could indicate changes over time. The low level of transformation for both subphases suggests that household trash may have been directly discarded here in the northwest corner of the lot.

With its high density and prevalence of faunal trash, Str. VB has the characteristics of an open-air midden. The level of transformation, gauged by the relative sherd size, was low for both phases of Str. V, indicating a secondary deposit. The location of this midden was near the northwestern edge of the property and removed from the dooryard and immediate vicinity of the house.

Along the western edge of the property, the ash fill of phase 10 in the west wharf units is associated with the Mahoney family. The two westernmost units, S1W15 and S2W15, contained the highest density of ceramics, with diminishing amounts from the west to the east. This is consistent with the assumed topography of the west property line, which would have been covered with water until some time before 1850; filling would require heavier collections of materials along the side closest to the water. In three of the units, the ashy level covers the dark brown sand that puts the wharf logs out of use. The low level of downsizing for
sherds strongly indicates that trash was directly deposited here within a coal ash matrix. However, little to no faunal remains were associated with the ceramic concentration; these seem to have been relegated to the privy in N13W5 or the aggregate in N11W9. Ceramics and coal ash were carted off to build up the west side of the yard.

Finally, in the north, central, and south wharf area, traces of the Mahoney household were scarce. The wharf area can be generally described as having low densities of nineteenth-century trash, with the exception of some very localized, high density refuse aggregates that appear to represent small loads of household trash. Most of these were buried in pits that cut down to levels of the wharf structure (and 1981 water table level), in what were opportunistic disposals of garbage.

The remains of one wharf deposit can be clearly dated to the Mahoney period of occupation between 1856 and 1876, although it is highly probable that the Mahoneys themselves were not responsible for the deposition of the materials. The secondary opportunistic deposit covering the sewer pipe trench of S2W10 was probably created by the Sullivans, who had access to cast cement pipes (City of Portsmouth 1871). The negative feature was backfilled with an odd assortment of vessels popular during the 1850s and included such forms as four pitchers, several storage vessels, and various cups.
and saucers. The collection of vessels suggests the residual remains of a household that has abandoned a property and left unwanted items.

The Landscape of Garbage for the Sullivans

Remains of the Sullivan occupation are most clearly found in the backyard units of N13W5 and N11W9. Again, there is no sign of the post-1876 occupation of the Sullivans in the unit closest to the house, N9W1. Like the Mahoneys, the Sullivans took advantage of the privy in N13W5 to discard secondary refuse. Three levels of nightsoil were associated with the Sullivan occupation between 1876 and 1892. Within these stratified remains, changes in the range and amount of ceramics might signal changes in the fortune of this household. However, before such indications of socioeconomic fortune are reconstructed, it is important to outline the maintenance and use processes of the Sullivan privy.

The organic deposit of VIIIC contained wood ash or crushed coral and was limited in extent to the trench dug for the water pipe. The association of a wooden water pipe with nightsoil was curious. The fills of VIIIA and VIIIB clearly covered the water pipe, and the sediment of VIIIC was recovered above, below, and to the side of the water pipe. It was as if the water pipe trench had been
backfilled with nightsoil, without regard to the notion of possible contamination from the human waste. Further, it appeared that once the water pipe had been installed, the privy box (Str. VIIIB) was erected over it.

The remains of the three nightsoil horizons were excavated stratigraphically to obtain a complete history of deposition. Crossmatching of vessels did occur through the three levels, but no conjoins were found across them, indicating discreteness of the deposits. Vessel intactness suggests that privy cleaning probably partially depleted the artifact inventory. While the sherd size was generally large (more than two-thirds were larger than 5cm²), the vessel-to-sherd ratio indicated that vessels were fragmented; ceramic remains were likely disassociated in the course of privy cleaning.

Two stratified levels in N11W9 can also be linked to the Sullivan household, where a dense aggregate of trash (Str. IVB) was covered by a light concentration of debris (Str. IVA). Again, as for the preceding period of occupation, the deposits are both characterized as having moderately low to low levels of transformation, as if the area has been targeted for trash disposal and little else.

The low level of transformation for both of these deposits indicate a secondary-trash aggregate, consisting of predominantly architectural debris and ceramics. Faunal
remains were not prevalent in either of deposits; selection appears for have been nonorganic refuse to be discarded in this open-air midden along the northwest edge of the property.

The matrix of Feature 19 within N11W9 was largely comprised of decomposing wood and included brick, nails, and window glass for a high prevalence of architectural refuse. The deposit was likely the remains of a razing episode overseen by the Sullivans upon their arrival at the site. The inclusive materials could consist of de facto and provisional refuse left by the Mahoneys incorporated into the secondary deposit of demolition debris.

The wharf units closest to the house (i.e., the north and central wharf units) contain little trash that is linked to the Sullivans, except for the landscaping fills that cover the sewer pipe in S2W10. These can all be characterized as tertiary deposits.

Likewise, in the west wharf units, one opportunistic midden is related to the Sullivan occupancy, and that is a small lens of sand that overlies the ash deposit in S2W14. Here, a metal can and some aesthetic-style transfer-printed wares were recovered, indicating that this style of ceramics was available in Portsmouth, although few of the households surveyed seem to have purchased much of it. Altogether, a total of two vessels with this particular Oriental motif
The Landscape of Garbage for the Tenants

Later tenancy households continued to select the backyard units for trash disposal, especially the privy area of N13W5. Evidence suggests that N13W5 was not used as an outhouse during the tenancy occupations, as the upper levels of Str. VII consisted largely of coal ash rather than nightsoil. The lowest level of tenancy debris (Str. VIIB) was predominantly architectural trash, and could represent demolition debris covering the nightsoil horizons of the Sullivan occupation. In the upper level (Str. VIIA), a high density of materials was recovered, with the prevalent artifact type being faunal remains. Both deposits can be viewed as the opportunistic dumping of secondary trash into a convenient and accessible pit.

Somewhat lower concentrations of trash were thrown away in the northwest corner of lot in N11W9 in an ashy matrix among a high prevalence of architectural trash. The upper level (Str. IIIA) has characteristics of a low-density open-air midden with post-depositional transformation by trampling. The moderately low density for both levels of tenancy trash in this corner of the yard suggests that other strategies were being pursued for the disposal of household refuse.
Even though the area west of the house was available for trash disposal, twentieth-century households did not take advantage of it the same way the backyard was used for kitchen refuse and discarded tableware. Municipal trash removal was in operation by the early years of the twentieth century, eliminating the need to discard of garbage on the property.

However, the former wharf area was pockmarked by scattered and mixed tertiary deposits, ranging from low to high densities. Westernmost areas of the wharf tended to have deposits predominated by ceramics, while those closer to the house had a prevalence of architectural materials. Faunal remains generally comprised low levels throughout the wharf area during the tenancy occupations. However, I believe that bone was selectively deposited in the area of the old privy, where it was found in high concentrations.

By at least 1920, the front yard of the Follett site became a trash-collection area for abandoned and discarded automobiles, as the residents ran a salvage business. The collection of these cars involved the accumulation of trash unrelated to the Follett houselot.

Along the western side of the property, no clear deposits could be associated with the tenancy occupations. One possible explanation is that this side of the lot was covered by a sequence of sheds and automobiles through the
early years of the twentieth century (Sanborn 1904, 1910, 1920).

DISCARD BEHAVIORS AT THE WHEELWRIGHT SITE

Appendix C outlines the physical characteristics of the nineteenth-century deposits at the Wheelwright site and links each of them to households headed by either Abigail Leslie, Bartholomew Barri Senior, Bartholomew Barri Junior, or the later immigrant tenants. The deposits of each of the households is reviewed in terms of the categories explored above.

A total of at least four different households occupied the Wheelwright site from 1800 to 1900. The first two decades of the nineteenth century were associated with the tenure of Abigail Leslie, who first arrived at the site in 1785. The next occupants were Bartholomew Barri and his nuclear family; he apparently rented the house from owner John Davenport, who, according to city directories, never lived here. After the death of his father, the younger Barri and his houseful lived here until 1877 when the property was sold to John Conlon. Conlon apparently rented out this property as well, and in the final quarter of the nineteenth century, the house was occupied by various coresiding families.
The Landscape of Garbage for the Widow Leslie

Only three deposits could be clearly linked to the Leslie household, including the basal level of units 3 and 5, and one downcutting feature in unit 11. Some ceramics from the tertiary scattered deposit from phase 6 in unit 2 were probably associated with the Leslie occupation, but the formation of this deposit was dated to the elder Barri residence. All deposits related to Abigail Leslie are fragmentary, with low to moderate densities, and low levels of vessel intactness. The greatest concentration of remains from this occupation horizon was the scattered deposit of phase 8 in unit 3.

Between the three deposits, little is added to the profile of Abigail Leslie. Because the sample was so small (a total of 24 vessels were counted for the Leslie occupation), it is difficult to make statements about widow Leslie's purchasing preferences or socioeconomic status. It might be tempting to say that little was recovered archaeologically because little was available to the woman who was required to mortgage her house three times. However, the overall undisturbed area excavated at the Wheelwright site was small, and the general depiction of trash-disposal behavior is so different from that of the Rider-Wood site, that we have to entertain the notion that we simply have not located the Leslie secondary disposal
sites. This is true also of the Wheelwrights who apparently had a historically visible—but archaeologically invisible—presence at 14 Jefferson Street, given the sample excavated to date.

Generally, then, the archaeological traces of the Leslie household are very scarce, suggesting that either the widow was not generating much garbage or that archaeologists have not uncovered the location of her trash disposal. The tertiary deposit in unit 11 was redeposited from elsewhere, and it could be that an open-air midden was in operation during the tenure of widow Leslie. The unexplored privy in unit 5 could have served as a receptacle for Leslie trash as well.

The Landscape of Garbage for the Elder Barri

The formation of seven deposits was linked to the elder Barri household, among them the basal levels of units 2, 4, 5, 7, and 10. Near the house, the deposits in units 4, 7, and 10 (phase 12) had moderate density levels, while those units located farther away from main doorways had low densities (phase 6 in unit 2 and phase 11 in unit 5). The elder Barri occupation is also marked by several negative features, among them a pit richly concentrated with faunal materials in unit 10, the rich trash pit and well fill in unit 3, and the redeposited fill level in unit 11.
In unit 2, the final formation of phase 6 was linked to the occupancy of Bartholomew Barri Senior. This deposit was characterized by low density but a wide temporal range, as was discussed for quaternary deposits. Its relative inaccessibility from house doorways or windows argues against its identification as a secondary scatter deposit. Overall, the low density and wide time range did not qualify this phase for an important contribution to the understanding of the elder Barri household.

In Unit 3, however, two major deposits were related to the elder Barri occupation. It appears that residents began to dig a well in this corner of the yard and got as far as digging a short distance below the ground surface and lining this portion with stones. However, for one reason or another, the well was abandoned, leaving behind a prime location for an opportunistic midden. The elder Barri household used the lower level (phase 4) for a moderately high density of secondary trash that was predominantly architectural debris. Sherds had a low level of transformation, and the vessel-to-sherd ratio was very low.

In the succeeding phase 3, identified in the field as a "trash pit," many of the same decorative styles for ceramics continued, but the nature of the trash deposit itself was quite different. The density was very high; indeed, the total number of artifacts excavated from the top
levels of Feature 1 was 5869, of which 3580 (61%) were bones. A sample of the bone was analyzed, and the range of species represented is summarized in Table D.5. A minimum of 225 vessels was counted, and the intactness of vessels suggested a single-episode mass deposit. However, the sheer quantity of the bones and the wide range of species represented do not support an argument for a single-event deposition. In fact, the faunal material evidenced a high degree of weathering and were generally in a fragile state due to exposure to the elements. The condition of the fauna suggests that these remains were left in an open-air setting over a long period of time.

One possible way to address the issue of the rate of deposition is to perform analysis of pollen, to check for the presence of grasses or plants that may have preferred open-air contexts (e.g., Bryant and Holloway 1983; Mrozowski and Kelso 1987). This approach was used with some measure of success for Deer Street features (Pinello 1989). A second approach to establish the rate of deposition is to examine the various forms of surface decoration and vessel forms for the ceramic inventory, to see if certain motifs and forms recur. It might be more likely to find a wide variety of decoration and vessel shapes in a long-term accumulation.

Of the hand-painted vessels, 14 were blue shell edged
and 10 were green shell edge; one additional vessel was handpainted to mimic feathering along the edges but its surface was unmodified before application of the blue paint. Of these, five were clearly identified as soup plates, and five were dinner plates. The vessel with the unmodified surface was a bowl. Sixteen vessels had some form of banding or annular decoration; the colors ranged from a thin blue line along the rim of vessels to multicolored bands such as brown, green, orange, and white. Forms for the annular-painted vessels tended towards hollowwares such as pitchers, large bowls, a sugar bowl, one mug, and several teabowls. Another popular hand-painted motif was floral decoration; five vessels had blue floral handpaint and 11 had polychromatic decoration motifs. These forms tended to be associated with tea service vessels such as cups, teabowls, and saucers, but also included the remains of two pitchers and a bowl. Some more infrequent decoration types included 2 mocha vessels (one teabowl), 3 engine-turned vessels (one tankard), and one Chinoiserie hand-painted form.

For the 68 hand-painted vessels, 33 forms were positively identified, including 10 plates, four pitchers, three cups, five teabowls, four saucers, one mug, a sugar bowl, three bowls, and one large bowl. Crossmending always occurred within 10 to 20 cm; in other words, sherds did not
crossmend with sherds in levels more than 20 cm above or below one another. While these represent a wide variety of decoration motifs and forms, all of these styles could have compiled a single household inventory discarded en masse into the opportunistic midden.

It is possible that the opportunistic midden of phase 3 had a composite formation, consisting of a single-episode mass disposal of ceramics along with the clearing away debris from an open-air midden. Such an episode might arise at the death of the household head, or when the leadership of the household is passed on to a new generation. As described in Chapter 4, two generations of Barris at 14 Jefferson Street. The mass deposit of phase 3 could represent the wholesale disposal of the elder Barri's household goods upon his son's assuming the position of household head at the death of the elder Barri. An alternative scenario is that the vessels were discarded when the younger Barri took a wife who replaced the ceramic inventory with her dowery. This could only occur if the household had adequate affluence to summarily dump a complete ceramic inventory. In either event, it should be clarified that the acquisition and use of the vessels are associated with the elder Barri, while the latest use and discard of the remains are linked to the household of the younger Barri.
The elder Barri was probably also associated with the lowest level of deposits in units 4, 7, and 10. Given the location of these in relation to the house, it is probable that this area served as an open-air midden. Phase 12 was characterized by a moderate density whose thickest area of concentration was in unit 4, the farthest away from the house. Trash was much thinner closest to the house in unit 10. Architectural remains tended to dominate the collection, and the collection of demolition debris may have been the initial source of the midden. All in all, few kitchen remains—fauna and ceramics—were in evidence in these units for the elder Barri's household.

However, cutting through deposits in unit 10 was a pit that was backfilled with a very rich collection of bone and high levels of ceramics and architectural debris. The ceramics clearly date the assemblage to a household that resided at the lot just prior to the peak popularity of whitewares and was dated to the elder Barri occupation. While amounts for all three artifact groups were high or very high, this deposit was composed of nearly 50% faunal debris, suggesting that this refuse aggregate was selectively comprised of bone. The nearness of the kitchen to unit 10 (assuming a back doorway through the back ell) makes it tempting to suggest that this opportunistic midden was used for the express purpose of disposing of kitchen
debris. The markedly high proportion of redware (22.6% of the total ceramic assemblage) also supports this contention that the phase 11 pit captured the remains of food preparation refuse.

In unit 5, along the back property line, a tertiary scattered deposit was in evidence. This assemblage of remains had a moderately low density and a low richness with an apparent selection for fauna. Given that this part of the yard may have served as a garden, organic remains may have been preferred for discard here.

At the northeast corner of the house, in unit 11, trash from the elder Barri's household was in greater supply. The depositional sequence of unit 11 was marked by several zones and changes in sediment as if multiple deposits had been redeposited here. With a very low vessel-to-sherd ratio and a relatively tight chronological range, this tertiary deposit is still informative about the elder Barri household, even though the sherd size indicates at least a moderate level of transformation.

In units 12 and 13 along the west edge of the property, virtually no remains from the elder Barri occupation could be detected. Likewise, northeast of the ell in unit 14, no deposits were found that dated to the elder Barri residence.

The trash-disposing behaviors of the elder Barri seem to indicate a tendency to "hide" trash in below-ground
opportunistic middens. In unit 10, the elder Barri employed an opportunistic midden to discard a dense concentration of faunal remains. Ceramics and architectural debris were present in low to moderate levels, while bones comprised the bulk of the fill. The fragmentation of the ceramics suggests a tertiary deposit removed from another source, possibly a nearby open-air midden. Both phases in unit 3 dating to the elder Barri residence were also opportunistic middens. Meanwhile some refuse was discarded close to the house in open-air middens. It should be noted, however, that dense accumulations were not left in these open-air middens, and that faunal trash was redeposited in tertiary opportunistic pits.

The elder Barri family trash was only lightly scattered in areas close to the house. The elder Barri had three young children while living at 14 Jefferson Street. It is possible they set garbage off in discretely bounded areas to isolate it away from the children's play zones. Unit 3 was set along the east fenceline toward the "far back" part of the yard; if the Barris used the privy found in unit 5, the transport of kitchen refuse would not be much farther than the usual trek to the outhouse. The rich concentration of refuse from phase 11 in unit 10 was buried below the ground surface and thus less hazardous.
The Landscape of Garbage for the Younger Barri

The majority of deposits from the nineteenth century derive from the lengthy occupation of Bartholomew Barri who arrived at 14 Jefferson Street as a boy in 1821 and departed when he was in his 60s in 1876. Both generations of Barris served as bakers and worked either from their home or from a business location in a house across the street.

The highest-density refuse aggregate was found in unit 2 along the east side of the house, where three of four nineteenth-century phases were linked to the Barri household. Two of the phases were negative features—one up against the face of the foundation wall (phase 4), and the other a later sewer pipe trench (phase 2) that cut through two main horizontal strata.

The location of unit 2 and its correlation with high-density deposits provoke some questions. There is no architectural evidence of a door from this side of the house, and the nearest window is through a downstairs parlor in the southeast corner of the house. A parlor is not necessarily a room from which high levels of ceramic and faunal debris would be generated nor discarded. The high-density amounts of bone and other faunal debris could only derive from a circuitous pathway from the present kitchen doorway 20 m away. If there was, as I believe, a door opening from the north side of the north ell, the walk to
the dumping area would still cover 13 m in distance. The distance involved in the schlepp argues against the identification of this high-density aggregate as a secondary midden.

Phase 5 of unit 2 contains the remains of what is probably the tertiary deposit of what had been open-air midden deposits against or near the east foundation of the house. This refuse aggregate was of a high density and moderately high richness, with a prevalence of architectural materials. Phases 2 and 4 both downcut into phase 5 and are therefore quaternary deposits. However, given that the depositional sequence of the three phases does not involve the mixture and disturbance of many previous levels, these tertiary and quaternary deposits can be considered informative for the Barri household. Whereas some investigators might dismiss these fills as "disturbed," I feel that once the formation processes are identified and articulated, archaeologists can make use of even disturbed deposits in their analysis.

The 60 vessels reconstructed from phase 5 were fragmentary and less than 10% complete, and likely related to the disassociation of ceramic remains in a tertiary redeposition of refuse. This is in marked contrast to the phase 3 trash aggregate of unit 3 where 60-70% of large vessels could be reconstructed and appeared to have been
discarded in a nearly whole state. A follow-up study for unit 2 should incorporate faunal research to examine the number and state of faunal remains to determine whether artifacts were left exposed to weather over a long period of time.

The trash from all three phases exhibited a high degree of richness as well as high density. While the two negative features had understandably higher levels of transformation, the horizontal deposit of phase 5 had only 62.8% of sherds in the very small size range; this was the second lowest value for all sampled deposits at the Wheelwright site. Phase 5 could represent the response of a family whose yard had begun to appear too small for the innumerable loads of garbage that had to be deposited. This part of the yard was only lightly used for refuse disposal in earlier periods, and apparently not in subsequent times. It seems to have been reserved for the use of the Barri family who used it heavily, in spite of its relative inaccessibility.

The highest-density area for the younger Barri household was phase 2 of unit 3 located near the northeast corner of the lot. Phase 2 was associated with the high-density trash backfill of phase 3, which materials appeared to have been linked to the Clark household. However, the very high-density level of phase 2 is deceptive in that the figure represents a conversion of the total number of
artifacts to a density per cubic meter. The actual deposit of phase 2 was quite small with a total of 451 artifacts recovered. The matrix was coal ash, which apparently served to cover over and fill in the slump left by the settled contents of the phase 3 "trash pit." Phase 2 was among the least transformed deposits on the site with only 63.6% of sherds in the very small size category. Located as it was, 8 m from the north ell, it is likely that the Barri household dumped coal ash bucketfuls here until the earlier trash deposit was covered. Then the traffic pattern for disposal changed to an alternative--and probably closer--location.

The younger Barri continued to use the secondary-refuse aggregate in unit 3; remains dating to his occupation superimposed those of his father's deposition. However, there were differences in how the two generations of Barris utilized this locus for discard. For the younger Barri, selection of materials for this open-air midden tended toward faunal remains within a coal ash matrix, suggesting a kitchen source of remains. It was not a dense accumulation of ceramics as it was during the time of his father.

Barri the younger also continued to use the open-air midden north of the back ell in much the same way as did Barri the elder. This midden was located just north of the back ell (see Figure 12) and within easy walking distance to
the kitchen. The aggregate was moderately dense with artifacts tending to be faunal or architectural debris. The deposit was thickest in unit 7 and thinned considerably as one approaches the house. The highest degree of downsizing was along the northern edge of the midden. In other words, the largest ceramics were closest to the house and did not seem to be much affected by trampling, redeposition, or other disturbance factors. The gradation from large to small sherds might suggest something of the traffic patterns across the pile of garbage along its northern perimeter.

The composition of artifact classes in units 4, 7, and 10 raises questions about the origin of materials redeposited against the east side of the house in unit 2. Faunal and architectural remains predominate in the open-air midden behind the house, and there does not seem to be any connection to the redeposited remains in unit 2 that are so highly comprised of ceramic materials. It is likely the secondary midden from which the unit 2 trash was redistributed has not yet been detected.

In the remote area of unit 5, the density level was moderately low, and the vessel-to-sherd ratio indicated a high degree of fragmentation as in a tertiary scattered deposit. Density was also moderately low in unit 11, but the vessel-to-sherd ratio here was much higher, with an average of five sherds crossmending to form each of 10
vessels. The moderate level of transformation in the sherd size likely indicates that this deposit was tertiary; the source of the secondary aggregate from which it is composed is not known.

The younger Barri apparently breaks with tradition by using the west property line for a highly transformed but fairly dense accumulation of tertiary trash. Vessel-to-sherd ratios clearly indicate the fragmentation of vessels, as does the high proportion of very small sherds. Like the other tertiary deposits described above, the location of the secondary deposits from which trash originated is not known at this time.

Finally, unit 14 had a moderate density of refuse up against the east foundation of the back ell; the most frequent artifact group was fauna, but ceramics and architectural debris were also well represented.

Most of the deposits associated with the younger Barri occupation derive from tertiary contexts, suggesting that energy was invested in landscaping and moving dirt around. The removal of trash may have a primary consideration in the earth-moving processes; areas along the property's edge seemed to have been selected for the deposition of these garbage-filled sediments. The open-air midden in units 4, 7, and 10 could have been a larger deposit that was reduced by the redeposition efforts.
The son does continue some patterns of trash disposal used by his father, such as the light use of the open-air midden behind the house and an on-going use of the unit 3 area for the discard of kitchen trash. However, the younger Barri appeared to have discarded secondary refuse in a primary area not yet detected by archaeological investigation. This secondary aggregate was probably the source of much of the tertiary trash redeposited in remote areas of the yard, such as along both the east and west property lines.

The younger Barri household seemed to favor the deposition of materials up against the walls of the house. The area of highest refuse concentration was a midden in unit 2 far removed from the kitchen and the presumed path of the back outhouse. A second area of high faunal density was against the east wall of the north ell in unit 14. The younger Barri household is noteworthy for its large size and the number of children who lived at 14 Jefferson Street. The second generation of Barris may have been guided in their refuse-disposal behaviors by their concern for the safety of their offspring.

Interestingly, deposits associated with the Barri household do not have high amounts of architectural debris. In all but units 2 and 3, levels of architectural debris ranged between low and moderate. High levels of
architectural debris were found in unit 3, far from any known standing structure. In unit 2, on the other hand, directly against the east wall of the house, high to very high levels of architectural materials were recovered. Most of this can be identified as maintenance debris, such as nails and window glass. There is a high ratio of brick and mortar debris, however, whose origin cannot be easily explained as part of the regular maintenance of the sides of a wood-frame house. It seems these materials were incorporated and transported from somewhere else.

Another factor is the business of Bartholomew Barri, who served the Strawberry Banke neighborhood as a baker. In the first years of his business, the directory lists both his home and business address at 14 Jefferson Street. A decade later, Barri is operating his bakery from a building across the street from his residence. The 1839 directory indicates that access to the bakery is through the "back door." While there is no architectural evidence of a backdoor through the north ell, it is possible there was one here to provide direct access to the back yard. If customers were directed to this most back of doorways, it may have behooved the Barris to keep this zone fairly clear of debris. If such a door never existed, traffic was still oriented along the west side of the house where the backdoor currently exists. This could offer some explanation for the
very low levels of trash that were found along this side of the house in units 12 and 13.

The Landscape of Garbage for the Tenants

The composition of the tenant households was in constant flux, and it is possible that each separate group had its own adaptive strategy for the disposal of trash. The following statements summarize the nature of deposits that date from roughly 1880 to 1910.

Evidence of the tenant occupation phase was not sought in units 2, 5, and 14. The uppermost levels contained modern debris mixed in with earlier materials and because of their modern deposition were not examined for this study.

In unit 3, tenant households continued to employ the northeast corner of the lot for general trash disposal in an open-air midden. Ceramic vessels were numerous (n=72) and were relatively intact with both a low ratio of very small sherds and a low vessel-to-sherd ratio. Architectural debris was prevalent, and the deposit could represent a collection of demolition debris from the dismantling and rebuilding of outbuildings that occurred in the first quarter of the twentieth century.

The biggest difference between the previous Barri households and those of the immigrant tenants is the presence of a huge, dense open-air midden directly behind
the back ell. Units 4, 7, and 10 were covered with a thick deposit of ceramics and architectural debris that was densest closest to the house and lensed out to the least dense concentration in unit 4. The levels of transformation followed this same pattern of being most highly fragmented in unit 10 and the least disturbed (downsized) in unit 4; this is just the opposite of what was found in these units in the previous phase 10 of the younger Barri occupation.

Faunal remains from this context showed signs of only having been slightly weathered. The sample was gathered from unit 10, which was closest to the house. The presence of several postholes and the generally good (i.e., unweathered) condition of the fauna suggests that perhaps a lean-to stood in this part of the yard. One obvious function of such a feature would be to house an animal raised onsite.

The open-air midden was also pockmarked with pits and postholes backfilled with high concentrations of trash. In one that cut through from the ground surface of the tenant midden, a very dense aggregate of bone was deposited in a pattern that was reminiscent of the elder Barri fauna-filled pit in the same unit. A second opportunistic midden in unit 10 was backfilled with very fragmentary trash, indicating a quaternary deposit.

In unit 11, a tertiary deposit with moderately high
density and predominantly architectural debris was related to the tenant households. While the overall depositional sequence of the unit indicates redeposition (see Appendix C), there was little downsizing of sherds, and the vessel-to-sherd ratio was low; in other words, the 62 vessels retrieved from this context consisted of an average of five sherds, one-third of which were 5 cm$^2$ or larger.

Along the west fenceline, the upper five levels of accumulation were associated with the tenant households. Three deposits were all characterized by a high degree of transformation and mixture of remains. The tertiary deposits were redeposited from an unknown origin, but the wide range of temporal types suggests that redeposition involved the collection of earlier remains.

Like the household of the younger Barri, most deposits related to the tenancy occupations are tertiary. Two areas of exception are the open-air midden of unit 3 and the various deposits located behind the house in both open-air and opportunistic middens. No simple patterns of discard behaviors could be detected from the small sample examined here. Discard strategies appeared to have been multiple and involved both "hiding" trash (especially fauna) in pits and leaving refuse fully exposed in open-air middens. Of course, the various trash-disposing behaviors could be related to the range of short-term and coresiding households
who occupied the site after 1877.

Unlike the Barri deposits, architectural debris abounds within the later deposits. One possible explanation is that the advanced age of the Wheelwright building after 1880 required frequent repairs and the transport of hazardous waste such as nails, window glass, and brick. Architectural debris was found in moderately high to very high levels in four of the eleven tenancy deposits, three of which were located within 1.0 to 1.5 m of the house. Unit 3 in the northeast corner of the lot also had a high level of architectural debris.

SUMMARY

Chapter 6 is a highly descriptive recapitulation of the archaeological data, laid out in detail in order to articulate the patterns of deposit formation at sites and between sites, for households and between households. Appendices A, B, and C are important components of the discussion in Chapter 6, as they outline the characteristics of the deposits in terms of richness, prevalence index, relative sherd size, and chronology. In the concluding chapter, I outline the advantages of such a quantitative study in terms of the enriched understanding one gains from reconstructing the site formation in terms of human behaviors. From here, one can then proceed to the
interpretation of the nineteenth-century Portsmouth context in terms of evaluating sample evenness, immigrant status, ownership versus tenancy behaviors, and perceptions about health and sanitation.
Chapter 7

CONCLUSIONS

Chapter 6 outlined the various trash-disposal behaviors associated with the main households occupying three sites in Portsmouth, New Hampshire. Once the formation processes of deposits have been so articulated, general patterns of refuse-generating behaviors can be described for individual households. In this chapter, I attempt to elaborate conclusions about the 12 households as a group, in terms of ethnicity and socioeconomic and immigrant status.

One of the main goals of my research was to understand the formation of the urban site at the level of the household. Households are major building blocks of the social system and are therefore critical analytical units in archaeology. Most nineteenth-century deposits are related to household acquisition and disposal practices; i.e., they are what Garrow (1984) called "lot-specific." All manner of refuse had to be disposed of by nineteenth-century city dwellers, including the broken remains of their dinner dishes and tea cups, vegetable scraps, bones from animal protein, and the assorted debris that derives from the construction, maintenance, and demolition of woodframe buildings. Each household operated with its own physical, socioeconomic, and cultural restraints--land and financial resources may have been in short supply; ideas about safety,
hygiene, and sanitation may have acted as further impediments to how and where trash was discarded.

Quantifying the archaeological traces of trash in terms of location, relative size of artifacts, richness of the deposit, and other such measures helps to characterize individual deposits that can be linked to various households. Reconstructing basic discard and disturbance behaviors was believed to be critical before one could develop insights into the culture or ideation of the people under study. Once trash deposits are characterized and linked to behavioral units, they can offer indications of the evenness of the archaeological sample, national origin, immigrant versus indigenous status, and ideation about sanitation.

ASSESSMENTS OF NINETEENTH-CENTURY HOUSEHOLDS

Two variables were selected to assess the evenness of the archaeological sample used here. Tables 7.1 and 7.2 summarize the total number of ceramic vessels discarded by household and the range and frequency of faunal remains from seven contexts. Only six households have information on the range and frequency of faunal remains, because of the lack of time to examine more contexts. In some cases, too, clear cases of good contexts from which to analyze faunal remains were not available. This was true for the Sullivan context.
<table>
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<tr>
<th>HOUSEHOLD</th>
<th>SAMPLE SIZE</th>
<th>MAMMAL</th>
<th>BIRD</th>
<th>FISH</th>
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<tr>
<td>Rider</td>
<td>95</td>
<td>84.2</td>
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<tr>
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<td>198</td>
<td>43.9</td>
<td>53.5</td>
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<td>42.8</td>
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<td>HOUSEHOLD</td>
<td>avg. # MEMBERS</td>
<td>Total # VESSELS</td>
<td># YEARS OCCUPATION</td>
<td># VESSELS/yr DISCARDED</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>--------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Rider</td>
<td>2</td>
<td>662</td>
<td>54</td>
<td>12.2</td>
</tr>
<tr>
<td>Sullivan</td>
<td>5</td>
<td>418</td>
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<td>26</td>
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<tr>
<td>Follett tenants</td>
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<td>Wood</td>
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<tr>
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in N13W9 did not contain a high density of bone. I household, where the privy did not contain much bone. I suspect this is due to maintenance processes that depleted the Sullivan trash inventory, and not because the household failed to generate much faunal garbage.

Appendix D summarizes the range and frequency of faunal species found in seven contexts at the three sites. Table 7.1 separates the distribution of identifiable faunal specimens into three main categories: mammal, bird, and fish. It is tempting to view the discrepancies in meat choice as a result of consumer behavior related to socioeconomic status. However, sample sizes for the faunal materials were not equivalent in all contexts. For instance, for the younger Barri household, most contexts are tertiary, suggesting that intact secondary deposits have not been recovered or may have been located in disturbed areas of the yard beneath the twentieth-century garage. The faunal sample analyzed for the younger Barri household was also quite small; future studies might examine the heavy faunal concentration from the tertiary deposit in Unit 2. Ideally, comparative studies of data should derive from similar contexts.

In Table 7.2, the average number of vessels discarded per household member per year is summarized for all 12 households. Again, it is tempting to attempt to explain the
differences in the numbers of vessels discarded in terms of socioeconomic status or the relative wealth of the household. However, I believe that these figures pinpoint which households do not have adequate samples available to perform interpretations of this type.

For instance, the widow Leslie occupied the Wheelwright site for 33 years. It is difficult to imagine that in all of that time, she only discarded 33 vessels. Moreover, the contexts from which materials were linked to the Leslie household were all tertiary deposits, suggesting that good secondary deposits were not recovered. Given the findings from other households headed by women (e.g., Mary Rider and the widow Jones), it appears statements regarding the relative wealth of the widow Leslie should be suspended until more intact deposits can be found. The location of Leslie's trash deposits may be predicted given the tendency of the other woman-headed households to choose nearby open-air middens.

The two tables, then, demonstrate the range of values that can be generated when deposits resulting from different formation processes are compared. Stronger conclusions about socioeconomic status can be reached if equitable deposits are used in comparisons.

In trying to assess the role of the nation of origin in household consumer behavior, no apparent differences were
noted between the various groups of English, Irish, and Danish immigrants. However, a case can be made for differences in acquisition strategies between American-born residents and all European immigrants. With the exception of Mary Rider, all immigrant households are marked by lengthy lag time between the peak popularity of ceramic types and their eventual discard. The de facto trash of James Mahoney deposited by Sullivan after 1876 dated predominantly to the 1850s. The ceramics of the Sullivan household were popular in the 1870s and 1880s. The tenants at the Wheelwright site were associated with painted and printed whitewares that had been popular in the 1840s and 1850s.

This could mean they were acquiring these goods after their peak popularity to get them at a reduced price, or they may have kept them in systemic context much longer, either through conservatory processes (gluing, repairing, taking care with them) or lateral cycling. Tentative conclusions about sets indicate that several decorative styles and colors were represented within immigrant household assemblages, rather than a homogeneous motif or technique of decoration (e.g., handpainted versus transferprinted). Again, the one exception is Mary Rider, who apparently could and did buy matched sets of cups and saucers and green- and blue-edged plates.
One possible factor in the long-term use life of ceramics is the household developmental cycle. The Mahoney family may have built up their ceramic inventory in the 1850s and 1860s when their children were young, and the breakage rate was higher. For the Sullivan group, they arrived at the Follett site in a relatively late stage when the need to replace ceramics was diminished. The Wheelwright immigrant tenants, on the other hand, were at an early stage of the household developmental cycle when perhaps they did not have the financial resources to invest in expensive sets of dishes.

Immigrant status may be a factor in the rate of replacement of ceramic goods when a new female heads a household. The prevailing hypothesis contends that wherever there is a change in the female head of a household, the new alpha female discards the remains of the older woman and replaces them with her own personal lineage of goods, resulting in a single-episode mass deposit of ceramics (Agnew 1982, 1989; Pinello 1989; Roussel 1983). My findings may offer a refinement of the model, in that it could refer to women with established residency in United States or where contact with the dowering household was still possible. A woman who immigrates, however, becomes detached from her natal household and dower goods. Arriving with few or no personal effects, she may have to "adopt" (reuse) the
ceramics of others, until she can replace them with her own.

In the immigrant households, few deposits could be described as single-episode mass depositions that would occur at the end of a household cycle. Deposits tended to suggest long-term accumulation. The one noteworthy exception to this is the mass deposit of vessels at the Wheelwright site bought and used during the elder Barri occupation, but probably discarded en masse by his son. The younger Barri was American born and took an American-born wife. When she entered the Barri intergenerational household, she may have brought material goods from her natal household to replace those of her mother-in-law. Other women who immigrated from across the Atlantic may not have had access to such a lineage of portable goods (Pinello 1989:26). Immigrant status could be an important factor in whether women keep older ceramics within systemic context or if they can afford to bring into their marital household dower ceramics from their maternal household.

Taking the example of Sophia Wood, she entered the household of her husband's aunt Mary. While the documents unequivocally state that Wood did not receive legal possession of Mary Rider's house until after her death, it is possible that Wood, his wife Sophia, and their three children were living with Rider prior to the transmission of
property. The undisputed female head was Mary Rider, but upon her death, no mass deposit of vessels was substituted by the incoming female head, Sophia Wood. It seems, however, that over the course of time before Mary Rider's death, older pearlwares were replaced by later whitewares and ironstones. This could represent the input of Sophia Wood who used both the available dishes and those she chose to purchase and bring into the household. The supplanting was a gradual process rather than a mass expulsion of the old and an immediate replacement with her own kitchenware.

CONTRIBUTIONS OF THE STUDY

In the opening chapter, I articulated three contributions of my dissertation: (1) to examine all deposits of three urban sites rather than focusing on features, (2) to outline a methodological approach to the study of archaeological collections, and (3) to provide an assessment of the notion of economic decline in nineteenth-century Portsmouth, New Hampshire. The significance of these three contributions is summarized below.

Excavating Nonfeatures in Urban Context

In the first case—the analysis of all archaeological deposits—it was found that while negative features provide a host of artifacts, they do not always provide much
information that can be generalized for nineteenth-century households. The most common feature is the privy; and while much attention is devoted to the analysis of outhouses (Agnew 1989; Mrozowzki 1984; Pinello 1989; Roussel 1983), much remains to be understood about how trash was selected for discard in these features. At the three sites examined here, privy contents were available from the Rider-Wood site and the Follett site. However, in both these cases, it appears that maintenance processes depleted the refuse inventory, leaving an incomplete record of what people discarded. Focus on such features alone results in the impartial understanding of refuse behaviors that can inform on socioeconomic status.

Trash-disposal behaviors associated with the use of downcutting features are complex. Both active and abandoned privies apparently served as opportunistic receptacles for a wide host of materials, but the rules for selection of items discarded in privies varied with the different households. Nonfeature deposits, such as widespread open-air middens, were composed of household trash with similar proportions of ceramics, fauna, and architectural debris found in privies. These deposits tended to be less affected by regular maintenance processes and therefore more informative on the complete range of materials acquired, used, and discarded.

Several of the deposits at the Portsmouth sites were
identified as tertiary. However, their formation could be clearly linked to households as modifications or redepositions of secondary-refuse aggregates. This type of deposit has often been dismissed as mixed or disturbed, but once these deposits are measured and characterized in terms of depositional behaviors, they often can be linked to households.

**Review of the Methods**

The second objective of my research was to develop a set of analytic techniques whereby archaeological collections could be examined and understood in terms of site formation processes. I believe it is important to create methodologies that will allow archaeologists to work with old collections, or more specifically, to analyze collections where the investigator was not a participant in the field excavation. In chapter 4, I outlined both qualitative and quantitative measures through which the formation of the archaeological site can be reconstructed. They include the formulation of a Harris matrix (Harris 1989), plotting the deposit location in relation to known activity areas such as doors, windows, and driveways, measuring the size of sherds, refitting ceramic vessels, calculating a minimum-vessel count, and determining the density and heterogeneity of the deposit. Each of these is
a simple procedure to implement in the course of analysis, and the merits of the individual methods are reviewed below.

I used the Harris matrix to outline the sequence of stratification and to correlate deposits across horizontal space. This exercise met with great frustration even where notes were adequate and included both horizontal plans and vertical profiles. One of the obvious problems was that—as Harris notes (1989:69, 95-101)—investigators tend to emphasize the profile over the horizontal plan. Nuances, such as differences in sediment color, were sometimes noted verbally but not drawn. The single most apparent drawback to urban archaeology as conducted at Strawberry Banke is that excavation in such small units did not allow the articulation of the horizontal boundaries of deposits. In the one case where a large-scale contiguous area was excavated—the north wharf at the Follett site—each unit was treated separately. But the units were dug and recorded unevenly, making it difficult to draw correlations between them. The more experienced excavator tended to "find" (i.e., detect) more strata, while the inexperienced did not recognize the beginning of a new deposit.

Moreover, a single sediment type that is found over a wide horizontal area—presumably the same deposit—could have a different depositional history in different areas. At the Follett site, marine sand was widespread over much of
the wharf area, and its date of deposition is related to the Joshua Jones occupation between 1796 and 1833. Yet, discrete episodes of trash disposal took place in different areas of the sand; the sandy substrate received artifacts at a differential rate that is probably related to use or traffic patterns. My analysis suggests that the Harris matrix is useful in establishing the sequence of stratification, but correlations do not indicate equivalency in the latest date of transformation for all parts of the deposit.

Digging at urban sites requires first and foremost attention to the detection and recovery of detail that aids in the reconstruction of microstratigraphy. Analysis of the three Portsmouth sites discerned that refuse aggregates could be represented by highly localized discard events whose center may be in one 1-m square with thinning remains in adjoining units. The excavation of urban sites requires experienced fieldworkers—or ever-present supervisors—to detect slight changes in the soil and stringent recording to capture the character of sediments.

At the Follett site, excavators, for the most part, were experienced enough to include a high level of detail in their fieldnotes. During the second year of excavation, when volunteers were allowed to participate in greater numbers, the project director required that a horizontal
plan be drawn for each stratum change. This level of standardization was critical for the reconstruction of phases in a Harris matrix.

For the most part, there was a direct association between the level of experience and the level of detail detected and recorded. At the Follett and Wheelwright sites, such nuances were detected, leading to a richer characterization of small discard events that range from the secondary refuse deposit in the coal level at the Follett site, to the tertiary deposits behind the ell at the Wheelwright site. Each of these could be linked to individual households. Such fine-grained distinctions were absent from the Rider-Wood excavation, and heightened detail of the Rider and Wood tenures was not available.

The concept of location, as has been elaborated in chapter 4, is a term that is relative to known activity areas. The Strawberry Banke sites were all associated with standing architecture where doors and windows were readily observable in relation to excavation units. At other urban sites, archaeologists arrive after the above-ground architecture has disappeared, and the obvious no longer is available. For nineteenth-century sites, the layout of architecture is often portrayed on maps that can offer some clues at least about the location and ratio of closed space (covered with architecture) versus open space. More
detailed information regarding the location of doorways and windows in houses is not always available from these documentary sources. However, working at sites like those at Strawberry Banke should allow archaeologists to discern patterns in the relationships between back and front doorways and secondary refuse aggregates.

As used here, deposit location does not necessarily imply discard locus; it refers to the archaeological provenience of recovered remains. Other measures, such as sherd size, *terminus post quem*, and vessel-to-sherd ratio, are important in determining whether the findspot can be associated with discard behaviors. Even where the archaeological findspot cannot be equated with the discard location, the recovery locus of artifacts can reveal landscaping or disturbance behaviors practiced by residents who had to live with their predecessors' trash. Urban contexts can be described simply as "constrained," requiring dwellers to creatively dispose of trash in ways that are not hazardous to adults, children, customers, or livestock. Occupants also had to find ways to discard the de facto refuse of earlier tenants or owners or to redeposit old trash that got in the way of performing day-to-day activities. When household outdoor activities changed over the course of time, new strategies for trash disposal or moving old dumps became necessary.
Refitting aided me in establishing correlations between sediments in different units suspected of being the same. When notes were poor or absent, refitting helped to ascertain that correlations did exist. Crossmending between deposits or units also confirmed the type of transformation processes operating.

Refitting was necessary in determining the minimum number of vessels and to reconstruct vessel forms. While I did not often indulge in the physical process of gluing sherds together, I did assemble vessel fragments together to identify the original form. I believe that different vessel forms can offer some indications of the type of deposit. For instance, King and Miller (1987) found that late seventeenth- and early eighteenth-century middens at a site in Maryland had differential quantities of the types of vessel forms. Near the main house, deposits contained artifacts associated with food service and preparation, while those concentrated near an outbuilding exhibited a "tavern-like" pattern of a high frequency of tobacco pipes and ceramic drinking vessels. The authors surmised that the outbuilding probably served as a coffee house (King and Miller 1987:51).

In nineteenth-century Portsmouth, the frequency of different vessel forms within deposits may inform on discard behavior. At the Follett site in S2W10, a collection of 144
vessels was excavated. Recognizable forms included four pitchers, two stoneware crocks, several redware milk pans and one beanpot, a chamberpot, and two serving platters, along with such tableware forms as plates, saucers, and teacups. Vessels for food preparation, storage, service, and consumption are all represented here, suggesting that this deposit may be the wholesale deposition of de facto refuse by an incoming household. The entire range of ceramic repertoire is represented, from kitchen items to dining ware to toiletry, suggesting that the Mahoneys vacated the premises before removing their household goods.

In N11W9, the vessel forms associated with the unburned coal suggested storage, such as ginger beer bottles, glass bottles, and stoneware crocks. Redware vessels were also large and thick-walled as if used for food processing or storage. These vessels may have been kept in the cellar and thrown away as de facto refuse when the new tenants took over the property.

A minimum number of vessels was calculated per deposit in order to offer a second quantitative measure of ceramics. While the number of sherds was used in assessing richness and the prevalence index, vessels rather than sherds were used in characterizing the chronology of the deposits. Percentages of ceramic types (e.g., redware, whiteware, ironstone) were given in ratios of the minimum number of
vessels, and changes over time as represented in ceramic acquisition were gauged by vessels rather than sherds. Determining a minimum-vessel count was a time-consuming process, but it allowed assessment of ceramics in behaviorally relevant terms; i.e., as objects people used, reused, broke, and threw away. For instance, I could talk about the deposit of N13W5 Str. VIIA both in terms of sherds \( n = 150 \) and the 89 vessels that consist of plates, pitchers, cups, and mugs that residents actually used.

Once a minimum-vessel count was determined, the vessel-to-sherd ratio was quickly calculated. This ratio was employed in place of Miller and Moodey's (1986) calculation of percentage of recovered vessels to determine the relative intactness of vessels. A value approaching "1" was believed to represent the most fragmented state, in that each sherd was counted as a separate vessel. Of course, other factors had to be considered, such as the relative size of sherds. Deposits could have relatively high vessel-to-sherd ratios with either small sherds or ceramic fragments that approached partial or whole forms. Deposits with a high vessel-to-sherd ratio and a high proportion of small sherds were characterized differently than those with the same vessel-to-sherd ratio but large sherds. Correlations between vessel-to-sherd ratios and sherd size were important in determining the kind and degree of
transformation.

The concept of heterogeneity was measured in terms of richness and a prevalence index. Richness was hypothesized to be indicative of the kind of refuse aggregate, and, as described in Chapter 4, was calculated by creating a set of classes and counting how many classes were present within deposits.

Grounds for selection for certain kinds of refuse based on assessments of richness were somewhat clear for secondary-refuse contexts but less so for tertiary contexts. In these latter deposits, Portsmouth residents appear to have "mixed" many types of trash together, perhaps in a deliberate effort to assemble garbage in single collection areas. Overall, through time, levels of richness increased from the nineteenth to the twentieth century. This is probably related to the introduction of new classes of materials such as bakelite, plastic, and asphalt shingles that decompose less readily, and to the relatively shorter time span where the effects of decomposition were less.

The prevalence index was developed as a means to compensate for the differential frequencies of artifact types within deposits. Each class was calculated as a percentage against the total retrieved number of artifacts. Looking at all classes proved to be unwieldy, so I focused on three main artifact groups, ceramics, fauna, and
architectural debris. Proportions of these three groups were calculated as simple percentages of the total, in the belief that varying ratios corresponded to different discard behaviors.

By using the prevalence index, I hoped to isolate evidence of specific behaviors in the prevalence of a particular artifact group. For instance, I thought razing activities could be inferred from an accumulation of architectural debris, or food preparation in concentrations of faunal remains, or food consumption in ceramic service items.

As with richness, most deposits did not demonstrate a clear prevalence of one artifact group over another. The discard of trash in nineteenth-century Portsmouth apparently involved the collection of a wide variety of materials with little distinction between them. One possible explanation is that of the "Arlo Guthrie trash magnet effect" (Schiffer 1987:62; Wilk and Schiffer 1979), in that trash attracts trash. A decaying and rundown building or a pile of demolition debris may well have been perceived as the perfect location for the discard of the rest of the family garbage.

Boone (1987) found that measures of deposit size were critical in understanding midden formation. For my study deposit size was measured in both the artifact total and
artifact densities. While the total was considered informative for the relative abundance per deposit, comparisons between deposits were necessary. Density was calculated per m\(^3\), as this figure was thought to better represent the variation in the thickness or thinness of archaeological deposits. Density was calculated for the artifact totals and for each of the three main groups. In the Appendices, Tables A.1, B.1, and C.1 summarize both the proportions (prevalence of a particular artifact group) and the amounts (densities per m\(^3\) of either ceramic, faunal, or architectural debris) for each of the nineteenth-century deposits.

One of the simplest methods employed in my study was the sizing of sherds. Using size ranges instead of the measurement of individual sherds (McIntosh 1977) allowed measurement to proceed quickly and offered relative proportions of small versus larger sherds. The size ranges were adapted from Desert Archaeology, Inc., where investigators use them with sherd density to distinguish between de facto, secondary, and tertiary trash deposits. I used proportions within size ranges as individual measures of degree—but not the kind—of transformation. Transformation can derive from the trampling or crushing of deposits, or the redeposition of secondary refuse, resulting in "tertiary" refuse. The only thing I might change is to
add an even smaller category that determines the ratio of sherds even smaller than 5cm² some contexts contained very fragmentary remains less than 2cm² in area, resulting in poor assessments of minimum-vessels counts.

Size measurement should be done on other artifact classes as well. I did not include size as a variable to be examined by the faunal analyst, although size could easily have been added to the list of attributes to record. As it was, the analyst often noted her perceptions of size with such notations as "very small," or "fragmentary." The size template shown in Figure 4.2 could be used with faunal samples as well as ceramics. Bottle and tableware glass are two other materials easily measured in size ranges. In most cases, I would expect that there would be convergence between the size of different classes of materials, assuming that the same forces were operating on all of them to the same degree. Variation in the size of materials within the same deposit—such as small sherds but large bones—should be a further indication of the discard behaviors involving in creating the archaeological deposit. For instance, large faunal materials thrown away separately from other kinds of refuse could become incorporated into older deposits where sherds have been downsized over time.

The advantages and disadvantages of the methods I used for my research have been explored above. Most measures
were informative when combined with other measures rather than using them individually to describe or characterize the formation of deposits. The implementation of these cost-effective methods could be readily applied to other urban contexts, such as Near Eastern tell sites where confined spaces required elaborate strategies for trash disposal, resulting in complicated stratification for the archaeologist.

Assessing the Archaeological Correlates of Decline

The third objective of this work was to recover archaeological traces of Portsmouth's economic decline so commonly cited by historians. Combining the total effects of 12 households within one neighborhood, I sought recurring patterns of what could be interpreted as material decline. At the outset, it must be said that the households represented in my sample came from a range of socioeconomic statuses and included traders, truckmen, bakers, sawyers, fishermen, and other laborers. At least three households were headed by widows.

The general availability of materials at the community level may be reflected in certain index types that were present or absent during the time of their peak production. In other words, we may ask what is missing from the archaeological record at the level of the settlement, given
the total sample of all households. In terms of ceramic acquisition, most types that were popular in the nineteenth century made their way to the Strawberry Banke sites. One notable exception was the variety of Japanese-inspired transfer-printed motifs that became available in the 1880s; this type was absent from nearly all nineteenth-century deposits.

At the Rider-Wood site, both the aesthetic-style transfer prints and decal ware were in short supply. At the Wheelwright site, both wares were absent, although decal ware was retrieved from a deposit from the site to the north of the Wheelwright site. Late nineteenth-century residents at the Wheelwright house tended to purchase heavy hotel wares or acquired older varieties that had seen peak popularity a generation earlier. At the Follett site, the aesthetic ware did not materialize, but decaled ware was retrieved in substantial quantities from the backyard units. Decaled ware was recovered from the wharf area of the Follett site, but these materials may have been introduced from other households and are not lot-specific. This relative absence of a ware popular in the 1880s may indicate difficulties in acquiring the aesthetic-style printed ceramics in Portsmouth, perhaps because of prohibitive costs or fluctuations in the trade route.

A second ceramic variety also popular during the 1880s
was cut-sponge-stamped decorations on whitewares. This decorative style was also evident in low quantities and, in fact, was found in only one context at the Wheelwright site. In York, Maine, however, survey results uncovered a nineteenth-century trash aggregate with a set of matching cups and saucers decorated with the cut-sponge motif (Wheeler and Baker 1991:24). It is a curious contrast that the more rural settlement of York had access to this ceramic style while work at the three Strawberry Banke sites suggest that Portsmouth residents did not.

The presence and absence of other ceramic types at the Portsmouth sites may also indicate economic decline at the city level. For earlier periods of the nineteenth century, the overall presence of American-made yellowware and Rockingham wares was low. These wares were first available in the late 1830s and continued to be produced in high quantities until the early 1870s (Gates and Ormerod 1982:3-5). The railroad was a critical innovation in making the Ohio-made pottery available to major nodes such as Chicago and New Orleans (Gates and Ormerod 1982:4). However, the same railroad system that made the Ohio Liverpool ware accessible to some settlements circumvented others.

I believe the relatively low amounts of yellow- and Rockingham wares at the three Strawberry Banke sites reflect the indirectness of the trade route that brought the
American-made wares to Portsmouth. And even while the maritime activities were curtailed in Portsmouth after the second quarter of the 1800s, trade by sea may still have offered the most efficient way to bring ceramics to the city.

THE NINETEENTH-CENTURY WORLDVIEW OF TRASH

The focus of this work has been the articulation of formation processes at the level of the household. Nineteenth-century sites are critical for outlining the complexities of human behaviors involved in the generation, discard, and disturbance of household debris. The historical context offered by directories, insurance maps, census records, city tax assessments, and city annual reports all help to delineate ethnographic boundaries. After 1900, urban areas turned increasingly to municipal trash-removing services that took the burden of trash disposal from the houselot resident. However, for the archaeologist, transporting garbage offsite raises new and bewildering questions we are just beginning to ask (Wilson 1991). Sites such as those of nineteenth-century Portsmouth can offer much to the understanding of lot-specific (Garrow 1984) processes that create houselot deposits.

Nineteenth-century households of Portsmouth form bounded social entities whose waste-producing activities can
be detected in the archaeological record. Understanding these cultural formation processes is a necessary step in reconstructing ideology or other highly intangible mental constructs.

My work suggests that while no clear differences could be detected in ethnicity, distinctions could be made in discard behaviors between immigrants from Europe and American-born citizens. Mary Rider and her nephew James Wood were apparently content to live with a stinking open-air midden a mere five meters from their back door. Irish immigrant Mahoney also deposited trash in open-air middens, but these were not located so close to the house, but along the property's edge. Both the Mahoney and Sullivan household, however, knowingly placed privy nightsoil around or on top of a wooden water pipe, suggesting that concepts of contamination from human waste did not deter them from this disposal practice. Irish and Danish tenants at the Wheelwright apparently had few objections to the presence of garbage within sight of the kitchen door along the west fenceline of the property.

Meanwhile, American born Bartholomew Barri the younger invested energy in the redistribution of trash away from doorways and other major activity zones. Barri did use an open-air midden just behind his house, but it was only moderately dense with materials. At the Rider-Wood site,
the second generation of Woods was American born, and the return of these adult children may have influenced the disposal of trash in the more remote areas of the yard rather than behind the house in the nearby open-air midden.

One possible explanation for the differences in trash‐discard behaviors is that alternative worldviews were in operation. One may be classified as an "Old World" view of trash, where refuse forms an integral part of the landscape. Irish immigrants commonly arrived in America from rural areas, unable to read or write (Byrne 1969). Englishman James Wood ran a tailoring business, but in the 1900 census, he was listed as not being able to read or write. Cultural concepts of trash among the rural and the uneducated may have been very different from those for city-bred, educated citizens.

Meanwhile, "American" views of garbage may have included ideas of hazard and toxicity, requiring behavioral systems that hid or buried trash. As immigrants became "Americanized," alternative ways of dealing with trash may have become prevalent. The Sullivans, for instance, showed a strong preference for the use of privies and opportunistic middens for the disposal of their own and their predecessor's trash. The Sullivans had been in Portsmouth 20 years prior to their arrival at the Follett site, and they may have been influenced after such time to adopt new
ways of conceptualizing trash.

These speculative musings on cultural systems could not proceed without the prior reconstructions of discard behavior through the study of site formation processes. Careful quantification of artifacts allowed the characterization of deposits in behavioral terms that were then linked to households. In this final chapter, I explored some of the many directions research can follow once this preliminary stage of interpretation has been completed, including the reconstruction of the relative socioeconomic status of households and the differences in immigrant versus indigenous mindsets.
Appendix A

CHARACTERISTICS OF THE DEPOSITS AT THE RIDER-WOOD SITE

As discussed earlier, the Rider-Wood site was excavated in 1981, primarily with volunteer labor. Ten units were excavated in the backyard of the lot; the characteristics of each are outlined in Table A.1 and further detailed below. Following Harris (1979, 1989), each stratigraphic determination per unit was assigned a phase number, based on changes in color of sediment, soil type, and types of artifacts. In the cases where contiguous units were dug, phases for the conjoining excavation squares were assessed as a single unit. The term "phase" was used to distinguish between the levels and strata designated by the field excavators, and is equivalent to the term "locus" used by Near Eastern archaeologists (Dever and Lance 1978).

UNITS 7A–C

Field excavators recorded eight different strata through 12 10-cm levels. Lab analysis recovered evidence of 13 distinct phases, using the Harris (1989) system of including vertical and horizontal interfaces in the enumeration of phases. In this case, any differences in color, composition, compaction of sediments and contents within sediments were considered separate phases of
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<th>CER/m</th>
<th>%FAUN</th>
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<th>%VS</th>
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<td>15 ML</td>
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<td>5012 M</td>
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<td>4426 H</td>
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<td>16.9 M</td>
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**KEY:**
- **CER:** Ceramics per m³
- **FAUNA:** Fauna per m³
- **ARCH:** Architectural Debris per m³
- **DENSITY:** Density of all Artifacts per m³
- **% VS:** % of Very Small Sherds
- **% CL:** % of Classes
- **% N/A:** N/A

**Legend:**
- **ML:** Low
- **MH:** Moderate
- **M:** Moderately Low
- **H:** High
- **HH:** Moderately High
- **HHH:** High

**Note:** Table data continued on next page.
deposition. In the two westernmost units, an eighteenth-century tanner's pit was found which was dug to a depth of 2.0 m below the 1981 ground surface.

Analysis of the three units proceeded at two levels. For the most part, the three meter-squares of 7A, 7B, and 7C were treated as one continuous unit of deposition (see Figure 4.5). The integrity of these units as a single sample over a wide horizontal area was also stressed during the field operation, as supervisors took care to excavate and record the individual units as one deposit. For all of the six nineteenth-century phases, the sediments were found over the entire 3-m² surface. On the other hand, comparison of proportions, amounts, and sizes of materials within each of the square-meter units helped to pinpoint variations in the distribution within the larger deposit. Units 7A-C are located parallel to the back ell of the house (see Figure 10). They are located 1.7 m south of the ca. 1920 ell (Sanborn Insurance Company 1920) that was still standing in 1981 when the archaeological project took place. The more important locator is the back wall of the main house, which is 5.4 m north of the three excavation units. Map evidence suggests the back ell was an addition that postdates Mary Rider's occupation; a small addition encompassing the back door area first appeared in 1892, and was subsequently enlarged around 1920 (Sanborn Insurance Company 1887, 1892,
1898, 1904, 1910, 1920). In other words, the back door used by widow Rider was from the south wall of the main house and not through the small addition that James Wood used. Units 7A, 7B and 7C sample a prime activity area close to the house and intersect the path zone to and from the back door.

The 1.2-m depth of materials was divided into 13 phases, 6 of which were deposited during the nineteenth century. Given the paucity of good fieldnotes and profile drawings, phases were distinguished from one another on the basis of ANY change in the color, texture, and composition of sediments, or artifact content within sediments. The characteristics of the six phases are summarized in Table A.1 in terms of richness, the percentage of very small sherds (i.e., degree of transformation), the prevalence (proportion) of the three main artifact groups—ceramics, fauna, and architectural debris—and the density per m³ of the same three material groups. A lengthy discussion of the chronology of the deposits is included so that linkages to households can be made. The chronological framework of the Rider-Wood deposits is also summarized in Table A.2.

The anchoring of deposits in time was based primarily on ceramic evidence, although, as explained above, the *terminus post quem* of all materials was considered in defining the temporal range of deposits. The largest-sized ceramics were also a factor in defining the end date.
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**KEY:**

- **V:S:** Vessel:Sherd Ratio
- **RW:** Redware
- **R-EW:** Refined Earthenware
- **CW:** Creamware
- **PW:** Pearlware
- **WW:** Whiteware
- **IS:** Ironstone

*Table A.2, continued*
During my early training in historical archaeology, I learned that creamware came first in 1762, followed by pearlware in 1780, then whiteware and classic ironstone in 1830. However, the history of the production of nineteenth-century ceramics is more complicated, as this neat conceptual continuum does not take into account the overlapping of the various ceramic technologies. Creamware does not disappear from nineteenth-century markets but is available as the lowest-cost ceramic throughout the nineteenth-century (Miller 1980:3). The production of pearlware did not cease abruptly at 1830 and yield to whiteware; rather, ceramic manufacturers marketed several white-bodied wares over the course of time in an attempt to capitalize on the demand for porcelain-like white wares. Likewise, ironstone had a somewhat complicated trajectory of production, beginning with Spode's 1805 fine-grained, high-quality stone china and Mason's 1813 ironstone china (Majewski and O'Brien 1987:120) and continuing with various transformations, including classic--heavy-bodied and plain white granite--and the elaborately molded decorations on finer, lighter-weight wares.

The view here follows Majewski and O'Brien (1987), who emphasize the availability of a multiplicity of wares in the nineteenth century. The discovery of ironstone within a deposit does not immediately date it to post-1830; nor does
a heavy concentration of creamware suggest that a deposit necessarily derives from an eighteenth-century setting. The dating of nineteenth-century ceramics depends less upon the identification of ware types than characteristics of surface decoration as outlined in Majewski and O'Brien (1987). Other factors--including the dating of other materials--are all considered before a date is linked with a deposit.

Table A.2 shows the range of ceramic types for each deposit and demonstrates the changes in the proportions of the various ceramic types over time (within each unit). Comparing the proportions between phases allowed an interpretation of the replacement of ceramic types over time.

Beginning with the earliest nineteenth-century horizon, phase 6, two clues help to anchor it in time. First, analysis of the stratification allows us to place it at least as early as the late eighteenth century as phase 6 covers the backfill of the tanner's pit that was associated with tanner George Waltons's occupation of the site from 1736 to 1780. Second, the beginning date for Jackson's occupation conveniently coincides with the onset of the production of pearlware; therefore, the arrival of the Jackson household on the lot should co-occur with the first deposits containing pearlware.
Phase 6 has an extremely low value for the proportion of refined earthenwares (i.e., creamware, pearlware, whiteware, or ironstone)—only 27.5%. The percentage of white salt-glazed stoneware, primarily manufactured between 1720 and 1780, was 21.7%, nearly as high as the percentage of refined earthenware. This indicated that the bulk of the materials in phase 6 originally dated to the last quarter of the eighteenth century, but its final deposition included some early nineteenth-century materials, most distinctly, early ironstones.

Phase 6 was the opportunistic placement of trash to fill the concavity left after sediments filling the tanner's pit settled; it was thickest in Unit 7A and thinned out considerably in Unit 7C. It is highly likely that the settled area was a convenient repository for discarded faunal refuse and other forms of domestic refuse.

Phase 6 is dated to the late eighteenth- and early nineteenth-century occupation of the Jacksons, who owned (and presumably lived at) the property from 1780 to 1809. The tanner's pit backfill (phase 7) is made up exclusively of artifacts that precede 1780; specifically, there is no pearlware in the phase 7 backfill. In the phase 6 sediments that cover phase 7, pearlware constitutes 11.5% of the ceramic assemblage. Phase 6 does contain some early Spode ironstone, suggesting that the household—consisting of
widow Sarah Jackson and possibly her son, Henry--was still purchasing new (and newly available) wares in the waning days of its existence.

In the deposit of phase 5B one finds a marked increase in the proportion of refined earthenwares (creamware, pearlware, whiteware, and ironstone)--a jump from 27.5% to 62.5%--suggesting an entirely different consumption pattern likely associated with the arrival of a new household on the site. The assemblage includes a slight percentage of whitewares, indicating the late range of 1820 to 1830. The great bulk of ceramics, however, (and the largest pieces) are hand-painted pearlwares, which should be dated between the 1809 and 1830 dates of the Rider occupation.

Between phases 5B and 5A slight differences are noted in the proportions of ceramic types. The percentage of whiteware is nearly triple that of the previous phase, while the proportion of pearlware rises slightly, and the minimum number of vessels doubles to 245 in phase 5A. However, these figures do not indicate a radical difference in the relative proportions of cream-colored ware (hereafter abbreviated C-C ware), pearlware, whiteware, and ironstone. Numbers indicate a slight dropoff in ironstone and a rise in whiteware forms, as well as an increase in pearlware. The numbers are consistent with the increasing availability of hand-painted decoration on whiter-bodied wares; the higher
proportions of discarded pearlware compared to phase 5B can be seen as Mary Rider's replacement of her older ceramics. This phase is seen as representing a change in the household head from John Rider to widow Rider and is dated to 1820 to 1840.

Phase 4 constitutes another massive deposition of vessels with fragments of 224 assorted cups, saucers, plates, and other forms of ceramics. The distribution of ware types is largely consistent with that of the preceding phase 5B, with the exception of increasing amounts of later whitewares and ironstones. Although the minimum number of vessels might indicate a single-episode mass deposition, it could also represent the long-term deposit of an expanded household.

In Phase 3, the proportions of refined earthenwares shift dramatically, with a sharp drop in creamware and a concommitant increase in ironstone; the plainer C-C ware is being replaced by the more expensive plain white granite, perhaps reflecting a more established stage in James Wood's household developmental cycle. Density is still moderately high, while the proportions of the three main artifact classes—ceramics, fauna, and architectural refuse—are even, suggesting that the use of this open-air midden did not involve selection of specific kinds of materials.

The open-air midden of phase 2C manifests several
interesting trends. Faunal remains were more prevalent here, as if some selection of trash was being practiced. The ceramic assemblage includes increased amounts of ironstones but also a peculiar rise in pearlware, a material that was not manufactured after 1830. Most of the pearlware is very small, as if highly transformed; these sherds may have been incorporated as tertiary trash when the open-air midden was buried. Aesthetic-style transfer-prints of the 1870-1880s are not in evidence in the final deposit of the Wood household open-air midden. This could possibly reflect the advanced state of the household when Wood had retired and could not readily purchase new materials.

UNIT 9C

Unit 9C tests near the house along the east property line. Maps indicate that a small shed (3.8m-x-2.4m) stood in this vicinity that likely was used for storage and to enclose the houselot privy. Archaeological tests did indeed discover the wooden walls and contents of a privy in the southern half of Unit 9C. The full dimensions of the privy are not known, as only the northeast corner of the structure was encountered in Unit 9C; the feature is at least 1.0 m long and 0.50 m wide.

The stratification of the unit was recorded in the field as consisting of 5 strata. However, analysis in the
lab isolated 19 phases (sensu Harris 1989), of which 12 were dated to the nineteenth century. Phases 6 and 7 are interpreted to be associated with the backfilling and covering of the privy once it was put out of use and probably replaced with interior plumbing. Phase 8 is closely allied with the two phases above as the collapse of the privy's wooden walls into the privy shaft.

Phases 9-11 consist of the organic sediments of the privy itself; these appear to be separate phases, although crossmending of vessels does occur between them. Phases 12 and 13 are the basal clay layers into which the privy base was dug; cross-mending evidence suggests that artifacts from phase 11 percolated into both of these clay horizons. Phase 15 is the foundation trench dug for the installation of the wooden privy walls (Phase 14); phase 15 is a very narrow trench that dug through phase 17. Phase 16 seems to have been deposited directly against the wooden walls and likely represents the ground surface during the use phase of the privy. Phase 17 was the ground surface prior to the erection of the privy walls, and it overlaid the sterile subsoil of phase 18. Phase 19 is the basal clay layer reached at the bottom of the privy shaft. The nineteen phases reconstructed by me through fieldnotes and artifact analysis closely correspond to the profile for the unit which was drawn by Project Director, Gray Graffam.
None of the sediments of Unit 9C matched those of Unit 7A-C with the exception of the uppermost brown ashy stratum that served as topsoil for most of the site in 1981. Otherwise, Unit 9C had a depositional history quite distinct from that of its neighboring excavation units. This archaeological interpretation is consistent with a reading of maps that sees this corner of the yard covered by a shed from at least 1878 to 1904; i.e., during Wood's occupation. The archaeological data further indicated that certainly the privy and probably the shed stood during Mary Rider's occupation at the site as well. From top to bottom, the earliest twentieth-century and nineteenth-century deposits are considered below.

Phase 6 contained no diagnostic datable materials, such as porcelain electrical fixtures or decaled ceramics. For the most part the proportions of ceramics resembled those of phases 4 and 5 in Units 7A-C, which dated to John and Mary Rider's occupation. The small size of the ceramics strongly suggest that the fill was redeposited.

Ceramic materials in Phase 7 included porcelain electrical fixtures that must at least postdate 1886 (City of Portsmouth 1887, 1889) when the city of Portsmouth first tied in to electrical power. Ceramics also include decal wares that would have been available only after 1890. The latest materials of phase 7 are consistent with the first
decade of the twentieth century, at which time a new owner removed the privy-shed (Sanborn Insurance Company 1904, 1910). However, the bulk of the privy backfill likely came from cleaning Wood household de facto debris within and around the shed.

The porcelain electrical fixtures may indicate that James Wood had electrified his house some time during his long tenure. The discarded electrical components can derive from one of two sources: either from the house (as the new owner chose to redo the wiring) or from the razed shed itself. The fact that portions of electrical fixtures were included in the privy backfill may indicate that the shed wherein the privy was housed also had an electric line to it. While Phase 8 contained no diagnostic artifact types by which to date the deposit, its stratigraphic position placed it chronologically at the point at which the privy box was razed. Map and archaeological evidence put this demolition episode between 1904 and 1910.

The chronology of Phases 9 to 14 is treated together, as they all are associated with a privy feature constructed, used, and maintained during the occupation of John and Mary Rider. It is my contention that the privy was also used by the subsequent owners, the Wood family, although no artifactual evidence can be found to confirm their use of the privy. However, the long lag in time between Phase 7/8
(ca. 1904 and 1910) and Phase 9 (ca. 1820 and 1830) requires an explanation. This has been elaborated in the discussion of Unit 9C in Chapter 6.

UNITS 10A, 10C, AND 11C

Although the three squares were excavated as separate units, the depositional history of 10A, 10C, and 11C have much in common. They all test along the east property line of the Rider-Wood lot, and they share the characteristics of a complex stratigraphic record. The one existing site map for Rider-Wood (Graffam 1981) site suggests that these three units were not dug in line with the remaining units as shown on the site map (see Figure 4.5) but instead followed the property line which is oriented slightly NE/SW. The interpretation of the three excavated units suffers from an incomplete knowledge of their exact placement, as well as poor recording of what appears to have been very complicated stratification.

Several buildings stood in the vicinity of the three units (see Figure 5.8), including a long warehouse noted on the 1813 map and somewhat smaller sheds in the last quarter of the nineteenth century. The architectural cycle of construction, use, razing, and landscaping is believed to have had a major impact on these three units.

The three squares are treated below as continuous
deposits, although in several instances, disjuntures do occur between them. Unit 10C seems to have undergone greater degrees of disturbance, in that this unit has the fewest clear instances of correlation between either Unit 10A or 11C. Efforts to link the deposits of 10A with 10C were frustrated by apparent horizontal discontinuity between the two units. Attempts to correlate deposits in 10A and 11C had a greater degree of success in that a similar sequence of sediments was recorded in the field.

While map evidence indicates that Unit 10A was north of the dense "architectural zone" occupied by at least two buildings in the nineteenth century, archaeological excavation uncovered a stone wall in the lower levels of the unit, just above sterile clay. The same wall was retrieved at approximately the same levels in Unit 10C and was referred to as Feature 12 in the field. In Unit 11C, I found a horizontal plan that shows a line of stones along the western edge of the excavation unit at 80 to 90 cm below ground surface, very close to the top elevations of the Feature 12 wall in the other two units. These stones were partially embedded in the west wall of the excavation unit and may not have been clearly visible as a continuation of the wall in the other two squares. The line of stones in all three units are likely to have formed the foundation for the long warehouse building depicted on the 1813 map.
Chronological Framework for Unit 10A

Phase 4 was a trench with a buried barrel (Feature 6). It was covered by phase 3, which contained late nineteenth- and early twentieth-century decaled porcelain. Phase 4, on the other hand, contained ceramics that, for the most part, were widely available in the third quarter of the nineteenth century, specifically panelled and embossed heavy ironstones. One piece was backmarked with a date of 1851; i.e., the production batch of the ceramic was printed on the base. Other pieces included American-made Rockingham and stoneware with Albany interior slip. The latest ceramic was a gold floral decaled vessel that crossmended with sherds in phase 5/6; this last probably dates to the final decade of the nineteenth century.

Phase 5/6 was disturbed by the excavation of phase 4, and the latest-produced ceramics crossmended--not surprisingly--with those of phase 4. Both phase 4 and phase 5 are believed to date to the Wood occupation.

Phase 7 contained the remains of 92 vessels, the majority of which were pearlware. The distribution of the types of creamware, pearlware, whiteware, and ironstone is consistent with proportions retrieved from other deposits that date to Mary Rider's occupation at the site (e.g., phases 4 and 5A of Unit 7). Lower values for the proportion
of creamware prevailed while there were higher levels of redware.

Phases 8A, 8B, 9, and 10 all date to the Jackson occupation. Early, fine-grained ironstone is the latest material found in these four phases, and this last comes from the uppermost level of phase 8A. Phase 8B contains creamware and pearlware with the highest proportion being redware. Phase 9 corresponds to the construction phase of the Feature 12 stone wall and is associated with Henry Jackson. In the documents, Jackson is given as the builder of the house that still sits on the site today; he may have made improvements on the lot by constructing the long warehouse (Hales 1813) as well. Phase 10 also contains an isolated small pearlware sherd that could have been intrusive from above. The bulk of phase 10 ceramics are eighteenth-century varieties and include redware, delft, coarse buff-colored Staffordshire earthenware, and creamware. It is certain that phase 10 originated in occupation levels earlier than Jackson's 1780 arrival but was at least slightly transformed during Jackson's residence at the site. The later pearlware could also have derived from the intrusion of the phase 9 stone wall or may have been introduced during the excavation process.
**Chronological Framework for 10C**

Phase 6 was found to crossmend and match decaled porcelain and ironstone of unit 10A phase 3 and was dated to the first decade of the twentieth century. This level was believed to correspond to landscaping by the new landowner following James Wood's long tenure at the site.

Phase 7 was correlated with phase 5/6 of Unit 10A. It contained molded ironstones thought to be available to the Wood household during the third quarter of the nineteenth century. Phase 7 covered the highly transformed phases of 8, 9, and 10, for which no clear correlations with Unit 10A could be defined. I believe these disturbed phases represent construction activity by James Wood that corresponds to the erection of the shed along the east side of his property (Sanborn Insurance Company 1887, 1892, 1898, 1904).

Phase 8 was identified in the field as a trench that cuts into phase 9 and was determined to correlate with the Feature 6 barrel found in unit 10A. However, linking phase 8 in 10C to phase 4 in 10A proved to be very problematic for me. The sediments were given as the same color, but the beginning elevations of phase 8 were 20 cm lower than those for phase 4. The range and distribution of ceramics were entirely different, and there were no crossmends across these two deposits. Understandably, it made sense to try to
link the two deposits that both occupied the east half of excavation units 10A and 10C. However, after many attempts to define the two as a single deposit, I finally concluded that they were quite different.

Phase 8 contained materials more common in the first half of the nineteenth century such as cream-colored wares, pearlwares, and undecorated whiteware. No ironstone vessels were collected from this deposit, unlike phase 4 of 10A, which contained 35.4% ironstone. The proportions of the various types of refined earthenwares are consistent with a date from the second quarter of the nineteenth century. Phase 8 did have a ceramic pipe that coursed through it, as one might expect for a trench dug to help drainage. However, the size of the artifacts was relatively larger with 36.4% larger than 5 cm²; by contrast, 76.0% of the sherds in phase 9 were smaller than 5 cm².

Phase 9 was correlated with phase 8A of Unit 10A because of matching and crossmending of ceramics. Phase 9 probably had some mixture of later materials but for the most part preceded the introduction of whitewares in 1830. Phase 10 had no obvious counterpart in unit 10A and was assumed to have been introduced during the construction phase of Wood's 1887 shed. Overall, materials derived from the first half of the nineteenth century.

Phase 11 and 12, as described above, are associated
with the construction of Feature 12, the long warehouse shown on an 1813 map. Artifacts ranged from creamware to hand-painted pearlwares, to early fine-grained and high-fired ironstone of the first decade of the nineteenth century. This phase is dated to Henry Jackson's occupation. The basal clay of phase 13 was found to contain no artifacts.

**Chronological Framework for Unit 11C**

Phase 7 contained porcelain electrical fixtures and drawer pulls, decaled ceramics, and milk glass, which are all features of late nineteenth- and early twentieth-century deposits. Interestingly, phase 7 had some aesthetic-style brown transfer-print on ironstone--one of the few examples of this ceramic style found at the Rider-Wood site. Phase 8 had little diagnostic material to date it, with the exception of three pieces of white milk glass that may have been widely available in the late nineteenth century (Jones et al. 1989:14). Phase 9 also contained milk glass and porcelain fixtures (a doorknob) that are consistent with late nineteenth- and early-twentieth-century deposits.

Between phases 9 and 10 is a sharp disjuncture. While the proportions of creamware and whiteware are largely unchanged, the percentages of pearlware and ironstone change dramatically between the two levels. The largest and latest
materials appear to be plain white granite and a paneled saucer further decorated with blue transfer print and red accent handpainting, popular between 1840 and 1860 (Majewski and O'Brien 1987:143). The prevalence of handpainted pearlwares and whitewares also coincides with the dates of Mary Rider's occupation between 1809 and 1864.

Phases 11 to 15 all apparently date between 1780 and 1830 given that they contain pearlware but no clearly distinguishable whitewares. The stratigraphic relation of phases 11, 12, and 14 to the stones of phase 13 is not clear, given that the stones were not recognized in the field as a potential feature. At least two interpretations are possible based on reconstructions from fieldnotes and artifact bags. One view is that phases 11, 12, and 14 cover and put out of use the stones of phase 13. The interpretation adopted here is that phases 11 and 12 are the fill levels that abut the east side of the line of stones and may be ground surface levels associated with the use of the building. The bottom levels of the stones of phase 13 may be set into phase 14. All four phases are dated to the Jackson occupation.

Phase 11 had no obvious correlate in either 10A or 10C, but a distinctive piece of pottery was found that crossmended with phase 9 in 10C. Phase 12 was considered very similar in composition and color to phase 8B of 10A and
had similar ranges of ceramic types. Phase 13 contained no whiteware and is dated to the Jackson occupation between 1780 and 1809. The matrix in which the stones of Feature 12 were laid--phase 15--again contained pearlware as the latest material. In the basal clay level of phase 16, only redware, delft, and stoneware were found; given the absence of creamware, the phase is dated to a pre-1762 level.

**Putting the Three Units Together**

Even though units 10A and 10C were only separated by a meter, several problems exist in the interpretation of these two units. Unlike the work performed in Units 7A-7C to excavate the contiguous squares as continuous deposits, no such effort was made to correlate the deposits of 10A and 10C. Excavators assumed continuity across the unexcavated Unit 10B and did not attempt to crossmend ceramics to confirm that deposits were indeed continuous.

Crossmending between the two units of 10A and 10C was performed for my research with great care in order to correlate deposits. The stratification of the two units is largely built from an interpretation of ceramic size and crossmending evidence. Ceramics of relatively larger size are thought to indicate the least transformation; smaller crossmending or crossmatching sherds are hypothesized to derive from deposits transformed from their original
depositional contexts. Some obvious correlations between the two units were found, in the topmost levels, and in the bottom levels associated with the stones of Feature 12. The linkages between the middle levels were obscured by disturbances within unit 10C.

I suspect that within Unit 10C the outbuilding called Feature 12 had two phases of construction, the later one associated with a shed built by James Wood some time after 1864. The earliest map for the Wood houselot is 1887 (Sanborn 1887), on which is visible a long narrow shed. Construction of this shed involved the disturbance of deposits down to the level of the footings of the 1813 warehouse. Crossmending does offer evidence of the mixture of phases 9 to 12 in 10C, as does the relatively smaller size of the ceramics in phases 9 and 10. Crossmends of the matching variety link deposits of phase 7 of 10A with the disturbed trench materials of phase 8 in 10C. Matches also occurred between phase 8B in 10A with phase 9 of 10C; this latter crossmatch is believed to be an indication of disturbed sediments that were redeposited at a higher level during the construction phase of the shed foundation wall. This is often referred to as "reverse stratigraphy." The later phase of the Wood shed may have consisted of the second course of stones in Feature 12. Just as likely, however, is the possibility that Wood simply dug down to the
earlier stone footing and set his shed on that without adding any further construction elements to Feature 12. The difficulties in interpreting the many use phases of stone have been lamented in other times and contexts (Kenyon 1951; Reisner et al. 1924:36).

UNITS 15A–C

The three units excavated at the southernmost portion of the yard will be only briefly treated here as it appears that for a good portion of the nineteenth century, this area formed not part of the Rider-Wood lot but that of a neighboring one. The deedwork for the last years of Mary Rider's occupation and the whole of James Wood's occupation was not consulted to see if/when the southern portion of the yard was relinquished to other owners. Map evidence, however, draws the property line far north of where units 15A, 15B, and 15C were dug. It could be that Wood sold off a portion of the lot, keeping only a small yard to go along with his house.

Seventeen phases were encountered in the three-m-long trench that intercepted the stone line of a wall called Feature 3. This feature is believed to be the remains of the long warehouse shown on Hales (1813) and the stable depicted on the various Sanborn insurance maps. The uppermost phases date to late periods unassociated with the
Rider-Wood site and are not detailed here.

In chapter 5, I described an architectural cycle of development for this part of the yard that probably involved the razing of two ends of the long warehouse but which left the middle third of the building standing for another 60 years. I preferred this scenario to one that saw the complete razing of the building followed by construction of a new one.

Phase 3 is the horizon that postdates the last use of the structure as this level covered the remains of the stable. Diagnostic materials included porcelain electrical fixtures and decal ware to mark the deposit as deriving from the very last decade of the nineteenth century and the early twentieth century. The virtual lack of hard plastic also suggests that the deposit predated 1940 when plastic was beginning to become commonly available. The remaining fill levels—phases 5, 8, 9, and 10—all included decaled ceramics commonly available from 1890 to 1930. Two wooden floors were uncovered in fairly intact condition, also recommending a recent date for their abandonment. What is interesting about these fill levels is the general absence of pearlware. This suggests that deposits that were scraped up from the surrounding landscape did not see high levels of deposition during the period pearlware was available, from 1780 to 1830.
Phase 11 was an interior fill with a low density and few artifacts to date the deposit. Whitewares after 1830 were not found in the phase 11 fill, nor were there any late ironstones. Phase 11 was interpreted as deriving from Jackson's occupation of the property. There is a sharp disjuncture between phases 10 and 11, which is consistent with an activity area that has been covered by an impermeable surface—such as an interior wooden floor—through which artifacts do not percolate. Fieldnotes do not imply any evidence of a floor, but the distinct break in dating of the fill horizons strongly indicates the presence of such an artifact barrier.

Phase 12, on the other hand, represents the ground-surface buildup and deposition on the exterior of the stable on the west side of the structure. This area comprises the zone directly behind the back of the house and against the west side of the stable at the property on Washington Street and should represent the refuse of Wood's neighbors. The extremely low density of artifacts and the high quantity of cobbles in the fill could indicate an area that was built up to permit drainage. The fact that 43% of sherds exceeded the very small size category argues against its use as a high-traffic zone as would occur for ramp or a doorway. The few artifacts tended to cluster around the second and third quarters of the nineteenth century.
Phase 13 and 14 were low-density fills with one small piece of early, fine-grained ironstone as the latest material. Earlier ceramics included eighteenth-century varieties such creamware, Jackfield fine redware, white salt-glazed stoneware, delft, and Staffordshire buff-colored coarse earthenware. The ironstone was found in the phase 13 fill that comprised the foundation trench of the construction phase for the building and confirms that Jackson was the builder of the building. The ironstone of phase 13 also links the wall of Feature 3 in unit 15B with the wall line of Feature 12 in units 10A, 10C, and 11C. Phase 14 was the basal clay level sampled in one unit only, in which was found early eighteenth century wares. No pearlware or creamware was recovered in this earliest phase, which probably dates to the Hill and Walton occupations.
Appendix B

CHARACTERISTICS OF THE DEPOSITS OF THE FOLLETT SITE

The Follett site was excavated over the course of two seasons. I worked as a field crew member in both 1981 and 1983 and was responsible for the excavation of two units in the back part of the yard. I also assisted in the drawing of profiles for other units. Having participated in the actual excavation process did help me to analyze this site, yet problems did arise in the analysis of squares where I did not excavate. Even though experienced field crew worked at the site, the quality of work was uneven, especially in the second year of digging when volunteers were allowed to participate. The larger crew size in 1983 gave rise to more diversity in the records.

Twenty-six 1-m squares were excavated at the Follett site (see Figure 4.6). In general, we may speak of the backyard units (N11W9, N13W5, N9W1), the north wharf units (N4W7, N3W7, N2W7, N1W7, N1W6, N1W8, S1W8, S1W9, S2W10 and S2W6), the central wharf units (S5W5, S6W6, S6W7, S6W8), the west wharf units (S1W15, S2W15, S2W14, S2W13), and the south wharf units (S10W7, S12W7, S10W12). The discussion that follows will be organized using this format. Harris matrices could not be constructed for the entire site, but were put together according to the general area of the
houselot, i.e., the north, central, west, or south wharf, or the backyard. Correlations could not be made between the three backyard units, because of the differential use of this part of the yard, so each of the three is treated separately.

The term "phase" is employed in those cases where the Harris matrix allowed the correlation of deposits across several units, especially in the wharf area. Again, "phase" refers to a unit of deposition that is equivalent to "stratum." However, in correlating deposits across several units, different excavators recorded separate stratum numbers, and to avoid confusion, I created an alternative enumeration using phases. The use of this term is consistent with Harris' (1989) phase as unit of stratification.

The configuration of the Follett site houselot is different from the other two examined, in that the southern border of the yard fronted along Puddle Dock. The land here was taken up by construction of an extensive wharf; the front yard of the Follett site can be understood as a massive cultural formation process that created an extensive horizontal ground surface where otherwise water would have stood. In 23 units the remains of this wharf system were encountered. For the most part, this eighteenth-century construction is not discussed in this study, except where it
was determined that nineteenth-century refuse-disposal activities were associated with the level ground surface created by the wharf or where negative features had disturbed or reached the cribwork of the wharf.

UNIT N9W1

This unit was located just north of the west ell of the Jones house in a part of the yard that, in rural contexts, is referred to as the "dooryard" (Hubka 1984:71,77). The two wings of the house enclose a small area that is further bounded by the north fenceline wherein domestic activities can take place outdoors. In rural settings, the dooryard is used for the making and processing of dairy products, among other activities. N9W1 is also within the path zone from the doorway at the northeast corner of the west ell to the rest of the backyard.

A total of 12 strata was excavated in 1982; three of these were associated with nineteenth-century occupation at the site. The stratigraphy of the unit was reconstructed by fieldnotes (verbal descriptions of sediments and inclusive artifacts and horizontal plans at each change in sediment) and a south wall profile drawing. The characteristics of the deposits are summarized in Table B.1, while the range of ceramic types is outlined in Table B.2.

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Table B.2, continued
contained a wide variety of ceramics indicative of a mixture of deposits, consistent with the moderately high level of transformation suggested by the sherd size. As described above, N9W1 could be considered the western extent of the dooryard area of the Follett houselot and may have been a prime pathway between the back kitchen door and the outhouse. The small sherd size of Str. II is believed to have been a result of trampling from human traffic. The terminus post quem for the manufacture of materials within the deposit was no later than 1850; hand-painted and transfer-printed whitewares dominated the assemblage of 29 vessels, which also included earlier wares such as creamware, pearlware, and white salt-glazed stoneware. The largest and latest ceramics were a black floral transfer print on whiteware and another blue transfer-print design on whiteware. The materials are an overall sample of ceramics available during the years of the widow Jones occupation.

Str. III, on the other hand, appears to date from the Jones occupation when the transition from hand-painted and transfer-printed whitewares was just beginning in the 1830s (see Table B.2). Very fragmentary remains of 33 vessels were recovered, with the greatest proportion being that of creamware; nearly one-quarter of the assemblage was pearlware. While some whiteware was found, the largest, latest material was pearlware.
In Str. IV pearlware is the latest ceramic found. The proportion of refined earthenwares drops dramatically, countered by a rise in redware and porcelain. The distribution of ware types is so distinct that this deposit probably represents the waste from the household that predated the Joshua Jones ownership of the lot.

UNIT N13W5

N13W5, one of the two units I excavated in totality, was the northernmost excavation unit of the Follett site. It was located along the 1981 northern property line. However, in earlier land deeds, the north line of the Follett houselot took a northerly jog into which a long, narrow shed was recessed for most of the nineteenth century. The earliest nineteenth-century map (Hales 1813) shows what might have been gardening area in this portion of the lot. Depending on the year and map, N13W5 either fell just outside the outline of the shed in this part of the yard or was located beneath it. This shed is believed to have housed a privy for at least part of the time that it was standing.

The stratification of N13W5 was highly complex, as two negative features downcut and disturbed the horizontal strata. The first of these was a very modern (ca. 1960s) pit which had been backfilled with cinderblocks, bricks, and
other demolition debris; remains of a local potter's waster materials identified the debris as the demolition of a kiln. The second was a wooden water pipe that was laid through the unit one meter below ground surface. This water pipe and its trench occupied fully half of the one-meter square; to continue excavation below and beside the trench, we were required to cut the water pipe out with a combination of handsaws, drills, and a chain saw. At this same level, the water table was reached, and the sediments surrounding the water pipe (a rich organic debris) were easily displaced. This, in combination with the extraction of the wooden water pipe, caused some obfuscation of the horizontal extents of the various deposits. Profile drawings were made of all four walls of this unit where 32 distinct phases were recorded.

Fourteen phases were analyzed for this project; some of these may date to the late eighteenth century but were considered important for the understanding of nineteenth-century formation processes operating in this part of the yard. The phases will be discussed using the stratum number that was designated in the field.

At least 11 of the 32 phases can be dated to the nineteenth and early twentieth centuries and are discussed below in chronological order. The upper six strata were
dated to the twentieth-century use of the site and are not considered in detail here. Materials in the latest sediments included plastic, bakelite, wire nails, bottle glass, automobile windshield glass, and metal.

In Str. VIIA, however, plastic and modern bottle glass were absent from the deposit. The latest-manufactured artifacts consisted of bakelite and decaled ceramics; the former was available after 1909. Str. VIIA was also rich with faunal remains. This phase is likely associated with tenancies after 1910.

Str. VIIB had a very similar distribution of wares, including about 40% ironstone, less than 10% redware, and very low levels of creamware and pearlware. The overall absence of early wares such as creamware, pearlware, British bone china, and white salt-glazed stoneware suggest that the formation of this deposit was "sealed" from underlying deposits and did not involve the mixture of earlier levels. No decal ware was retrieved from Str. VIIB, but some vitreous, thick-bodied wares (hotel china) was found that could date the deposit to the last decade of the nineteenth century or the early part of the twentieth century. The latest nonceramic artifact was the crown bottle cap, manufactured after 1892 (Jones and Sullivan 1985:163).

The two phases of Str. VII are believed to be related to the razing and modification of a single-story shed
depicted on insurance maps (Sanborn Insurance Company 1887, 1892, 1898, 1904). By 1910, the building is shown as longer and narrower than its predecessor, and it is possible that the entire structure was replaced at this time. Fieldnotes reveal that the charred remains of wood covered Str. VIIIA, and the level of architectural debris is moderately high to high in the two levels of Str. VII. The high density of faunal debris was generally slightly weathered or in good condition, as if the remains had been deposited in a protected area. I interpret the burned wood and charcoal to represent the demolition debris from the razing of the old privy shed, in which heavy concentrations of kitchen refuse had been discarded.

The formation of Str. VIIIA was closely linked to the deposition of VIIIB and may be in turn related to the backfill of VIIIC. The organic sediment of VIIIA was a horizontal layer that covered the entire area of the 1.0-meter square; at this level no evidence of privy walls was recovered, but the sediment composition, texture, and odor indicated that it was nightsoil. The relative sherd size—with more than two-thirds of ceramics larger than 5.1 cm²—suggested a low level of transformation from use to findspot.

Between Str. VII and VIIIA, the proportion of ironstone dropped 10% and the ratio of whitewares rose 10% (see Table
B.2), suggesting that a different consumer behavior was in operation. Ironstone still constituted the highest percentage of the vessel count and included undecorated forms and hand-painted and transfer-printed decorations; decorated whitewares contributed 20% of the total ceramic assemblage. Str. VIIIA ceramics include molded designs on ironstone depicting naturalistic grains, a decorative type popular in the 1860s. The bulk of the assemblage, however, consists of polychrome hand-painted and transfer-printed wares whose popularity revived in the 1880s after 20 years of plainer, whiter wares. Remnants of some pearlware and creamware were included in the deposit, but these vessels were represented by sherds in the very small size range that were probably incorporated in the fill during the discard event. Of the forms that could be identified, cups (1), saucers (2), and plates (7) predominated; four of the latter plates were blue shell-edged. Two fragments of a celluloid comb were also retrieved from VIIIA, putting the terminus post quem date for the deposit near the final decade of the nineteenth century.

The deposit of Str. VIIIA is linked to the Sullivan household, where the low level of transformation of the sherd size implies little downsizing between the time of discard and subsequent archaeological recovery. The 1880s date of the ceramics coincides well with the occupation
horizon of the Sullivan family, and the range of vessel forms suggest a pattern of regular disposal of broken everyday tableware. There is no indication that Str. VIIIA represents a single-episode mass disposal, in that the total number of estimated vessels is 41 and consists primarily of forms with relatively high use, such as cups and plates.

In Str. VIIIB, the same motifs and decorative styles were found, including transfer-printing on ribbed or octagonal vessels and cut-sponge decorations on cups. The decorative style of ceramic materials matched other forms within Str. VIIIB. For instance, a flow-mulberry motif was repeated on both a cup and a saucer, and at least two cups were decorated with the same green and red cut-sponge motif. Shell-edged plates apparently were bought in batches of more than one, as the molded decoration and application of paint matched across several vessels. The cut-sponge motif was repeated on vessels in both VIIIA and VIIIB. Because of the close correspondence between ceramic decorative styles in Str. VIIIA and VIIIB, Str. VIIIB is also associated with Sullivan family.

During excavation, the matrix of Str. VIIIB was similar in color and composition to the overlying deposit of VIIIA and, thus, both were considered subphases of a lengthy depositional history. Str. VIIIA contained the remains of everyday food preparation and service items. The matrix of
Str. VIIIB was a combination of nightsoil and coal ash that contained a moderate amount of ceramics, but no faunal debris. The lack of fauna suggested that the discard behaviors associated with this deposit were different, and that organic kitchen trash was discarded elsewhere. The heavy concentration of wood in Str. VIIIB probably represents the wooden lining of the privy box; perhaps the prevalence of ceramics and the relative absence of faunal and architectural debris in this deposit represents coarse drainage fill in the lower levels of the privy.

Str. VIIIC is an assemblage of 77 vessels, of which half are whitewares and ironstones. Ware decoration is dominated by hand-painting and flow transfer-printing of a nature that was popular in the 1880s. Some residual molded ironstones from the 1860-1870s also form part of the deposit. Vessel forms include cups, plates, and saucers, with two large, banded mixing bowls, and one flow-black pitcher.

Str. VIIIC was a rich deposit with a high density; amounts for ceramics and fauna were high, as it appeared that kitchen refuse and tableware trash were selected for disposal here. The level of transformation was slightly higher than for the preceding levels of VIII A and VIIIB with 39.4% of sherds less than 5 cm². This moderately low level of transformation may have derived from the "packing" of
nightsoil and its contents in around the water pipe during its installation.

Str. VIIIC overlaid an earlier organic deposit, called first Str. X and later Str. XII Zone 1. This latter deposit was distinguished from Str. XIA and Str. XIB, which were cut into by XII zone 1; the stratigraphic relationship was not immediately apparent until XII zone 1 was found to cut into Str. XIII and XIV as well. The north profile shows how the sterile marine sand of Str. IX and a lens of sterile gray sand seeped in on top of Str. XII zone 1; these clean fills helped to further distinguish XII zone 1 as a sediment distinct from the organic deposit of VIIIC.

In Str. XII Zone 1, the distribution of ceramic types is sharply different from the Str. VIII phases, with a much lower proportion of ironstones and equal proportions of whiteware and pearlware that combine for more than half of the assemblage. One whiteware vessel had a Clews backmark, dating it to the period between 1820 and 1836.

The fairly low ratio of very small sherds (40.8%) argues against a great deal of redeposition, although some downsizing of materials may have occurred when the water pipe was installed through the upper centimeters of this deposit. Given its stratigraphic position directly beneath the materials of the Sullivan household, it is likely that XII zone 1 derives from the Mahoney family who resided at
the site just prior to the Sullivans. While there was a high ceramic density and moderate amount of fauna per cubic meter, the total volume of the deposit was very small and the actual total number of artifacts retrieved was low (n=33). Altogether, Str. XII zone 1 should be considered a minute--and nonrepresentative--sample.

Str. XIII zone 1 beneath the water pipe was a deposit of 329 total artifacts that converted to a high density. Ceramics were mixed but nearly one-half postdated 1830 in the form of transfer-printed whitewares and plain white granite. These materials could be associated with either the Mahoney household or that of the widow Jones, but the formation of the XIII zone 1 deposit in correlation with Str. XII zone 1 points to an association with the Mahoney group. A moderate proportion (76.0%) of sherds were very small, but the largest ceramics were also the latest, suggesting that the very small sherds were remnants of vessels that had been discarded earlier but were incorporated into the XIII zone 1 fill during the course of backfilling the water pipe trench.

The west profile drawing shows what may have been an earlier trench (Str. XIV, Zone 1) that was cut into by Str. XII Zone 1. Unfortunately, the artifacts from this deposit were believed to date to the eighteenth century and were not examined for this study. All that can be said with
certainty about Str. XIV zone 1 is that it cut through Str. XIIIA, XIIIB, XIIIA, XIIIB, and XIIIC. Str. XIV zone 1 did not disturb Str. XIV, but XII zone 1 did downcut into XIVB. Str. XIIIA, on the other hand, was a rich deposit with the highest density for the Follett site, and the actual artifact total of 1187 was also the highest quantity of materials retrieved from a single provenience. Most of the artifacts contributing to the total were floral and faunal remains, such as bone, oyster and lobster shell, eggshell, nut husks, cherry pits, and coffee beans. Although the proportion of the total was low, the density amount for the ceramics was high.

The largest and the latest of the 22 vessels were whitewares with polychrome hand-painted floral decoration or transfer prints on scallop-edged ironstones; six others were very small remnants of transfer-printed or hand-painted pearlwares. Redware constituted 18.2% of the total ceramic assemblage, but the sherds were also very small and probably incorporated from earlier deposits. A moderately low level of transformation was involved in the creation of this deposit, and the 43.8% of very small sherds came from early vessels. The decorative styles on the ceramics tend to date from the 1830 to 1850s. If there is no time lag between the purchase, use, and disposal of these ceramic materials, Str. XIIIA is associated with the household of Joshua Jones and
his widow. The nature of the deposit indicates a mass disposal that could occur with the cleaning of a kitchen at the change of household heads.

Str. XIIB demonstrates a sharp break with all of the previous deposits in that few vessels are found, and all appear to date prior to 1762 when creamware became available. Str. XIIB is probably linked to the deposits of XIIIIA-C, which were also void of all refined earthenwares manufactured after 1762. Redwares, white salt-glazed stoneware, and buff-colored coarse earthenwares comprise the ceramic assemblage, indicating materials manufactured prior to the arrival of Joshua Jones at the site.

The low minimum-vessel count for XIIB, XIIIIA-C may be related to the use of this part of the yard as a garden (Hales 1813); it is possible that debris was selectively deposited in this part of the lot to minimize hazards when working with the soil and to maximize the fertility of the plot. Ceramic amounts are moderately low in XIIB, and the size (80% very small) suggests a moderate level of transformation. Faunal amounts, on the other hand, are high, suggesting perhaps that biodegradable trash was delegated to the garden area. Seeds, nut husks, eggshells, and small pieces of wood and bark also contribute to the artifact total. Glass, in the form of both window glass and bottle glass, total only four pieces for the entire deposit,
reinforcing the argument that hazardous refuse was not discarded here. Wood, bone, and shell were found in moderately high amounts in the underlying clay deposits of XIIIA, XIIIB, and XIIIC as well.

The fact that only early materials were found in N13W5 at the level of XIIIB does not mean that later households, such as the Jones family, ignored the northwest corner of the lot. What it may indicate is a continuity in the use of this area for gardening and little deposition of trash.

UNIT N11W9

N11W9 was placed near the northwestern edge of the houselot to retrieve evidence of the northernmost extent of the 1813 warehouses. Twelve strata (20 phases) were excavated with eight phases associated with the nineteenth century.

The uppermost two strata contained modern materials such as plastic, tar paper, and decaled ceramics and were not analyzed in detail. Beginning with Str. IIIA, however, materials could be said to date from the first quarter of the twentieth century. More than 75% of the ceramic vessel assemblage consisted of thick-bodied, vitreous hotel china, ironstone, and whitewares. No creamware or white salt-glazed stoneware was recovered while only a small proportion of pearlware (7.1%) was found; this is thought to indicate a
fairly intact deposit that did not involve the mixture of underlying levels. The moderately low levels of ceramics and architectural debris were contained in a coal ash matrix that was devoid of faunal materials. Str. IIIA and the underlying Str. IIIB probably represent the direct discard of fuel refuse from coal-burning stoves in a remote corner of the lot. The uppermore IIIA showed a higher degree of sherd fragmentation, with 60% less than 5 cm², but this may have been the upper horizon of an ash pile that saw some crushing of materials from human traffic after the pile was buried.

Str. IIIB had a similar range of ceramic materials: no creamware or white salt-glazed stoneware, but a high combined ratio of hotel china, whiteware, and ironstone (46.2%). The level of pearlware vessels doubled between IIIA and IIIB, but these were represented by very small sherds that could have derived from earlier trash levels. The amount of redware increased from none in IIIA to 23.1% in IIIB. The variation in the proportions of ceramics may be linked to changes in the composition of the tenant households. Curiously, one rim sherd had a hole drilled through it in a possible attempt to repair it for further use; this may offer a clue of the socioeconomic status of residents at the Follett site at this time. It may also be of significance that a preference for plain and thick-bodied
vessels is indicated by the refuse of Str. III.

The composition of IIIB is comparable to IIIA in that the general matrix of the sediment is coal ash and clinkers with moderately low levels of ceramics and moderate amounts of faunal and architectural debris. However, the matrix also contains brick and stones that suggest rubble or razing debris. The dismantling after 1904 of an old shed that stood over N13W5 may have been the source of this demolition debris. A layer of wood rubble (Feature 16) was associated with IIIB. The trash in IIIB was apparently subjected to a low level of postdepositional disturbance; more than 70% of the sherds exceeded 5 cm2 in size.

In Str. IVA, both the composition of the sediment and the distribution of ceramic types change slightly. Like Str.IIIA, the bulk of Str. IVA consisted of coal ash with moderately low to low amounts of other trash mixed in. The rubble aspect of IIIB is no longer apparent in IVA, as it is largely comprised of fine ash; the absence of clinkers compared to IIIA may be related to a difference in coal-burning practices or the quality of coal purchased. The greatest proportion of ceramics is ironstone, among which are plain and blue shell-edged forms. Rockingham and American-made stonewares are also included in the ceramic assemblage. Any or all of these ceramics were available in the second half of the nineteenth century. The moderately
low density of ceramics was not adequate to assign the deposit to a household. However, its formation was related to IVB, below, where the greater quantity of materials allowed a more refined date.

Catalog sheets for Str. IVB indicate that a large quantity of ceramics was recovered during the 1981 excavation. However, in spite of the unpacking and repacking of more than 100 boxes of artifacts for the Follett site, I could not locate all the IVB ceramics. The description which follows derives from the examination of one artifact bag and the remnants of five reconstructed vessels.

Str. IVB was limited in its horizontal extent to the eastern half of N11W9 and consisted of black, unburned coal. Mixed in with the coal chunks were high levels of ceramics and moderate amounts of faunal and architectural debris. More than three-fourths of the sherds exceeded 5 cm², and of this proportion, over 40% of the sherds were larger than 16.1 cm². Of the total 44 vessels, several nearly whole forms were represented, including two ginger beer bottles, the cover to a stoneware crock, four dinner plates, one soup plate, three pitchers, two cups, one mug, and three saucers.

The decorative styles were mixed, with materials available from the 1840s to the 1880s, including blue, black, and green transfer-printing on whitewares, and plain
and molded ironstone. One green transfer-printed plate with a Romantic motif was backmarked with the "Mayer" name, dating it after 1836 (Thorn 1947:57). The ginger beer bottles probably date the assemblage to the fourth quarter of the nineteenth century, when decoration with Bristol glaze on stoneware was more popular. The wide range of ceramic forms and decoration styles is interesting, and there is a hint of a lengthy time lag between the acquisition and collection of these wares and their disposal. Several of the sherds showed signs of reddish staining, as if oxidized. The deposit also contained decomposed iron, contact with which caused the staining on ceramics.

Str. IVB might be the remnants of on-site storage of coal in an outdoor setting, or it could represent the cleaning of cellar contents and garbage after the Sullivans vacated the site. The layer of wood, excavated as Feature 19, could be part of a wooden bin that stored the coal. The wood of Feature 19 also contained large segments of 2 ginger beer bottles, one English brown bottle, and a stoneware storage crock. Both IVB and Feature 19 contain a high proportion of American- and British-made stonewares, compared to other deposits. The quantity of bottle glass in both deposits was also high, suggesting that the ceramic and glass assemblage represents storage vessels that may have
been kept down cellar. Redware vessels also tended to be thick-walled as if for a storage vessel.

Beneath the layer of wood, another ashy matrix (Str. VA) was recovered with a moderate level of fauna and moderately high amounts of ceramics and architectural debris. The prevalent ceramic was whiteware (49.2%), decorated with both transferprinting and handpainting. One-quarter of the vessels were ironstone, decorated with flow transfer-printing, but mainly were plain white granite and molded of the variety popular in the third quarter of the nineteenth century. American-made Rockingham and yellowwares were also represented; these were popular choices for bowls and storage vessels. At least one cream-colored-ware chamberpot was included in the debris of Str. VA. A low level of transformation was indicated with more than 70% of sherds larger than 5cm² in size. At least one flow-black transfer print looked as if it had been poorly applied to the surface of the vessel, suggesting that the Mahoney household may have been buying ceramic seconds.

Str. VA and VB were linked to the same household because of similarities in the sediment color and composition and relative richness of the deposit. Sherd sizes were uncannily similar in the two horizons, with low levels of transformation posited. Shell-edged decorations also matched between vessels in the two levels. While the
level of variation between the two is sharp enough to warrant the linkage of separate households to each, the deposits of VA and VB were both associated with the Mahoney household.

The stratified deposits of Str. VA and VB can represent changes in ceramic choices of the Mahoney family over time. In the earlier horizon, nearly one-fifth of the assemblage of 32 vessels was made of locally available (and presumably cheaper) redware. In the following level of VA, the ratio of redware drops to 4.8% of 63 vessels. The preference for American-made stonewares and yellowwares also disappears over time. The VB deposit consists largely of tablewares rather than storage containers, and the proportion of cream-colored ware rises. The changes in ceramic selections may reflect the changing fortunes or household needs of the Mahoney family; e.g., a decrease in number of members in the household (daughters married off), less need to make or store large quantities of food. The very high faunal density of VB may also reflect the consumption pattern of a larger household. The elderly Mahoneys, on the other hand, seemed to revert to the cheap cream-colored ware for their plates, cups, and one sugar bowl; this could be indicative of the diminished socioeconomic status of laborers who must retire from the work force.

The thin layer of Str. VI did not cover the entire unit
and had, therefore, a moderately high density in spite of the collection of only 78 artifacts. Ceramics comprised 25.7% of the total, and of these, the greatest bulk (50%) was pearlware, followed by redware (40%). Decorative motifs on the pearlware tended to be blue floral handpainting on teawares and blue painting on shell-edged plates. The high level of pearlware and the virtual absence of post-1830 whitewares strongly indicate that these are the remains of the Jones household when Joshua was still alive. Materials here were subjected to a moderately low level of transformation. The remains of only 10 vessels were recovered, so not much more can be offered about Joshua Jones from this deposit.

Str. VII contained about half as much pearlware, but motifs and forms matched between Str. VI and VII. Again, the presence of pearlware and the absence of later wares suggests that the deposit is linked to the Jones household. However, earlier materials were incorporated into the Str. VII level; 51.9% of the sherds were very small, suggesting a moderate level of transformation that probably involved the admixture of earlier trash.

In Str. VIII, however, a sharp discontinuity between it and the overlying VII appears. All ceramics predate 1762, as there is no sign of creamware or any of the later refined earthenwares. Faunal and architectural materials comprise
more than one-half of the total accumulation of 629 artifacts; 94 pieces of flint are also part of the fill. I believe that Str. VIII represents the ground surface prior to the erection of the north end of the Jones warehouses. The fragments of wooden timber included in the matrix may be the decomposed remnants of footings for the structure. In any event, the eighteenth-century deposit fell beyond the scope of my work and is not considered further, except to note that Str. VII and VI may represent the interior area of this warehouse.

THE NORTH WHARF UNITS

A T-shaped configuration of 11 units was excavated to explore the northern extent of the eighteenth-century wharf system; this area comprises units N4W7, N3W7, N2W7, N1W7, S1W7, N1W6, N1W8, S1W8, S1W9, S2W10, and S2W6. Figure 5.9 shows the location of these units in relation to the Jones house and the 1813 warehouse, as reconstructed from map evidence. A Harris matrix was compiled to link the deposits of these units together, along with those of the central wharf area (S5W5, S6W5, S6W7, and S6W8). The excavation of the 15 units was uneven, with some excavators recording finer distinctions than others. Using the Harris matrix, I reconstructed a total of 19 phases from the uppermost level to a white marine sand found in almost all units. In Table
B.2, the north wharf squares phases dating to the late nineteenth and early twentieth centuries are summarized.

In all of the above-mentioned units, the substructure of the wharf system was recovered in the lowest levels, and it not clear whether this portion of the lot was ever submerged beneath the tide water of Puddle Dock. Maps, however, suggest that the water line was at least twelve meters south of these units.

The north wharf units were suspected to be high traffic areas, because of their proximity to the west side of the house. Trash-disposal activities, on the other hand, did not appear to contribute to the formation of this part of the yard. Most archaeological debris was small and scattered, suggesting tertiary or quaternary deposits, rather than deliberate secondary-refuse disposal.

The uppermost phases (1-5) were dated to the recent twentieth-century uses of the site because of the inclusion in the fills of plastic, tar paper, automobile windshield glass, bottle glass with modern marks or decals, and coins minted after 1920. Beginning with phase 6, deposits were dated to the first quarter of the twentieth century, when this part of the lot was used as an automobile and scrap-metal junkyard. With the exception of S2W6, phase 6 deposits tended to have low to moderate amounts of the three main artifact classes and high amounts of metal and glass
from the junkyard deposits. Domestic debris did find its way into the ashy matrix, including decaled ware and heavy, thick-bodied hotel china. Porcelain fixtures such as doorknobs and furniture handles also prevailed as well as porcelain electrical insulators.

In the isolated deposit of phase 7, found only in N1W7, S1W8, and S1W9, decaled wares, porcelain insulators, parian figurines, and plain ironstone were recovered. Phase 8 was another localized lens of trash with hotel china and decaled ware. The decals in both phase 7 and 8 deposits consisted of small delicate floral designs around the rim of vessels; in several instances the color of the decals had faded and were only visible when held at an angle to a light source. This suggests to me that these wares were early variants when the technology had not developed well-fixed decals. In the Feature 3 pit (phase 9), the only diagnostic material is the thick-bodied, high-fired hotel china, available perhaps as early as the 1880s (Majewski and O'Brien 1987:124). The pocket of trash in phase 7 was marked by a moderately low to moderate level of transformation, with only slightly more than half of the sherds less than 5 cm$^2$. This may indicate a household deposit of refuse discarded directly in the junkyard area.

Phase 10 was an underlying deposit with wide horizontal extent over most of the units. The composition of the phase
10 matrix consisted mainly of sand as opposed to clinker and coal ash and is probably related to the Puddle Dock infilling of the early twentieth century. As stated elsewhere, it may have been present in N4W7, N3W7, and N2W7, but the change between it and phase 6 was not detected by excavators. Materials in phase 10 were similar to those of phase 6 and included bakelite, decaled ware, porcelain fixtures and electrical insulators, and hotel china; the inclusion of bakelite makes the deposit at least as late as 1909. However, metal comprised as much as 50% of phase 10 artifact totals in some units. While a junkyard was not depicted on the grounds of the Follett site until 1920 (Sanborn 1910, 1920), it is possible that the front portion of the houselot was collecting scrap metal even earlier. The lot adjoining to the west was marked as a junkyard as early as 1910, and houselots on the southern side of Newton Avenue were also converting yard space to the storage of junk. Phase 10 is therefore considered an earlier use of the southern portion of the yard for the collection of scrap metal.

Phase 11 was found in only two units, SlW8 and SlW9, and bakelite was recovered here as well. The overall proportion of metal in phase 11 was much lower than in phase 10 and probably indicates a use of the space as other than a junkyard disposal area. This pattern is repeated in the
Beginning with phase 12, decaled wares and bakelite no longer form part of the deposits. Some hotel china is still present, but the ceramic assemblage is dominated by plain, molded, and flow transfer-printed ironstones. Bottle glass represents under 10% of the total artifact count, suggesting that phase 12 may precede the availability of cheap machine-made bottle glass. Busch (1987:73) notes that the advent of the automatic bottle-manufacturing machine in the first decade of the twentieth century greatly affected the availability of the glass bottle which in turn affected the need to recycle or reuse this resource. Heavy concentrations of bottle glass discarded in household contexts probably date after the end of World War I when the costs of bottle glass were reduced (Busch 1987:74).

Phases 13 and 14 were both part of a filling operation associated with the installation of a sewer pipe (phase 15). These three phases were found only in the westernmost units of S2W10 and S1W9. The phase 13 ceramics seem to indicate a discontinuity between it and the upperlying deposits discussed above. The ceramic assemblage is dominated by nonvitreous wares such as pearlware and whiteware with some semivitreous ironstone. The percentage of refined earthenwares ranges between 57.6 and 62.5% of the total, suggesting a common origin of the materials. While some
plain ironstones were present, the majority of the ceramics were decorated with either handpainting or transferprinting. Redware makes up about one-fifth of the vessel totals in phase 13. The lenses of phase 13 in both S1W9 and S2W10 were subjected to moderate levels of transformation.

Phase 14 contains almost 75% refined earthenwares, with pearlware and whiteware the most numerous ware types. The range of ware types suggests a general date of manufacture of 1830-1850, the time period associated with the later years of the Jones occupation. In S1W9, transformation levels are still moderate, but in S2W10, they drop to moderately low.

Phase 15 was found only in S2W10 as a the backfill of a trench that allowed the installation of a cast cement pipe. The pipe was identified as a sewer pipe, and in 1981, it was still in use as a conduit for waste water. However, it is not clear if the original purpose of this pipeline was to channel sewage or if it was a homeowner's response to poor drainage. What is clear is that the pipe was oriented to drain into Puddle Dock.

Fieldnotes and profile drawings do not specify the horizontal boundaries of this sewer pipe trench; notes suggest that the phase 15 fill was located on the eastern half of the square, but the vertical edges of a trench were not detected in the field. Neither was there any evidence
of the edges of this trench in the unit that adjoined to the northeast, S1W9. However, it does appear that installers of the sewer pipe used the excavation of the trench as an opportunity to discard a rich concentration of ceramics and more moderate amounts of faunal and architectural debris.

Ceramic amounts were assessed as moderately high, but this does not take into account the relatively large size of the sherds. More than one-fifth of the sherds exceeded 16.1 cm², and several were portions of recognizable vessel forms, such as saucers, pitchers, cups, and serving platters. Redware forms included one bean pot and two milk pans, one of which had a "glob" of clay affixed to the base interior; perhaps the household was purchasing cheaper seconds for use in the home. Stoneware vessels were comprised of a small storage crock, a lid to a larger vessel, and an English-made jug neck and handle. Cream-colored wares included one chamberpot and a tall, handled hollowware that probably was a wash pitcher. Ironstone vessels were nearly exclusively service items, including two molded, foliate pitchers whose motifs were very similar. There were also two ironstone serving platters; one was an octagonal ribbed form popular in the 1840s to 1860s, while the other was a brown transfer print with a Romantic motif. Nearly all of the whiteware vessels were transfer printed in blue, brown, green, and mulberry colors. Two backmarks put the assemblage in the
time period between 1822 and 1853.

The dating of phase 15 is plagued by one incongruity. The sewer pipe was identified in the field as being made of case cement (Harrington 1981:15-16), a product that was manufactured and sold in the Puddle Dock neighborhood in the 1880s and 1890s. However, all of the ceramics from the backfill of the trench covering the sewer pipe date from the 1830-1850s. Stratigraphically, the vertical position of the deposit just beneath late nineteenth-century levels does not contradict an 1880-1890 date for the trench. However, the nature of the phase 15 deposit raises many questions in terms of a lengthy time lag between the manufacturing date of the inclusive materials and their final deposition in a trench associated with a pipe produced a half a century later.

Annual city records were searched for evidence of cement pipe earlier than 1890, and in 1870, the city of Portsmouth paid a Dennis Shea for cast cement pipes (City of Portsmouth 1871), suggesting an earlier date of availability for the material than offered by Harrington. I believe the sizable vessel assemblage recovered in S2W10 represents de facto refuse abandoned by the Mahoney household that was cleared away by the Sullivans. The curious distribution of vessel types in phase 15--serving platters, storage crocks, four pitchers, and assorted cups and saucers--suggests an
incomplete household assemblage. These vessels may have been remnants left behind after sorting through the ceramic inventory.

The widespread charcoal lens of phase 18 is generally dated to the Follett occupation, but some slightly later trash may have been incorporated into it. It is not inconceivable that phase 18 represents the charred remains of the warehouse buildings.

Phase 19, on the other hand, was a light-colored marine sand that contained flint and coral, indicating that its origin was not local. Harrington believes that the source of the sand may have been the West Indies or other trade point; it was transported as ballast in the gundalows that docked at the Joshua Jones warehouses. Marine sand is found as far north as N13W5 but only as far west as S1W8. The marine sand may have been deposited on the outside of the warehouse building and may therefore help to delimit the eastern edge of the former warehouse structure. In fact, Harrington believed she had located the eastern edge of the warehouse in S1W8, because of a large wooden rain gutter that may have served to channel rainwater along the east side of the outbuilding (Harrington 1981:17).

As in phase 18, phase 19 artifacts are represented at low to moderate levels, with the exception of a high density area in N1W8. Ceramics tend to predate 1762, although there
were rare instances of creamware, pearlware, and whiteware vessels. Phase 19 is also believed to date from the Follett occupation and to be associated with the maritime activities of off-loading merchandise and ballast.

**THE CENTRAL WHARF UNITS**

In an attempt to reconstruct the maritime lifeway of Joshua Jones, the project director focused on the recovery of traces of activities associated with the Jones warehouses and the activities performed along their east side. Four units were opened 4 m south of the large configuration of the north wharf units, S5W5, S6W5, S6W7, and S6W8. The four units were treated as a single contiguous deposit both in the field and in my reconstruction of phases. Their proximity to the north wharf units also allowed correlations to be drawn between the two areas of the site. In the discussion of the phases which follows, the enumeration is consistent with that of the north wharf units. The upper two strata in all four units were marked by late materials and were not considered further. Discussion begins with phase 10.

In compiling a Harris matrix for the north and central wharf units, several correlations between the two excavated areas were made. The color and composition of the sediments and the range of artifacts suggested a correspondance
between phase 10 of the north wharf units and what is described here as phase 10.

Phase 10 probably underlies the 1920s junkyard that stretched over all of the central wharf units; in the level just above phase 10, a 1920 penny was found. The high degree of ferrous staining likely comes from the decomposed metal of junked automobiles and other scrap metal that collected over this area.

Artifacts from phase 10 reflect an early twentieth-century date of deposition, with porcelain insulators and fixtures, bakelite, decaled wares, and hotel china. The high level of transformation suggested by the ratio of very small sherds can be explained by crushing. The 1920 Sanborn insurance map depicts a garage along the western edge of the property whose access was reached by driving over the central wharf area. The collection of junked cars probably also involved mechanized equipment that towed and dumped heavy loads.

Phase 11 was represented by bakelite and hotel china in S5W5 and S6W5; earlier ceramics such as hand-painted pearlware and plain ironstone were recovered in the westernmost central wharf units. As for the north wharf units where phase 11 was detected, metal objects are still present but at a much lower percentage than that of phase 10. Phase 11 appears to be the result of Follett site
household discard as opposed to the on-site transport of trash originating from other households.

In phase 12, a sharp discontinuity between it and the overlying phase 11 was detected. Plastic, bakelite, hotel china, and decaled wares are no longer present in this horizon. Rather, the ceramic assemblage is dominated by pearlwares, both handpainted and transferprinted, along with some plain ironstone. The moderately high level of transformation indicated by sherd size suggest that phase 12 was redeposited from elsewhere on the site. The sediment is a rubble fill with pebbles and cobbles, with a generally high vessel-to-sherd ratio. Fragmentary remains of vessels were captured in fill brought in to help raise the front level of the yard to keep it above the water table level. No clear date can be assigned to this landscaping endeavor except to note that the presence of white granite in the fill indicates that phase 12 was deposited sometime after the 1850s. Again, as in the north wharf units, bottle glass was represented at low levels (under 2%), suggesting that the deposition of phase 12 preceded the onset of machine-made bottles.

Phase 16 was marked by very high amounts of architectural debris that was localized in S6W5; other units had low to moderately low levels of architectural trash. Charcoal flecks were a component of the sediment matrix, and
this, combined with the high level of architecture, may indicate the remains of a razed structure. The matrix also contained what appeared to be fired clay lenses, or natural clay that was subjected to heat. Artifacts from this horizon included creamware, pearlware, very little whiteware, and some ironstone. Fully one-third of the minimum-vessel count consisted of pearlware that was probably brought to the site by the household of Joshua Jones. However, the latest transformation of the deposit was probably associated with the household of widow Jones; it is to her that the whitewares and hand-painted ironstones are ascribed. Widow Jones may also have oversaw the dismantling or destruction of the warehouses, and some of the remaining wood debris may have been burned onsite to clear away some of the hazard.

Artifacts for earlier phases were not examined for this study in the mistaken belief that the materials dated to the eighteenth century. However, I now believe that phases 17, 18, and 19 probably date to the period under scrutiny. In S5W5 and S6W6, a charcoal lens similar to phase 18 was recovered, which overlay marine sand (phase 19). In these central wharf units, the marine sand consisted of several layers of different-colored sand, ranging from light gray (10YR7/1) to white (5YR8/1), with lenticular lenses of flint. This probably represents the periodic offloading of
ballast from gundalows during Joshua Jones trucking
operation at the Follett site dock. If artifacts from this
phase were examined, they should be similar to those
retrieved from the north wharf units in range and quantity.

THE WEST WHARF UNITS

Along the westernmost portion of the Follett houselot,
four units--S1W15, S2W15, S2W14, and S2W13--were dug to
locate remnants of the 1813 warehouses. In all four of the
units remains of the early (eighteenth-century) wharf system
were recovered at depths 80 to 120 cm below ground surface.
The stratification of the west wharf units was marked by
complexity and a high level of modern backfilling. The
excavator in charge of the digging of two of these units
recorded the macro processes of disturbance but had some
difficulty in recognizing minor distinctions and phases.
Where he found three strata, a more experienced excavator
noted at least 11 separate deposits. In compiling a Harris
matrix for the four units, I found evidence of at least 11
phases that were dated to the nineteenth and twentieth
centuries. The phasing for the west wharf units is distinct
from the sequence of phasing elaborated for both the north
and central wharf units. Discussion will begin with the
uppermost level and will conclude with phase 12.

As stated above, the uppermost levels down to 50 cm
below ground surface are modern fill layers, containing such material as plastic and bakelite, screws, washers, and other metal hardware, and porcelain furniture knobs and electrical insulators. One modern negative feature is of particular interest and is outlined below.

Phase 2 was a straight-walled trench found in the eastern two-thirds of S1W15 and S2W15 and the western third of S2W14 that cut down one meter to the level of the eighteenth-century wharf structure. The width of the trench was also one meter and closely approximated the size of a backhoe bucket. The backfill of the phase 2 trench was a dark brown (10YR3/3) mottled sand with rocks that also contained plastic, bottle glass, and a wide range of ceramics manufactured from the eighteenth to the twentieth centuries. Its general date and location suggest that this was one of Robbins' backhoe trenches, as he sought to confirm the configuration of the Puddle Dock wharf system in his 1966 excavation.

Phase 6 was dated to the third quarter of the nineteenth century with the inclusion of plain and molded ironstones. One piece of what may have been plastic was retrieved from S2W15; however, the sandy matrixes of both the intrusive phase 2 trench and the silty sand of phase 6 were often difficult to distinguish and keep separate. It is believed that this late material was introduced through
the phase 2 trench.

Phase 7 appears to have been dated from the second quarter of the nineteenth century; prevalent ceramic types include plain white granite ironstone, yellowware, and molded Rockingham wares. The proportion of whitewares is low for phase 7, as it seems that ironstone vessels had replaced the earlier wares.

Phase 8 was a small intrusive pit with few diagnostic artifacts. Phase 9, on the other hand, contained remnants of an aluminum can as well as aesthetic-style transfer-printed ironstone and porcelain plates with concentric base rings; both of these latter ceramic innovations began in the 1880s. The relatively large size of sherds suggests that phase 9 is linked to the Sullivan household.

Phase 10 can be characterized as a deposit of 58 ceramic vessels, of which 34.5% were partially reconstructable or whole ironstone vessels. An additional 17.2% were transfer-printed and handpainted whitewares popular in the 1840s and 1850s. Several ceramic backmarks also date from this period, helping to anchor the white ash deposit in time. Other ceramics included American-made Rockingham and hard yellow, suggesting that the household purchasing ceramics was exploiting a market less dominated by British exports. While the printed and painted wares were perhaps most commonly available in the 1840s and 1850s,
the plain and molded ironstone of phase 10 suggest that these were the remains of the Mahoney family.

The function of the ash level is perhaps most clearly illustrated in S2W14, where the ash covered the remains of an intact wharf on the west side. However, on the east half of the unit, the ash covered what appears to be the partially dismantled remains of the wharf, with a segment of wharf log lying on its foundation stones. No wharf at all was recovered in S2W13, except for the continuation of the foreshortened wharf beam (called Feature 36). Phase 10 is associated with putting out of use the wharf system that had previously formed the western edge of the houselot.

Phase 11 covers the upper part of the wharf structure and is possibly associated with the phase 10 backfilling that retired this part of the wharf. While the artifacts are less numerous here, the ceramics indicate a date of manufacture not far removed from the materials from phase 10. Prevalent in phase 11 are plain white granite, molded ironstone, and printed and painted whitewares of the variety found in phase 10. Most or all of these ceramic types would have been available from the 1840s to the 1850s and could be associated with the latest years of the widow Jones occupation or that of the Mahoney household.
THE SOUTH WHARF UNITS

The southernmost portion of the Follett site was tested in three units, S10W7, S12W7, and S10W12. Several correlations can be drawn between the central wharf units and those of the south, including a layer with a heavy metal content and evidence of ferrous staining, a deep fill layer, and the marine sand. However, the south wharf units were on or near the water line, and their formation is slightly different from that of the other wharf areas. In the east profile, Str. IV is shown as a thick fill layer that is probably associated with the infilling of Puddle Dock. Str. V, the marine sand, was only retrieved in the northern half, as if the edge of the solid ground surface was reached here.

In all three units, a radical discontinuity was evident between the upper, twentieth-century layers and the lower, eighteenth-century wharf structure. In two of the units, S12W7 and S10W12, no nineteenth-century deposits were recovered at all. For S12W7, it is clear that this unit was well beyond the water line and located within Puddle Dock. S10W12, near the west edge of the lot, probably also was located within Puddle Dock and was constructed entirely of the wooden superstructure of the dock. In S10W7, however, thin lenses of sediments containing nineteenth-century artifacts were isolated. As stated above, these would have marked the boundary between solid ground surface and
beginning of the water's edge.

The chronology of the south wharf units can be dated to two main periods: that of creating the wooden wharf cribbing in the eighteenth century and that of filling in over the wharf in the twentieth century when Puddle Dock was filled in by the city of Portsmouth. The artifacts from fill levels in the three south wharf units contribute to this scenario in that nineteenth-century wares and materials are largely absent except for thin lenses in S10W7. Str. III was junkyard fill with high levels of ferrous staining from metal and also contained machine-made bottle glass, bakelite, and decaled ware that date the deposit to the first quarter of the twentieth century.

In Str. IV, a thick layer of fill, a wide range of materials was recovered, including eighteenth-century delft and creamware, pearlware, yellowware, Rockingham, decorated whiteware, ironstone, and a lightning stopper with a patent date of 1883 printed on it. The wide range of materials defies a linkage to a single household, and given that Str. IV was part of a city-wide project of backfilling, it is not clear if the artifacts in Str. IV originated from the Follett houselot. If Str. IV did derive from other portions of the Follett yard, it may have come from higher ground in the northern part of the property. However, the moderate level of sherd downsizing (only 62.2% of sherds less than 5
(450 cm²) does not support an interpretation of scraping and moving topsoil. It is more likely that Str. IV represents off-site fill brought into Puddle Dock.

The latest datable material in Str. V was creamware, first available in 1762. However, both of the underlying lenses of Str. VI and VII contained pearlware, and in Str. VII, a large piece of light blue transfer-printed whiteware was recovered. Most of the other ceramics--delft, Nottingham stoneware, and Staffordshire buff-colored coarse earthenware--dated to the eighteenth century, indicating that the refuse from this deposit cannot be easily linked to one household. Overall, the latest ceramics from V, VI, and VII were those available to the Jones household.
Appendix C

WHEELWRIGHT SITE

A total of 16 units was excavated at the Wheelwright site (see Figure 4.7), but only 10 are examined in detail here. The others--units 1, 6, 8, 9, and 15--were characterized by twentieth-century disturbance down to basal levels and were not considered of importance to the study of nineteenth-century discard behaviors. The deep levels of disturbance for unit 15 were related to the construction and razing cycles of a twentieth-century garage, while unit 1 was severely disturbed by the dismantling of the north ell (see Figure 5.10). Artifacts from unit 16 were not adequately prepared for analysis, so they were not examined for this study. In addition, three units--6, 8, and 9--fell beyond the houselot bounds of the Wheelwright site.

Unlike the Rider-Wood site, where fieldnotes were inadequate, analysis of the phases at the Wheelwright site was greatly aided by standardized fieldnotes for each unit, profile drawings for at least one wall of each unit, and abundant photographs and slides. The excavators were also available for discussion of ambiguities.

As was the format for the Rider-Wood site, the richness, density, and prevalence of each phase are summarized in Table C.1, while Table C.2 is intended to be
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### Table C.2. Distribution of Ceramics at the Wheelwright Site

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Table C.2, continued
followed during the discussion of the chronology of the phases.

The central tendencies for the Wheelwright proportions and amounts of artifacts, deposit richness, and degree of transformation were calculated separately from either the Rider-Wood or Follett site deposits. The distribution of amounts at the Wheelwright site was bimodal in nature, so a category of "very high" was added to the low, moderately low, moderate, moderately high, and high levels. As described above, each site was analyzed separately but will be compared at the end of this chapter.

The chronological framework for each of the units is an attempt to match historically known households with archaeological deposits. The artifact type of greatest importance for dating was ceramics, followed by other chronologically sensitive materials, such as electrical fixtures, bakelite, and plastic. The nineteenth-century chronology of the Wheelwright site is made up of three main households—widow Leslie (1785 to 1818), Bartholomew Barri the elder (1821 to before 1830), and Bartholomew Barri the younger (1830 to 1877). Habitation for the final quarter of the nineteenth century comprised short-term tenancies that were classified as "post-1880 tenancy." Clear distinctions between tenant families could not be ascertained, so they were grouped as a household type.
UNIT 2

A 1.0-x-0.5-m trench was placed perpendicular to the house foundation about midway along the east side of the building to obtain information on the construction date (see Figure 12). Unit 2 has three main strata with two downcutting negative features—a trench for a modern sewer pipe and a "foundation trench" (Feature 2). Excavators associated this latter with the construction phase for the house, but site profiles seemed to indicate a fairly recent excavation that did not downcut into the basal levels of Str. III. This foundation trench was more likely a recent attempt to examine or repair the fieldstone foundation. Str. I (phase 1) was considered late in deposition and was not included in the analysis.

With the removal of the uppermost stratum (phase 1), nineteenth-century deposits were immediately encountered. Despite the fact that two of the following phases were downcutting features, I believe that they both can be assigned to a temporal framework. The reason the "disturbed" deposits can be included in a discussion of households by time range is that the disturbances are localized and cut through datable deposits.

With the exception of the uppermost modern level, the remaining four phases were all dated to the nineteenth century and the occupations of the two generations of
Bartholomew Barri. The Barris appear to have used this part of the lot for trash disposal more than any other households, and a possible explanation may be taken from the documents.

Beginning with the earliest land transactions in 1696, the east side of the Wheelwright lot was reserved for a narrow lane. Land deeds specify provisions for this right-of-way until the 1818 transfer of the property from Abigail Leslie to John Davenport. Indeed, the 1813 map shows a wide space between the Wheelwright house and the structure on the adjoining property. Although some trash may have accumulated along this roadway, the lack of a door on this side of the house and traffic along the lane may have deterred heavy disposal of household refuse.

By 1850—when Bartholomew Barri was at the site—maps no longer depict a small land separating the two properties. I believe that after 1818 when the road was no longer officially sanctioned (i.e., mentioned in documents), this section of the yard became an area available for trash disposal. It is likely that the lot was fenced and that the narrow strip along the east side of the house was used to throw away trash. What is curious about the rich deposit of phase 5 is the relative inaccessibility of the area from doorways, windows, and the kitchen. Nonetheless, high amounts of faunal debris and very high levels of
architectural debris found their way to this location.

By 1878, maps indicate that the property line of the Wheelwright lot was drawn directly along the east side of the house with virtually no clearance between it and the boundary of the adjoining lot. Although some allowance would be given for traffic to walk alongside the house to make repairs, it is possible that the fence line was drawn in closer to the house and that there was little room to dump refuse here.

Phase 2 was the backfill of a trench dug to lay in a sewer pipe. Sewer lines crisscross the backyards of the Strawbery Banke museum as nineteenth-century households began to cope with the demands of interior plumbing, so it is not unusual to find remnants of both active and abandoned water and sewer lines at houselots. In this case, the pipe ran parallel to the east side of the Wheelwright house about 50 cm from the foundation wall. The fairly narrow width of the trench and the nearness of the house both suggested that phase 3 was hand dug rather than excavated with a backhoe—the latter typically leaves a trench 1 m wide. The inverted bell shape of the trench interface is perhaps more commonly associated with shovel excavation than the straight-sided, squared-off profile of a backhoe trench.

Profile drawings depict the U-shaped trench covered by modern fill horizons (phase 1) and cutting into the
horizontal levels of Str. II and III (phases 5 and 6). The phase 3 excavation of the trench cut down into two strata, and the phase 2 backfill mixes the materials from them. In other words, even though profile drawings indicate mixture of Str. II and Str. III materials in the phase 2 backfill, the deposit was more closely linked with the remains of Str. II. This is partly because phase 5 had a density more than 45 times higher than the extremely low density of phase 6; for every 45 artifacts collected in the mixed fill of phase 2, 44 should originate from phase 5 and one from the phase 6 context. In addition, the range and ratios of ceramic types closely linked it to phase 5, which was dated to the time of the Barri household.

Phase 4 cuts through phases 5 and 6 and is marked by a mixture of materials. Phase 4 was found to have a ceramic distribution similar to phases 2 and 5, with redware at 25% of the total assemblage and a fairly low value for refined earthenwares at 43.8%. That earlier levels were disturbed by the excavation of the trench against the foundation wall is evidenced by the inclusion of six vessels whose manufacture predates 1800, including delft, coarse buff-colored earthenware from Staffordshire, and Nottingham stoneware. The latest materials suggest that phase 4 is associated with the younger Barri household.

The younger Bartholomew Barri became household head
after 1830 when hand-painted multicolored whitewares were popular. The Barri assemblage from 1839 to 1877 should include these whitewares which were later replaced by plain and molded ironstone. Phase 5 consists of a minimum number of 60 vessels, among which four (6.7%) are hand-painted whiteware and six vessels (10%) are ironstone. For phase 2, whitewares were 13.6% of the total number of vessels, while ironstone was 1.7%. Values for redware and refined earthenwares between phases 2 and 4 were nearly equivalent, as one would expect if phase 2 was essentially composed of the same range of ceramics from phase 5.

Phase 6 is associated with the elder Barri occupation from ca. 1820 to 1830. The total number of vessels from this level was quite low, so the proportions may not be highly representative of the consumer behavior of this household. Refined earthenwares comprised two-thirds of the assemblage and redware was one-sixth. Other deposits for the elder Barri household will be more informative.

UNIT 3

Unit 3 was a 2.0-x-0.5-m trench dug near the northeastern boundary of the houselot. It had eight phases including a large trash concentration (phase 3), a coal fill (phase 2), the bottom levels of an abandoned well (phase 4), and the west end of a stone foundation (phase 7). In
addition, there were three horizontal levels, Str. I, II, and III. Unit 3 was located about 8 m northeast of the back ell of the house, through which the back door was assumed to have been.

Unit 3 included a mass deposit of 269 vessels recovered from Feature 1. Excavators interpreted this to be a composite feature with two components. The lower levels (phase 4) corresponded with a well shaft that looked to have been partially dug and lined with stones then abandoned before completion. The stones showed some signs of caving in and collapse. The upper part of the well shaft (phase 3) was considerably wider in diameter and was backfilled with a dense concentration of faunal and ceramic debris. Phase 2 was a series of coal ash lenses--multiple depositions--that filled in the slump left by the settled backfill of phase 3.

Crossmending showed that these three phases were distinct in that the majority of conjoining crossmends occurred within the three deposits. However, matches in the ceramic ware types and decoration also occurred between the phases, suggesting some continuity between them. The sequence is articulated below.

Phase 1 was the most recent level of deposition and while it contained some modern plastic (6 fragments), the bulk of the materials was dated from about 1880 to 1925. For the most part, phase 1 in this part of the yard did not
evidence a great degree of disturbance as a significant amount of sherds (40.5%) were larger than 5 cm², indicating a moderately low level of transformation. Phase 1 was associated with the short-term tenancies of the late nineteenth and the early twentieth centuries.

That some mixture of materials is occurring is evident from the proportion of pearlware which is exactly double that of the ironstone vessels. The ironstone vessels are assumed to be associated with the late occupation horizons. The largest sherds (16.1-49 cm²) are all either from redware, whiteware, or ironstone vessels, all of which might have been available to the post-1880 occupants of 14 Jefferson Street. Whiteware was still being produced by English factories at this time, but its period of peak popularity was long over. The handpainted whitewares may have been cheaper for the Irish and Danish immigrants who lived here.

Phase 2 consisted of multiple deposits of coal ash with moderate amounts of ceramics but very high levels of faunal debris. The range of ceramic proportions of phase 2 has a marked similarity to the distribution in Phase 3, with approximately 10% redware and 70% refined earthenwares. However, the minimum number of vessels in phase 2 is quite low and the sherds which crossmend or match with phase 3 are smallest in size. The largest and latest datable ceramic
material is the nearly complete base of a ginger beer bottle, of a type popular between 1860 and 1880 (Raycraft and Raycraft 1990:114). This helped to date the coal lenses to the younger Barri occupation.

Phase 3 was a mass deposit of 225 vessels, the highest proportion of which was pearlware (47.6%). Phase 3 did include some whiteware and ironstone, at levels which are consistent with a household beginning to replace the previously popular pearlware. The elder Barri household can be linked to the acquisition of these vessels. However, the mass deposition of ceramics--225 in a 30-cm-thick deposit--may not have been a single episode.

A sample of the faunal materials from phase 3 was subjected to analysis to help determine the kind and rate of deposition. A total of 1016 bones were examined from both the top 10-cm level of the feature and the middle 10-cm level. A sizable proportions of these bones--895 (88.1%)--from both levels were classified as "heavily weathered;" the lower level produced an even higher proportion of heavily weathered bone with 97.4%. Several bones from the upper level of phase 3 were gnawed by rodents, but none from the second level was found with gnawing marks. The faunal evidence indicates an open-air collection of materials that suffered a high degree of exposure to the effects of weathering. Bones exhibited pitting and calcium loss and a
generally fragmentary and fragile condition. The sheer number of bones argues against a single household cleaning of refuse but instead indicates a regular use of the discard area to dispose of kitchen garbage. The condition of the bone suggests that these may have been provisional discard left in a secondary open-air midden, but were opportunistically transferred to the abandoned well shaft. The phase 3 trash deposit is dated to the final occupation of the elder Barri household.

The debris of phase 4 is also associated with the elder Barri family, as the cross matching between phases 3 and 4 was too similar to assign to a different household. The level of redware doubles between phases 3 and 4, and there is a decline in the overall proportion of refined earthenwares from 73.6% in phase 4 to 63.6% in phase 3. Creamware and pearlware ratios are essentially equivalent between the two phases, and the main difference appears to be an absence of whiteware and ironstone. The ratio of refined earthenwares for the two phases nearly mirrors that for the Mary Rider occupation in unit 7. During approximately the same time period of time (the first two quarters of the nineteenth century), both the Rider and elder Barri households have stratified deposits where archaeologists can see the increase in the proportion of the refined earthenwares over time.
Phases 5 (Str. II), 6 (builder's trench for 7), and 7 (a stone foundation) did not have artifacts associated with them and could not be dated. The one clue we have for the phase 7 construction is that nineteenth-century maps do not show any architecture on this part of the lot until after 1878. However, the stratification of unit 3 does not indicate that phases 6 and 7 are this late, so it is possible phase 7 is the remains of a building that predates 1813.

The final phase of unit 3 was the basal yellowish brown sand, which included a minimum number of 15 vessels. The comparatively low density and the smaller size of the sherds (70% are very small) suggests that a scatter of materials was tossed here. More than a quarter of the ceramics were white salt-glazed stoneware, commonly available from about 1720-1790 (Noël Hume 1980:114-119). Other eighteenth-century wares included German Westerwald stoneware, delft, and Staffordshire buff-colored coarse earthenware. However, the latest materials date the final transformation of the deposit to the Abigail Leslie occupation.

Like Samuel Jackson of the Rider-Wood site, the arrival of widow Leslie to the Wheelwright site in 1785 nearly coincides with the 1780 introduction of pearlware, so that vestiges of this ware type should be apparent in refuse disposed of by widow Leslie. However, as a landowner who
was required to mortgage her property three times in 10 years (Rockingham County Deeds 172/29; 183/209; 206/117), Leslie may not have had funds available to purchase the latest in ceramic styles. Moreover, her placement in the household developmental cycle—widowed with no evidence of children still living with her—argues against the need to consume large amounts of pottery vessels.

UNIT 4, 7, AND 10

The three units were dug over the course of two seasons and tested the backyard area directly north of the back ell (see Figure 11). Unit 4 was a 1.0-x-0.5-m trench oriented north-south and located 5.5 m north of the back (north) wall of the house. Unit 1 established the boundary of the back ell at 3.0 m north of the house, but this wall line and the surrounding ground surface had been severely disturbed about 1960 when the back addition was removed. Unit 4 was 2.5 m north of the line of the back ell.

Unit 7 was a 0.5-x-0.5-m square appended to the south end of unit 4 to resolve some ambiguities encountered in the excavation of unit 4. A line of fence postholes was recovered in units 4 and 7, which line corresponded to an eighteenth-century boundary. A total of 6 postholes was found in these two units, suggesting that the fence line was maintained long after the northeast corner of the yard was
reincorporated as part of the Wheelwright houselot in 1794.

Unit 10 was a 1.0-x-1.0-m square that joined to the southeast corner of unit 7. Many of the deposits were continuous with units 4 and 7, including one fence posthole, but unit 10 also had several larger downcutting negative features. A simplified Harris matrix (Harris 1989) was created that correlated all the deposits of the three units; a total of 12 phases was counted for the 3 units. Each unit will be briefly reviewed below then the main phases of the combined units will be treated. Postholes and shallow pits with a low density of artifacts will not be discussed at length.

Four deposits in unit 4 were dated to the nineteenth century, including three horizontal strata (phases 3, 10, and 12) and one negative feature (phase 5). In unit 7, there were 3 overlapping postholes (phases 6, 7, and 8) and two shallow pits (phases 4 and 5) that cut into the same three horizontal levels recovered in unit 4. Unit 10 had a more complicated stratification with one obvious posthole (phase 9) and three large pits (phases 2 and 11), one which pit cut into another. The same three horizontal strata—phases 3, 10, and 12—could be detected in unit 10 as well.

The upper levels of the three units can be associated with the tenancy occupation of the Wheelwright site. Most specifically, phase 3 and the two shallow pit features
assigned to phase 2 all can be dated to the last quarter of the nineteenth century and the first quarter of the twentieth century. Phase 1 did not contain any obviously modern materials, but neither could it be clearly linked to the late nineteenth-century tenancy households; the very small size of sherds (89.9%) and the wide range of ceramic types were taken as indications of redeposited and highly transformed materials. The materials of phase 10 are generally found to coincide with the dates for the Barri occupation, while phase 12 is linked to the John Clark household.

Phase 2 consisted of two separate pits, both of which were cut out of phase 3, with no diagnostic evidence to date one earlier than the other. Both pits (Feature 15 and Feature 16) were located in unit 10; Feature 16 cut into an earlier pit, discussed as phase 11 above. Both features had low minimum numbers of vessels and cannot be considered typical of the ceramic distributions for this period.

Phase 3 contained surprisingly high numbers of the remains of pearlware vessels and low quantities of the later ironstone. The unexpected high quantity of earlier wares such as creamware and pearlware could be partly explained by the mixture of phase 3 and phase 10 artifacts by excavators who saw only a single deposit when excavating. No decal ware was recovered from this phase, a ceramic type that
first became available about 1890, but was no doubt expensive in the initial years of retail. Dense and vitreous white-bodied wares, called hotel wares, was found, however.

Phase 9 was detected in unit 10 only and was a shallow pit backfilled with very high amounts of ceramics, fauna, and architecture. The fact that a pit was used for the disposal of trash suggests that the depositional behavior associated with this feature is different from the open-air middens the Barri household employed in unit 2 or the coal ash dumps of unit 3. While the presence of whitewares almost certainly links phase 9 with the Barri household, the profile of ceramic types is very different from distributions from other Barri deposits. Redware represents more than one-third of the total number of vessels, while the proportion of refined earthenwares is the lowest value associated with the Barri occupation. I submit that phase 9 was an anomalous and perhaps opportunistic refuse aggregate.

Ceramic vessel counts for phase 10 are taken only from units 4 and 7.

UNIT 5

Unit 5 was excavated as a 1.0-x-0.5-m trench that tested the back (north) lot line of the Wheelwright house. A total of 11 phases was articulated with three dated to the
nineteenth-century occupation of the Wheelwright parcel. Unit 5 was heavily dissected by negative features, including two privies, a rodent burrow, and a sinkhole from a decomposed wooden post. The unit intersected two back-to-back privies, one for each side of the property line, so that at least two phases were associated with houselots beyond the scope of this research.

Unit 5 was excavated only so far to reveal the wooden edges of the privy boxes; in the interest of time and to preserve rare cultural resources, the site supervisors elected not to dig any further into the features. Phases 5 and 7 represent the uppermost levels of fill that closed the abandoned outhouses, one on either side of the property line.

While found on the north side of the Wheelwright property line, phase 2 represented a common practice at urban sites and is deserving of a few words. Phase 2 was a dense coal-and-ash deposit that filled in the concavity left by the settling of a backfilled negative feature, the phase 5 privy. Phase 2 was an early twentieth-century assemblage of 40 vessels within a moderately dense deposit with moderate proportions of ceramics and fauna but a low percentage of architecture. Richness was moderately high with 22 classes. Amounts were moderately low for architecture and moderate for the other two artifact groups.
The 57.5% of very small sherds indicated a low level of transformation of the deposit that had several reconstructable vessels, including a late nineteenth-century foliate molded ironstone tureen. One backmark on a Homer Laughlin saucer was dated 1917 to anchor the deposit in the first quarter of the twentieth century.

Phases 2, 7, 8, and 9 are associated with the behaviors of people from the lot adjoining to the north side of the Wheelwright property, and their history was not researched for this project. The remainder of the deposits from unit 5 can be assigned to households who lived at 14 Jefferson Street in the nineteenth century.

Phase 4 represents the abandonment and backfilling of the privy on the northernmost side of the Wheelwright lot. Since such a small sample was taken of this deposit, it is difficult to assign it a date based on the inclusive materials. Backfilling of a privy shaft often requires the collection of several cubic meters of material and might involve the digging, hauling, or clearing of deposits unrelated to the use phase of the privy. Given that the remains of only seven vessels were recovered from the upper 20 cm of this backfill, the high proportion of redware and the relatively low ratio of refined earthenwares are consistent with distributions from other Barri deposits. More excavation would be required to better date phase 4 and
to obtain more information on the use and construction phases of the privy.

The 15 vessels of phase 10 were linked to the Barri household and included white granite and a sizable portion of a ginger beer bottle dated between 1860 and 1880 (Raycraft and Raycraft 1990:114). The proportion of refined earthenware was again low and comprised less than half the total vessel assemblage. Redware was 13.3% of the total.

In phase 11, the extremely low minimum number of vessels precluded a concise connection to any one household; the remains of only three vessels were counted, one of which was English bone china, and the other two were pearlware. This particular ceramic profile could be linked to either the Leslie or the elder Barri household. The northeastern corner of the lot was also for a short period of time in the eighteenth century owned by the Moulton family who owned the lot to the north of the Wheelwright house, and phase 11 could equally be part of this household's garbage disposal. In both the cases of phase 10 and phase 11, deposit densities were moderately low, suggesting that traffic in refuse deposition in this corner of the yard was low.

UNIT 11

This excavation unit was initially a 2.0-x-1.0-m trench oriented north-south one meter north of the northeast corner
of the Wheelwright house (see Figure 4.7). The trench was comprised of five downcutting features and four horizontal strata. Upon encountering the rich remains of one pit, the project supervisors decided to reduce the area of the excavation trench so as to leave the feature for future exploration. The sequence of deposition is outlined below.

The stratigraphic profile of all the downcutting phases for unit 11 is ambiguous because the backfill of the features is the same color and sediment type of the stratum through which they cut. Once the dark yellowish brown soil of Str. III was reached, their outlines (horizontal extent of the features) become more certain. Profile drawings do not eliminate the confusion, either, as excavators did not label features. Profile drawings also do not capture the beginning elevations for features within the very dark grayish brown matrix of Str. II. Most of the information for the stratification and phasing of features is reconstructed from horizontal plans.

In spite of the relatively low values for the degree of transformation (as indicated by the ratio of the very smallest sherds), the stratigraphic profile for unit 11 indicates a complex sequence of backfilling, with several lenses of sediment deposited from the west to the east. The phase 2 backfill was identified in the field as a "trash pit" but may actually be part of this landscaping effort to
build up the east side of the property line. Features 17, and 18 can, I think, be safely associated with postholes for a fenceline that was oriented along the east wall of the house. Feature 19, at the northwest corner of the unit, may be a posthole for a fenceline that ran parallel to the north wall of the house, perhaps to enclose a small activity area. The placement of these phases in a temporal framework is explored below.

Phase 1 was found to have modern hard plastic, so that its final deposition had to postdate 1940. Phase 1 also contained asphalt roofing shingles and modern-looking roofing nails. Phase 2, on the other hand, was comprised of a majority of artifacts that was manufactured in the eighteenth century. Ceramics included early wares such as dipped white salt-glazed stoneware, delft, buff-colored coarse earthenware from Staffordshire, and German Westerwald stoneware. Pottery forms were also more typical of the eighteenth century, such as scalloped-edged pie plates, tankards, bulbous jugs, and one Westerwald pitcher that was 75% complete. All of these could have commonplace items in the household of the Wheelwrights who occupied the site in the mid eighteenth century. Curiously, the older wares were found in larger pieces, as if these had been secondarily deposited with relatively little transformation and subsequently redeposited as phase 2 in unit 11. By
contrast, the later materials were nearly all very small.

Phase 3 also contained the same range of earlier ceramics but also had later materials such as porcelain electrical fixtures and one piece of plastic that could be early bakelite. Phase 3 has been associated with the post-1880 tenant households with the relatively higher ratios of whiteware and ironstone. Given the crossmends and crossmatches between the ceramics in phase 3 and phase 2, it is clear that there is some connection between them.

Phase 4 is also linked to the tenant households, as a moderately large (49.1-100 cm²) piece of late ironstone was found in this feature. Phase 5, on the other hand, was associated with the younger Barri residence, as the latest and largest sherd was from a classic ironstone vessel of the type popular in the middle decades of the nineteenth century. The minimum-vessel count for both deposits is fairly low, so that not much can be garnered from them in terms of household consumer preferences.

Phase 6 included some whiteware and was linked to the household of John Clark. Phase 7 was marked by the absence of later wares such as whiteware and ironstone, but did include pearlware, so the excavation of Feature 17 was associated with the widow Leslie. Again, the vessel count is low for both these deposits, so not a great deal can be said about them.
As stated above, the stratification of the phases of unit 11 indicate the redeposition of sediments in large horizontal lenses which tilted from west to east. Phase 2 was a dense collection of eighteenth-century artifacts that had the appearance of a single-episode mass deposition because of the relatively large size of the sherds and the number of crossmends forming partial vessels. Excavators portrayed phase 2 as cutting into phase 3 with a clearly visible outline, but the degree of crossmending and matching between these two phases suggests that their deposition may have been close in time. Feature 14 (phase 2) also did not behave like a typical negative feature in that its depth was shallow and its horizontal extent wide. It seems highly likely that late in the nineteenth century or early in the twentieth century, residents at the site uncovered a cache of early trash and used it to fill in behind the house. Two of the horizontal fill layers of unit 11--phase 3 and 6--are also characterized by high densities of trash.

UNITS 12 and 13

These two units were each 2.0-x-0.5-m trenches that straddled the west property line of the Wheelwright site in order to test the accuracy of the historical documentation of the site boundaries. Unit 12 was excavated first, and then, to expose more area, the adjoining unit 13 was
excavated along the north balk of 12. Four strata were discerned in unit 12 before unit 13 was also opened up. To my knowledge, only one profile drawing was made, and that was of the north wall of unit 12 before unit 13 was opened up.

Attempts to link deposits of the two units met with frustration because of ambiguities in fieldnotes and horizontal plans. No clear evidence of strata that matched across the two units could be found, so the analysis of units 12 and 13 proceeded level by level rather than by stratum or distinct deposit. The phases of these two units largely consist of arbitrary levels but closely approximate the sequence of strata recorded by the excavators. Nonetheless, the phases of units 12 and 13 do not have the same integrity as do phases in other units. Once the bottom levels of the units were reached, the remains of several intersecting postholes were recorded; the upper levels of these features probably also cut through the topmost levels, but were not detected in the darker soil horizons.

The first three phases of units 12 and 13 were marked by post-1890 ceramics, such as American-made thick-bodied hotel ware, but there was no plastic in these deposits. Other temporally sensitive artifacts included crown bottle caps and a clothespin hinge. The ratio of bottle glass was
low, suggesting that this deposit did not postdate the early twentieth-century innovation of machine-produced bottle glass.

All three upper phases were associated with the tenancy occupations that began in 1877 and continued into the twentieth century. Ironstone proportions were surprisingly low, but they showed evidence of being replaced by the later thick-bodied hotel wares. The proportion of redware was also low, comprising about one-eighth of the ceramic assemblage. That phases 1, 2, and 3 involve transformation and disturbance is indicated by the relatively high ratio of ceramics that were produced before 1830. The horizon with the highest degree of transformation--phase 2, with 93.2% very small sherds--had 46% of the vessels that were manufactured before 1830. As the level of transformation decreased, so did the relative proportion of earlier inclusive materials decrease.

Some of the high degree of disturbance in phases 1-3 can be related to the excavation of postholes for the fenceline that separated the Wheelwright lot from that of its neighbor to the west. While clear evidence of the postholes was not detected until the upper 60cm of archaeological fill had been removed, it is likely that phases 1, 2, 3, and 4 included and incorporated the upper portions of these postholes. Fieldnotes record the presence
of possibly as many as nine postholes, which is not unusual for a fenceline that was actively maintained over 250 years.

Phase 4 was still marked by a moderately high level of transformation, but the sherds seem to indicate an earlier date of deposition. The late-nineteenth-century porcelain is absent from this level and is apparently replaced by the earlier white granite. Phase 4 had been linked to the Barri household.

Phases 5, 6, and 7 all represent mixed deposits with uncertain beginning elevations so it is not clear how to assign them temporally. None of the postholes contain ironstone or later materials. The latest datable artifact is whiteware in phase 6 and pearlware in phases 5 and 7. In general, the sample collected from the posthole is considered too small to accurately date the excavation and backfill of these deposits.

Phases 8 and 9 were both sparsely populated with artifacts. A minimum number of 19 vessels was estimated for the lowest 40 cm of the excavation units. While there was no ironstone found in these lowest levels, the presence of whiteware may be associated with the Barri family. Earlier ceramics were also included in the two phases.

UNIT 14

Unit 14 was a 1.0-x-1.0-m square excavated about 3.0 m
north of the north wall of the Wheelwright house, about midway between units 10 and 11. Nineteenth-century deposits were similar to those in unit 10, but clear correlations between them could not be drawn. One source of difference between the units could derive from the differences in use of these areas. Along the west wall of unit 14, a stone foundation wall was found; this wall corresponds to the back ell added on to the northwest corner of the house between 1780-1785 (Baker 1966:1, 11). Most of the deposits of unit 14 fall clearly outside the bounds of this addition. The traces of a long-term nineteenth-century accumulation was recovered for the square, and the characteristics of it and two earlier phases are summarized in Table C.2.

Phase 2 consisted of several cumulative deposits. The latest materials were moderate-sized sherds of white granite, dated to the younger Barri occupation. The proportions of refined earthenware (35.2%) and redware (29.6%) were nearly equivalent, and there was a sizable quantity of eighteenth-century wares such as white salt-glazed stoneware, buff-colored coarse earthenware, Nottingham stoneware, and delft, suggesting tertiary mixture of materials. Phase 2 was recovered along the east face of the stones, i.e., the ground-surface buildup associated with the use of this addition.

Phases 3 and 4 are closely related in time, given that
the founding levels of the stones of Feature 25 are upon (or within) Str. III. It seems that the single course and row of stones (phase 3) were laid directly upon the Str. III ground surface (phase 4) with no evidence of further modification, such as trenching. However, there may have been some cleaning, clearing, and leveling of the area north of the house in order to establish the foundation on a level surface. Some subtractive formation processes could be in operation, resulting in the removal of trash within the construction zone and redeposited elsewhere. While architectural evidence indicates the ell was added to the house between 1780 and 1785 (Baker 1966:1, 11), archaeological evidence suggests that it was earlier than this, because of an absence of both pearlware and creamware. The documentary evidence, including land deeds and inventories, further complicates the dating of the additions to the house; Dupre (1990:H-1) notes that the 1785 dower rights make no mention of a northern addition off the back wall line, and she hints that the building may have been later than the 1785 date suggested by Baker (1966).

Correct assessments of chronology must incorporate the depositional history of phases, especially within the architectural developmental cycle. Construction phases include preparation of the work area that might be as obvious as a foundation trench, but could also be as simple
as raking an area smooth. The process of raking could remove traces of later trash that could more accurately date the building phase by creating a discontinuity in the archaeological sequence that was not readily apparent in the archaeological record.

SUMMARY

The complexion of stratified deposits at the Wheelwright site is entirely different from that of the other two sites examined. The total accumulation of debris, as represented by horizontal strata, was often no more than 40 cm deep. On the other hand, many large downcutting features pockmarked the horizontal layers, and these were filled with heavy concentrations of trash. At the Rider-Wood and Follett sites, strata accumulated for more than a meter in most parts of the site.

As at the Rider-Wood site, there is a low amount of aesthetic-style transfer-printed ironstone of the variety popular in the 1870-1880s. This period coincides with the final stage of the Barri occupation where the advanced state of his household developmental cycle may have prevented the acquisition of a new printed style of ceramics to replace the plainer white granite.

The 1880s marked the advent of short-term tenancies of immigrant laborers. Most tenant households can be described
as being in early stages of development; i.e., marriage and childbearing. These households probably did not have the resources to purchase the new style of pottery. In fact, the immigrant tenants seemed to have high levels of white granite and whitewares, ceramics that had seen peak popularity some 20 to 30 years earlier. These "old-fashioned" ceramics may have been cheaper to acquire. Or we may be seeing archaeological evidence of another network of availability—such as flea markets, landlords' outdated ceramics, or charities (e.g., churches) that arranged for the provision of basic household needs for newly arrived immigrants.

Another marker ceramic that is entirely missing from the later years of the nineteenth century at the Wheelwright site is decaled ware. Available in the 1890s, only one example of a decaled vessel was recovered from deposits associated with the Wheelwright site, and that was from the first phase of unit 3. Some late nineteenth- and early twentieth-century thick-bodied American-made hotel ware was found, but these are the only clearly datable remnants of vessels contemporary with the tenant households.
APPENDIX D

RESULTS OF THE FAUNAL STUDY

The following set of tables indicates the types and quantities of fauna found for seven archaeological contexts. Table D.1 lists a sample taken from the open-air midden dated to the Mary Rider occupation after the death of her husband. At the Follett site, remains from a secondary open-air midden associated with the Mahoney family are tabulated in Table D.2. Two phases of the open-air midden behind the Wheelwright house are summarized in Tables D.3 and D.4; the first corresponds with the younger Barri occupation, while the second is linked to the later tenancy period. Table D.5 lists a partial sample of the fauna from the mass deposit from the upper levels of the abandoned well shaft; the fauna are believed to be provisional discard from the elder Barri residence at the site. In Table D.6, faunal garbage discarded in the abandoned Follett privy is counted from the tenancy occupation. General impressions of the depositional and postdepositional conditions of the refuse can be gained by examining the number of unknown or unidentified specimens.

Finally, in Table D.7, the English common names are offered for the family, genus, and species names used in the tables.
<table>
<thead>
<tr>
<th>Faunal Category</th>
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<td>Aves</td>
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<td>Anas sp.</td>
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<td>Gallus gallus</td>
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<tr>
<td>cf. Meleagris gallopavo</td>
<td>2</td>
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<tr>
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Table D.1. Fauna at Rider-Wood Site, Unit 7B, Phase 5A
### Unit N11W9, Str. VA

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<td>Ovis/Capra</td>
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<tr>
<td>cf. Sus scrofa</td>
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<tr>
<td>Lg/Med mammal</td>
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**TOTAL:** 35

### N11W9, Str. VB

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<tr>
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</tr>
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<td>Meleagris gallopavo</td>
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<tr>
<td>Reptilia</td>
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<tr>
<td>Rodentia</td>
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<td>Ovis aries</td>
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**TOTAL:** 125

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Table D.2. Fauna at Follett Site, N11W9, Str. VA and VB
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Table D.3. Fauna at Wheelwright Site, Unit 10, Phase 10
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<td>cf. Gallus gallus</td>
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<td>Artiodactyla</td>
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Table D.4. Fauna at Wheelwright Site, Unit 10, Phase 3
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</tr>
<tr>
<td>cf. Gallus gallus</td>
<td>24</td>
</tr>
<tr>
<td>Gallus gallus</td>
<td>45</td>
</tr>
<tr>
<td>Anatidae</td>
<td>1</td>
</tr>
<tr>
<td>cf. Meleagris gallopavo</td>
<td>3</td>
</tr>
<tr>
<td>Meleagris gallopavo</td>
<td>1</td>
</tr>
<tr>
<td>cf. Ana platyrhynchos</td>
<td>2</td>
</tr>
<tr>
<td>Felis domesticus</td>
<td>2</td>
</tr>
<tr>
<td>Artiodactyla</td>
<td>10</td>
</tr>
<tr>
<td>cf. Bos taurus</td>
<td>12</td>
</tr>
<tr>
<td>Bos taurus</td>
<td>25</td>
</tr>
<tr>
<td>Ovis/Capra</td>
<td>8</td>
</tr>
<tr>
<td>cf. Ovis aries</td>
<td>1</td>
</tr>
<tr>
<td>Ovis aries</td>
<td>1</td>
</tr>
<tr>
<td>cf. Capra hircus</td>
<td>1</td>
</tr>
<tr>
<td>Sus scrofa</td>
<td>1</td>
</tr>
<tr>
<td>Large mammal</td>
<td>18</td>
</tr>
<tr>
<td>Lg/Med mammal</td>
<td>5</td>
</tr>
<tr>
<td>Medium mammal</td>
<td>3</td>
</tr>
<tr>
<td>Med/Small mammal</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>12</td>
</tr>
<tr>
<td>Unidentified</td>
<td>15</td>
</tr>
</tbody>
</table>

TOTAL: 225

Table D.6. Fauna at Follett Site, N13W5, Str. VIIA
Osteoichthyes/Teleost (Bony Fishes)
  Gadiformes (Cod group)
    cf. Gadiformes (most like Cod group)

Reptilia (Reptiles)

Aves (Birds)
  Phasianidae (Quails, Pheasant, and Peacocks)
    cf. Gallus gallus (most like Domestic Chicken)
      Gallus gallus (Domestic Chicken)
  Anatidae (Ducks and Geese)
    Anas sp. (Duck)
    Anas platyrhynchos (Domestic Duck)
      cf. Meleagris gallopavo (most like Domestic/Wild Turkey)
        Meleagris gallopavo (Domestic/Wild Turkey)

Mammalia (Mammals)
  Rodentia (Rodents)
    Cricetidae (Native rats and mice)
      cf. Neotoma floridana (Rat)
  Felidae (Cats)
    Felis domesticus (Domestic Cat)
  Artiodactyla (Even-toed Ungulates)
    Bovidae (Cows, Sheep, and Allies)
      cf. Bos taurus (most like Cattle)
        Bos taurus (Cattle)
    Ovis/Capra (Sheep/Goat)
    Ovis aries (Domestic Sheep)
      cf. Ovis aries (most like Domestic Sheep)
        Capra hircus (Domestic goat)
      cf. Capra hircus (most like Domestic Goat)
    Suidae (Pig)
      Sus scrofa (Domestic Pig)
      cf. Sus scrofa (most like Domestic Pig)

Table D.7. Common English Names for Family, Genus, and Species Names Listed in Appendix D Tables
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