VIII. Conclusions

The Wilmington Boulevard archaeological project represents one of the largest, and most intensive archaeological investigations undertaken in the United States to date. The project was conducted under an explicit and detailed research design, one which integrated historical research, field investigation, and detailed artifact analysis. Many of the methods employed on this project were either new, or had not been extensively tested and verified on other projects. Further, the sheer volume of artifacts generated by the field investigations created extreme logistical problems. This chapter discusses the theoretical, methodological, and logistical problems encountered, and the solutions that were, in most cases, found for those problems. Also, this chapter discusses contributions made by this project to the study of urban archaeology, and suggests future research directions for the archaeology of the City of Wilmington.

The Wilmington Boulevard Mitigation Project was planned on the basis of a National Register District Determination of Eligibility prepared by the Delaware Division of Historical and Cultural Affairs (Wise 1980). That document presented an outline history of the project blocks and discussed, in general terms, the types of archaeological resources expected to occur within the blocks. Input to the project planning was provided by personnel of Mid-Atlantic Archaeological Research (MAAR), who had conducted archaeological testing on the blocks the previous summer. Those two available sources produced valuable information that was incorporated into the research design and project work plan.

The sequencing of the historical research on this project was done in response to construction scheduling needs, and could not have been handled in any other way by the time of SSI's involvement in the project. That type of timing is unfortunately characteristic of many contract archaeology projects, but is extremely critical in the case of urban projects. As a result, detailed block-by-block histories were not compiled before the field work began, and the decisions of where to dig were based on more generalized information than would have been desired. The lack of highly detailed historical data prior to the field phase led to at least two major problems. One, the sample of excavated lots did not include an example of a low socio-economic status occupation from the pre-industrial period. Second, at least some of the selected lots were not particularly well documented in the historical record, and critical gaps and ommissions in the record diminished the comparative value of those examples.

One possible way to circumvent that problem was recently applied to two projects in New York City (Harris 1980; and Friedlander 1981). Those projects also involved extremely tight development schedules. In one case, an abbreviated land use history was commissioned in advance of development by the City of New York and, in the other, by the developer. The histories produced by those projects were land use histories in the sense that all available historical maps were compiled, and deeds on a lot-by-lot basis were abstracted at ten-year intervals. The various types of historical records available were surveyed, and decisions of where to excavate within the properties were made on the basis of the study results. The individual lot

histories were, in both cases, fleshed out by historical research conducted concurrently with field work, but the land use histories (conducted either by historians with archaeological training, or historians working closely with archaeologists) did provide excellent information upon which to base excavation decisions.

There were other methodological problems with the historical research conducted during the Wilmington Boulevard Mitigation Project. A great deal of time and resources were correctly directed towards assembling an historical context for the study blocks within the City of Wilmington. Data gathered on the City at large included general background information, as well as highly specific information on the residential locations by occupations of varying socio-economic groups. That study yielded a massive amount of information that fed into the distribution maps presented in this report, and into the interpretations presented in the report narrative. The decision was made during the analysis phase to graphically depict the occupation level distributions on maps by simple presence/absence. That decision expedited the final report, but diminished the effectiveness of those data. The occupation distribution study would have been of greater use for future research had actual densities of occupation levels been presented versus simple presence/absence. The research files compiled for this project should have sufficient data for that to be undertaken by a future researcher and, hopefully, that work will eventually be done.

The research design constructed for this project studied the nature of urban settlement patterning in Wilmington in terms of land use and socio-economic group distributions, as well as the nature of consumer behavior within the project area. The research design further studied how those variables changed through time, through comparisons and contrasts drawn from pre-industrial and industrial occupations. The project research design stands as a contribution to the theoretical development of urban archaeology, despite the fact that some of the project research hypotheses were not supported through historical research or artifact analysis. The same research questions posed in this research design remain valid questions for future research, and the Wilmington Boulevard research results will provide comparative data for future work.

One severe problem, which will be discussed in greater detail later in this chapter, was the dearth of comparative artifact studies conducted at the level of sophistication of the Wilmington studies. This was due primarily to the fact that many of the analytical techniques employed were new, and had not been available long enough to have been cross-checked and verified or denied on large-scale projects.

A number of valuable lessons were learned from the field phase of this project that will be applicable to future urban archaeological projects. One immediate lesson was that hand-turned bucket auger tests have limited utility to archaeology within heavily urbanized tracts. That technique had been used successfully by SSI within less intensely urbanized areas prior to the Wilmington Boulevard Project (cf Foss, Garrow and Hurry 1979; and Garrow 1982). The heavy demolition debris encountered over the Wilmington Boulevard Project blocks rendered the technique ineffectual in that case, however. Backhoe testing proved to be an effective substitute for auger tests. There

are problems that can be encountered with backhoe tests if they are not carefully advanced. Backhoe trenching can destroy the very archaeological evidence being sought, but the Wilmington field work would have been impossible without the use of a backhoe. That statement, made two and a half years after the completion of the Wilmington field work hardly seems to be a revelation, since backhoes have become fairly standard equipment on urban projects in the interim, but it was still a fairly new approach at the time the Wilmington field work was conducted.

The field work was planned and implemented to discern and explore "analytical contexts" within the study lots. The concept of "analytical contexts", as applied in the report, was essential to successful testing of the research design. "Analytical contexts" basically consist of debris that can be determined to have originated within the lot under study. This means that contexts are combed to determine which artifact collections are comprised of "primary or secondary refuse" (following Schiffer 1972), and which are displaced materials (fill). This allows the analysis phase of the project to key on materials that can provide data concerning lot residents, who can also hopefully be studied through project historical research. Fill deposits, however, were not ignored during the analysis process and, in most cases, fill-derived artifacts were used for mean ceramic dates in order to more accurately assess the dating of analytical contexts. This approach did, however, provide a sorting mechanism that reduced the sheer bulk of artifacts that required a more sophisticated treatment than cleaning, cataloguing, and dating.

The technique of large block excavations employed on some of the study lots on this project proved to be quite fruitful. The collections extracted from those lots were derived from occupation levels (also termed middens or topsoils) as well as features, and offered an opportunity to study artifact collections deposited over fairly long time periods as well as the short-term deposition present in most features. It is true that the collections extracted from occupation levels tended to be highly fragmentary, but study of those collections at the artifact pattern (South 1977) level did provide useful, substantive information. Beyond the question of the recovery of collections from occupation levels, the use of large blocks offered the opportunity to study sufficiently large backyard segments to formulate good concepts of how those spaces were used, and how those uses changed through time.

The more minor attention paid to architectural remains during this project was an appropriate approach. The vast majority of the architectural remains encountered during the field work were cellars of recently demolished buildings. All of the demolition debris encountered within those cellars dated to the second half of the 20th century and, while information could have been gained by exposing and exploring structural ruins, that information could not have materially aided in testing the project research design.

The use of fairly small volume soil samples on urban projects appears to have been validated on this project. A very large floral sample was extracted from the soil samples, and although the floral analysis did not provide substantive new information, flotation should be built into future projects.

The analysis phase of the project produced both successes and failures. The utility of artifact pattern (South 1977) studies was amply demonstrated during the analysis. The results of the Wilmington artifact pattern studies indicate that this analysis tool was sensitive when measuring differing functions. The South (1977) artifact pattern method, as revised by Garrow (1982), is an excellent format through which to present the artifact content of a selected context or an entire site. It is a fairly rational artifact formating scheme that does render an artifact collection comparable with other artifact collections formated using the same method. The artifact pattern approach does seem to have reflected differences between contexts generated on domestic versus nondomestic sites and, thus, can be a valuable key to discerning site functions from study of the total (or partial) artifact content of a site. It may indeed be significant that artifact percentages at the group level do not appear to change on domestic sites through time, and the artifact pattern approach may indeed measure a fundamental Euro-American consumer pattern that remains similar despite technological change.

The mean ceramic dating approach (South 1977) appears to have worked fairly well on this project. This analysis leaned heavily on ceramic date ranges devised by Garrow (1982) at the Washington Civic Center Site for nineteenth century ceramics. That scheme appears to have worked well for the period from ca. 1840-ca. 1860, although the validity of the scheme for the 1830s awaits verification. The Garrow (1982) date ranges were not set up to measure post-1860 contexts, and must revised and expanded in order to span the remainder of the 19th century.

Two minor analysis techniques proved to be of value to the Wilmington Boulevard analysis. Those techniques were "quantified cross-mend analysis" and "percentage of completeness analysis" for ceramic and glass vessels. "Quantified cross-mend analysis" was devised by Garrow (1982) on the Washington Civic Center Site, and was used to determine the nature of a mid-nineteenth century dump excavated under that project. Few opportunities existed for using that technique on Wilmington Boulevard, but it did prove valuable in sorting related from unrelated levels in one barrel privy in Area H. "Percentage of ceramic and glass vessel completeness" proved to be a more versatile analysis tool. That technique was used for each "analytical context" as a final test to determine if a given context contained secondary or displaced debris. Two privy features were eliminated from further analysis based on the low percentages of completeness of ceramic and glass vessels. Both "quantified cross-mends" and "percentages of vessel completeness" studies should be considered as basic analytical tools on future urban projects.

The results of the "form/function analysis" of ceramic and glass vessels were not particularly conclusive. That analysis technique was employed in an attempt to characterize the ceramic and glass content of households at the complete vessel level, so that material culture reconstructions could be made. The results of that analysis were compared with similar analyses conducted on the Washington Civic Center (Garrow 1982) site and sites within Alexandria, Virginia (Cressey et al 1982). Some correlations were noted that may eventually prove to be important, but the small amount of comparative

data available at present render this technique less useful at this time than would have otherwise been desired.

The "ceramic set analysis" suffered from the same basic problem. That technique was developed on the Washington Civic Center Site (Garrow 1982) to confirm that a deposit under study was the product of a single household. It was anticipated that ceramic sets would be present in certain Wilmington Boulevard contexts, and that study of ceramic sets would yield insights into the nature of the deposits. Ceramic sets proved to be rare within the Wilmington collections. A number of possible reasons were explored to explain that situation, but two explanations seem most likely. The highest status households explored during this project appeared to date from the late eighteenth to early nineteenth centuries. Deposits from those contexts probably pre-date the extensive use of sets, and the absence of sets in those contexts is thus somewhat expectable. All but one of the lots that yielded analytical contexts from the mid-nineteenth century were occupied by families of lower socio-economic status or by families of declining socio-economic status. The single exception to that pattern was Area A, which appears to have sustained occupation from 1848 to 1853 by a family of somewhat higher socio-economic status. Significantly, the Area A contexts from that period did yield weak evidence for the presence of ceramic sets. This may mean that the very presence or absence of ceramic sets is a crude socio-economic marker after some point in the nineteenth century, although data to substantiate that statement are sparse at the moment. At any rate, "ceramic set analysis" should be attempted on urban contexts on future projects that date from at least the mid-nineteenth century onward.

Two techniques were employed to address the economic level reflected by ceramic collections. One, the "Wise Analysis" (1976), utilized ceramics at the sherd level, while the second, the "Miller Analysis" (1980), required ceramics at the vessel level. Both analysis techniques have been discussed in the body of the report, and need not be discussed in detail in this section. Basically, the "Miller Analysis" appeared to return consistent, useable information, while the "Wise Analysis" simply did not work. The "Wise Analysis" probably should be retested on purely eighteenth century sites on future projects, while the "Miller Analysis" can be adopted on nineteenth century sites as a technique of proven utility. The only significant problem encountered with the Miller Analysis was that the number of contexts that qualified for that analysis on this project was relatively small, as was the total number of comparative examples to date available from other sites. The results achieved from Wilmington, however, yielded results comparable to the examples run on other sites and, hopefully, many more comparative examples will reach the literature in the near future.

One technique that did not work on the Wilmington Boulevard Project involved the chemical analysis of soils. It was hoped that contexts deposited during domestic occupations would differ chemically from nondomestic contexts, and that those differences could be detected by careful soils analysis. That did not prove to be the case, although there appeared to be correlations of pH levels among certain types of deposits. The use of chemical analysis of soils on a broadscale basis cannot be recommended on future urban projects, although the use of chemical analyses in specialized instances cannot be discounted.

The faunal analysis conducted on this project yielded mixed results. It is apparent from the results of the study that butchering patterns did change from emphasis on domestic butchering in the early period to heavy dependence on professional butchers in the industrial period. Unfortunately, the analytical contexts used on this project did not include a low socio-economic household from the pre-industrial period and, at this time, it is not known if the detected butchering patterns derived from use of an inadequate sample, or indeed reflects historical process. The faunal analysis did detect significant differences in the quality of cuts of meats consumed in Area A during the Dowdall occupation and Area H, which was occupied at about the same time by families of lower socio-economic standing. Unfortunately, a comparison of one case with two or a handful of cases does not comprise a statistically valid sample. The results of the analyses do suggest, however, that it may be possible to characterize relative socio-economic standing from faunal analysis, and that technique should be tested on future projects.

The results of the floral analysis were inconclusive. The recovered floral materials appear to represent incomplete samples of the floral assemblages that would have been used on any of the lots, and more likely represent species that were either deposited in the analytical contexts as components of fecal matter, or were wind blown weed seeds. This may mean that floral analysis has limited utility on urban historic sites, but that analysis technique should be further tested before it is discarded.

The analysis techniques used during the laboratory phase of this project produced mixed results, but for the most part worked as anticipated. The greatest analytical problem encountered was the small number of analytical contexts generated by the excavations. That problem would not have been quite as critical had a more extensive comparative base existed in the literature. Hopefully, the Wilmington Boulevard study greatly expands the available comparative base, and ultimately will lead to the acceptance of at least some of the analysis techniques employed on this project on a broader scale.

The Wilmington Boulevard Project has made a number of contributions to the study of the history and development of the City of Wilmington in particular, and to urban archaeology in general. No entity as complex as a city can be understood through intensive investigation of seven contiguous city blocks. The study blocks in the case of the Wilmington Boulevard Project were strategically placed, in that they presented the opportunity to study a cross-section of much of the historical span of the city, but the study was limiting in that the study area did not include a true cross-section of Wilmington's neighborhoods, or commercial and industrial activities.

A major contribution made by this project to study of the history of Wilmington was the periodization of the City's history derived from the historical and archaeological investigations. This report contains the most detailed history yet compiled of the City of Wilmington and, in this case, it was possible to supplement at least part of the historical record with archaeological research to illustrate day-to-day life (at least to a degree) in the pre-industrial and industrial city.

A second major contribution made by the Wilmington Boulevard Project is compilation of meaningful historical and archaeological data sets that can be used for comparisons and contrasts on future projects. A major difficulty faced on this project was the dearth of comparative historical and archaeological data on Wilmington that could have been used to validate or invalidate portions of the research. This study generated a comparative base that should prove critical for the success of future projects within Wilmington, and extremely useful for urban projects conducted elsewhere.

Perhaps the most pragmatic contribution made by the Wilmington Boulevard Project was that the historical research and archaeological investigations salvaged information that would have been destroyed or rendered inaccessible to future researchers by project construction. In that sense, at least a sample of the data contained by the study blocks has been conserved, and can be manipulated and remanipulated by future researchers. That may ultimately prove to be the most important contribution made by this project to understanding the history and development of Wilmington, as analytical techniques may be developed in the future that will allow for more meaningful study of the Wilmington Boulevard data.

Completion of the Wilmington Boulevard Project, although a truly massive undertaking, does not mean that additional historical and/or archaeological research in Wilmington would be redundant. This project identified a number of data gaps that need to be filled on future projects. Further, the comparative base for periods that were reasonably well-documented through this study needs to be expanded.

One significant data gap identified during this project dealt with the entire pre-Revolutionary War period of the City. No analytical contexts, and few individual artifacts, from Wilmington's pre-Revolutionary War occupations were found during this project, and that critical time period remains undocumented archaeologically. Further, no lower socio-economic occupations were isolated in the study area for the entire pre-industrial period, and the lack of such contexts greatly reduced the comparability of the recovered contexts from families that enjoyed higher socio-economic status.

The post-1860 period in Wilmington was poorly documented archaeologically during this study. The only late context found that contained analytical value was a manure pit filled around 1900, and that feature derived from a commercial occupation. The reason for the lack of later deposits within the study area probably relates to the increasing commercialization and improvements in city services during that time period. It appears, based on this study and others (cf Garrow 1982), that fewer artifacts and features are generated by purely commercial compared to purely domestic occupations. This does not mean that lots occupied only by commercial concerns throughout their history should be ignored archaeologically, but may mean that positive data return will be greatly diminished on such lots. The increase in city services in the second half of the nineteenth century in Wilmington could be an alternative explanation, as improved water and sewer systems as well as solid waste disposal methods may have negated the need for cisterns, privies, and garbage disposal areas, and thus reduced the potential for types of feature placement within all lots. At any rate, the post-1860 time period in

Wilmington was not well represented in this study, and needs to be explored on future projects.

A third major data gap identified during this project was the lack of industrial sites within the investigated seven block sample. The Dowdall Bottling Works was the only investigated site that returned a substantive industrial component and, in that case, few specialized industrial artifacts were found. The development of Wilmington's industrial base in the nineteenth century is a critical factor in the growth of that City, and should receive special attention on future projects.

No analytical contexts were identified during the Wilmington Boulevard Project that could be tied solely to black occupants. This was a major disappointment, as two formerly black occupied areas were investigated in search of such deposits. Future research should be sensitive to that data gap, and to investigating well-defined ethnic groups who contributed to the development of the city.

Future historical and archaeological research should be conducted to broaden the comparative base of the time periods and occupation types presented in this report. Again, historical and archaeological research of that type would not be redundant, but could materially add to what is now known concerning Wilmington's history and development. Constructing the history and development of any city through historical and archaeological research is a long-term venture. The Wilmington Boulevard Project represents a good, substantial first step in that process, that now must be built upon by additional, future research.