3. ETHNICITY, INDUSTRY AND AGRICULTURE

THE FIRST REPORT of this project (Heite and Blume 1992) addresses most planning considerations that drove the current project. Closer examination of the sawmill site, and inclusion of the Mosley tract west of McKee road, added dimensions of industrial archæology and ethnicity, neither of which had been addressed sufficiently by the earlier volume or by existing state preservation planning documents. During the review process, it became apparent that certain classes of cultural resource need to be further defined.

This discussion should not be necessary, but for artificial semantic and administrative partitions that have come to compartmentalize cultural resource activities. Resources are not well-served when particular disciplines are allowed to reserve certain site categories as their exclusive jurisdictions.

The preservation program divides all historic properties into categories of building, site, structure, object, or district. Over the years, these categories have been arbitrarily and sometimes illogically assigned to the exclusive supervision of certain disciplines, each with parochial interests and emphases.

ARCHÆOLOGY OF INDUSTRIAL PROCESS

Industrial archæology, as distinct from the historical archæology of industrial sites, is a discipline largely absent from Delaware cultural resource surveys and planning. The Delaware preservation program lags behind other industrial states in its attention to industrial archæology.

Regional and state industrial archæological surveys elsewhere have been much more comprehensive in scope and results. The National Park Service is committed to industrial archæology, or "IA," as its practitioners often call it. In western Pennsylvania, the Service coordinated one of the largest regional industrial preservation studies to date, the nine-county "America's Industrial Heritage Project." Half the steering committee were self-identified industrial archæologists (National Park Service 1991).

Industrial archæology is one of the last sudisciplines where amateurism is an essential component. An example of the amatuer-professional synergy is a recent 296-page comprehensive survey of iron, charcoal, and lime industry sites published by the Vermont Archæological Society in cooperation with the state preservation agency(Rolando 1992).

DEFINING RESEARCH QUESTIONS

By training and inclination, industrial archæologists are likely to focus on a process and the relationship of physical and social environment to the accomplishment of the process. Thus an industrial archæologist will define his subject in terms derived from verbs, such as bridge-building, gunpowder-making, canning, or sawing.

Traditionally-oriented archæologists, on the other hand, are more likely to begin their inquiry by defining data in terms of nouns describing things, rather than by references to ongoing processes.

Industrial archæology frequently obtains insights through analysis of standing industrial artifacts, settings, and even from industrial processes still being practiced. Some of the most useful industrial archæology studies have resulted in films of the last practitioners of disappearing industrial processes (Vogel 1969:92). The worker's context in the workplace is documented eloquently in such documentary films as *Working Places* and *Pioneer Axe*. Industrial archæologists emphasize changes in process, and the impact of those changes upon society, often beginning with workers.

Since technology has been a major instrument of social change during the past two centuries, an industrial archæologist must divide his attention between technology and the human environment. On one hand, he needs the expertise of a historian or practitioner of technology, while depending upon his or her own anthropological training to provide cultural context. Because such

diverse expertise seldom resides in the same person, industrial archæology seldom is a solo effort by a single discipline.

Theodore Z. Penn of Old Sturbridge Village defined the objectives of industrial archæology in a 1978 essay, quoting Webster's dictionary as his authority:

> "Archeology is defined as 'The scientific study of the material remains of past human life and human activities.' This definition establishes that artifacts are the primary source of archeological knowledge and it draws no arbitrary distinction between objects found above or beneath the ground. Industrial archeology, then, can be interpreted as the scientific study of the material remains of past human industrial life and activities, regardless of whether the physical materials are standing intact on their original site or lying buried in ruins. Thus, the primary concern of industrial archeology is with the material culture of industry in the past as a unique source of information about human behavior."

IA METHODS AND APPROACHES

Delawareans have been at the forefront of American industrial archæology. The Hagley property near Wilmington was one of the first examples of a systematic industrial archæological study (De Cunzo and Catts 1990: 91). Hagley's graduate program was, in the past, a major training ground for industrial archæologists.

A paper by Robert Howard of the Hagley Museum, entitled "Black Powder Manufacture," appeared in the first issue of *IA*, the journal of the Society for Industrial Archæology. The article was organized according to process stages and was illustrated with historic photographs of Hagley workers in action, ancient engravings, and museum models based upon archæological findings (Howard 1975).

Differences in emphasis between the archæological approaches are evident by comparing two recent studies. Canneries at Flemings Landing and Lebanon were investigated simultaneously in connection with bridge replacement projects by teams with different approaches, producing different results (Coleman, Hoseth, Custer, and Jaggers 1988; Heite 1990a).

The Lebanon data recovery was a typical industrial archæology project that concentrated on processes and the larger context of change in the canning industry. Collaborators included a tinsmith, to interpret craft remains, and an amateur local historian of the canning industry, to provide a specialist view of local industrial history.

The report on Flemings Landing, which did not extend beyond Phase II, contained no mention of industrial processes and cited no sources on the history or technology of the canning industry. While both schools have their strengths, it is difficult to justify investigating an industrial site without reference to the technology being studied.

A model for coherent multifaceted industrial archæology is the massive four-volume dissertation by Iain C. Walker (1977), which combined documentation, excavation, and observation of working pipe makers to produce a coherent technological and cultural chronicle of the pipe-making industry.

Walker, a British-trained historical archæologist, compared the technical vocabularies of pipe makers in different countries to supplement artifact data that helped him trace the movement of manufacturing technology. He showed that the name for a tool travels with its use, and can be as important to archæologists as the tool itself. His photographs and interviews of working pipe manufacturers helped to explain the pipes found in the ground and the excavated remains of pipe making sites.

INDUSTRIAL ARCHÆOLOGY IN AMERICA

Formal study of industrial archæology in America traces its separate origins to a meeting in 1967 at the Smithsonian Institution, attended by about 30 historic-preservation and museum professionals as well as a few "dirt" archæologists. Guest of honor was Kenneth Hudson, whose handbook on the subject recently had been published by the Council for British Archæology.

At that meeting, Hudson introduced the idea of above-ground archæology as a recording technique. While it was then a novel idea to Americans, the archæology of above-grade artifacts has a long and respectable history in British archæology. To an industrial archæologist, sites need not be buried, or even inactive, to be proper subjects

for study. Industrial archæologists apply archæological documentation methods more frequently to above-ground features than to buried ones.

The British term, "*Industrial* Archæology," brought immediate negative reaction from a few traditional archæologists working on American industrial sites, who rejected an archæological subdiscipline that included the participation of technological historians (Foley 1968), in positions where they might color archæological interpretation (Foley 1969).

The interdisciplinary nature of industrial archæology clearly has been distasteful to some American archæological purists, then and now. Industrial archæology relies heavily upon amateur (or at least non-archæological professional) participation. To the industrial archæologist, enthusiasts and craft practitioners are valuable collaborators, since they frequently possess detailed subject-matter knowledge or skills essential to understanding the evidence.

The opposition even went so far as to assert that archæological data can be valid only if it has been "exhumed" (Foley 1968). In response, an industrial archæologist pointed out that it is more efficient to record a building while it is still standing, or a declining industry while it is still practiced, than to wait until the human and material evidence had been buried (Vogel 1969). Some traditional archæologists, even if they are sympathetic to the IA point of view, are wont to point out that the subdiscipline sometimes fails (or declines) to reach theoretical heights achieved by other subdisciplines (Schuyler 1975). Some in the field are working to formalize its diffuse academic roots. A graduate industrial archæology program at Michigan Tech "emphasizes a truly interdisciplinary approach and fuses the individual perspectives of archæology, history of technology and anthropology" (Lankton 1992).

INDUSTRIAL ARCHÆOLOGY IN DELAWARE

When the Society for Industrial Archæology formed in 1971, Delaware's Hagley Museum was prominent among the institutions represented, together with the National Trust, the Smithsonian Institution, and the Historic American Engineering Record (Hyde 1991). Delaware's early national prominence has not been reflected in the subsequent state preservation program

In spite of Delaware's primacy in the field, the state's preservation plans ignore the peculiar nature of industrial archæology as a definable subdiscipline closely related to, but not necessarily always a part of, historical archæology. The state management plan for historical archæological sites addresses industrial and engineering sites under the domain of "manufacturing and trade," a catch-all that also includes some aspects of agriculture, home production and consumer behavior. Themes in this domain cover virtually every remunerative pursuit except education and religion. (De Cunzo and Catts 1990:121).

The plan, like the entire federal program, arbitrarily cuts off the temporal span of archæological interest at the "early twentieth century" (De Cunzo and Catts 1990:21). This arbitrary cut-off does not coincide with the theoretical orientation of the typical industrial archæologist.

A recent or contemporary site that embodies very old craft processes may provide significant data relative to a much earlier time. The date of the physical evidence may therefore be less important for their purposes than the age of the knowledge that went into its creation.

A valuable industrial archæology resource, for example, was a shop operated until a few years ago by a Dover letterpress printer. It was built in 1960, to house a business that had been established a century earlier. The proprietor, Lena Simmons, had worked with the same type and equipment for 75 years by the time she retired at 95.

While the tools and type were useful ninteenth-century artifacts or valuable antiques, the site *as a whole* possessed industrial archæological value primarily because the owner was able to recount folkloric details of how the equipment had been used, and the circumstances surrounding acquisition of particular items. Relative locations of shop equipment was particularly important to the final record. The resulting yet-unpublished study is decidedly archæological, and already has been used to interpret shop sites that were conventionally "exhumed" (Heite 1990b).

DELAWARE'S CRITERIA FOR EVALUATION

In order for an industrial site, or any other site, to be eligible for the National Register, it must possess significance and integrity. The plan (De Cunzo and Catts 1990: 195-196) identifies five criteria for evaluating the significance of historical archæological sites:

1. Documentation
2. Archæological Integrity
3. Representativeness
4. Research questions and needs
5. Association with a person

Documentation may not be as simple as first appearances would indicate. Industrial sites are well documented. Business records are, after all, voluminous wherever they are kept. However, most business records are transactional. Plans of machinery, correspondence about innovations, and other operational evidence, seldom survive. When it comes to workplace environment and the lives of employees, even the best business records are inadequate. Archæology can expand on the written database in the areas of technological innovation, labor conditions, and worker attitudes.

Integrity, a prime consideration in any determination of eligibility, is a sliding scale of relative values. A fully intact factory, from which waste materials have not been removed, would be the pinnacle of integrity. A few such survivals have been recorded, in technological backwaters where ancient workers continue to work at equally ancient machinery, carrying out obsolete processes.

Below that level, integrity must be evaluated quantitatively against a site's ability to provide information. Intact machinery, or evidence of machinery locations; dispositions of waste; and evidence of larger site layout, are all elements that must be evaluated in order to determine relative integrity.

Delaware's historical archæology management plan contains standards for archæological evaluation (De Cunzo and Catts 1990:194-197). According to these standards, archæological integrity is evaluated under two criteria: temporal and physical, echoing the classic three literary unities of time, place, and action.

In the fast-paced world of industrial innovation, age is relative. Innovation can render very new installations obsolete in far less than the fifty-year traditional span espoused by the National Register. By the time some technologies are fifty years old, there are no examples left to evaluate.

Computers and typesetting machines twenty years old are museum pieces. Whole industries have been created and disappeared in much less than a half-century. Clearly, temporal parameters must be adjusted in such cases, as a matter of course, during the planning process.

Physical integrity, in the historical archæological sense, includes below-ground and above-ground architectural remains and land use. In the words of the plan, "The cultural landscape is to be seen as one other resource type, supplementing the documents, archæological remains, and surviving architecture."

Representativeness is an attribute that must be sharply defined. Is the site representative of the common run of such sites? Or does it represent the cutting edge of a technology? This concept is best expressed statistically.

Research needs must be considered from several points of view. Each industry, as well as each region, has its research concerns. On the Pacific coast of Canada, salmon canneries are as important as tomato canneries in Delaware (Newell 1987). A student of the canning industry in general will be interested in both, but a student whose perspective is Delaware history will not necessarily be interested in salmon canneries. Industrial archæology, by its nature, speaks to diverse research agendas. It is the responsibility of any on-site researcher to understand and serve the needs of distant users in disciplines other than his own.

Failed innovations are particularly interesting to historians of technology because they represent directions not taken by industry. Sites of fruitless experiments, while not representative, may hold considerable research value, since they might help explain why certain changes did not occur.

No survey with an industrial component is responsive to the data resource until it has been linked to the research needs of those studying similar sites worldwide, regardless of their academic orientation.

Association with a person, from the perspective of the National Register program, has been held to mean famous leaders, or otherwise exceptional individuals.

Unfortunately for the historical record, industrial historians and industrial museums have traditionally slanted their messages to reflect the accomplishments of rich white male industrialists who are their principal source of funding. Traditional industrial interpretation therefore tends to emphasize associations with "famous" people who headed companies or unions. Indeed, the academic study of "labor history" is more often the study of labor leadership rather than laboring people.

Industrial and labor historians were among the last to to embrace the more egalitarian principles of the New Social History movement or the eclecticism espoused by Braudel and the *annales* historians. As a result of this retarded evolution, the literature of industry and labor remains heavily larded with "great men" histories.

Recent researchers on industrial sites have sought to study the ordinary industrial operative, whose daily grind was largely ignored by traditional histories (Lowe 1982). Archæological investigations of rooming houses at Lowell, or steel mills at Birmingham, have raised new questions about workers as individuals, rather than as a collective element in abstract economic equations.

INDUSTRIAL CONTEXT RESEARCH NEEDS

Because Delaware's preservation plans fail to address the distinct subdiscipline of industrial archæology, it will someday be necessary to develop a ranking scheme for screening sites (Heite 1990a:115-117).

Toward that end, some questions might focus the issue of significance in terms of the archæology and history of industry:

1. What was the relative historical or economic significance of this industry, expressed statistically, during the period represented at the site?
    a. What percentage of the state's workforce was employed in this industry?
    b. What was the dollar value of output from this industry during the period in question?
    c. How many establishments existed during the period in question?
    d. Is this operation representative, or an exception?
2. What are the technological landmarks in the history of this industry?
    a. Does this site exemplify one of the technological landmarks?
    b. Did this site or its operators participate in a technological innovation that was to be significant in the history of this industry?
3. What innovations in the history of this industry occurred, or are represented, in Delaware?
    a. Are these innovations represented at the site in question?
    b. How many Delaware sites contain expressions of these innovations?
4. Compared to the integrity of the other sites in Delaware, what is the relative integrity of this site?
5. Can this site yield information about labor relations or working conditions?
    a. Is there evidence on the site to shed light on labor-history issues, such as:
        automation
        unionization
        industrial hygiene
        machine-operator safety
        ethnicity
        gender
    b. Can the site yield information concerning diet, living standard, or family structure of workers or their relatives?

These five questions touch upon all four of the National Register criteria, the most obvious of which is criterion D, a site's ability to provide historical or archæological information.

Significance on any industrial site should be evaluated in terms of data quality, a concept of integrity that is used effectively in Delaware to evaluate prehistoric sites (Custer 1986:188). If the purpose of registering any archæological site is to recognize our need to obtain information it can provide, it follows

that industry-wide data quality should be a primary consideration in the evaluation of any site.

For example, we have exhaustive, high-quality, information (good data quality) on the grist mills of Delaware, but our surveys have recorded almost nothing (poor data quality) on pit sawing. Saw pits are therefore a higher priority, under criterion D, than grist mills, because any saw pit can increase knowledge to a greater extent than any grist mill.

Recognizing Industrial Questions

Evaluations of significance under criterion D are possible only if one first recognizes the existence of evidence, and the possibility that the evidence might be useful to someone. Since industrial archæology is interdisciplinary, it is, by definition, impossible to assess any site's potential information value within the confines of a single academic specialty.

An example of this tendency to ignore the possibility of interdisciplinary questions occurred a few years ago. A 200-foot segment of the New Castle and Frenchtown Railroad right-of-way was about to be destroyed. The property is listed in the National Register, but it was destroyed without test excavation. The investigators noted, " ... since it consists solely of the bed on which the stone sleepers and rails were originally laid and later removed, it does not have associated archæological materials." In other words, railroad beds are, by declaration, not archæologically interesting (Lothrop, Custer and De Santis 1987:99).

In fact, the site was the place where experimental rail on wooden crossties were installed on one track, next to another track with the older system of iron rails on stone sleepers (Holmes 1962:178).

The wooden railway was built on a line of parallel pine sleepers or mud sills buried in the right-of-way. Crossties were laid on the mud sills, and a wooden rail was attached to the crossties. A piece of strap iron was commonly attached to the wooden rail to take the beating from the rolling stock. Whereas an English railroad on stone sleepers cost $180,000 per mile to build, a wooden line could be built in America for $20,000 to $30,000 (White 1976:38-39).

Strap iron rails had earned a bad reputation for durability and safety even then. The New Castle and Frenchtown introduced experimental two-piece iron rail, which proved more durable (Scharf 1888:429).

This innovation ultimately facilitated the expansion of American railroads across the continent, freed from dependence upon expensive stone sleepers. Because the railroad operated for only two decades, this particular roadbed should have suffered few changes and rebuildings. Investigation in the right-of-way could have provided valuable information about the development of an innovation that profoundly affected our national growth.

Examination of the roadbed could have provided design details of the innovative mud sills and crossties, but more importantly could have revealed changes, rebuildings, and problems that were not documented. Experience has demonstrated repeatedly the gap between written engineering records and actual field conditions uncovered archæologically.

The importance of studying this, or any, undisturbed historic section of early railroad would have been obvious to an industrial archæologist, but none were consulted.

In contrast to Delaware's ambivalence, New Jersey's preservation office mandates excavation of railroad sections, ranging from the pioneering Camden and Amboy to the Trenton-Princeton light rail electric line (Jonathan Gell, personal communication; Bello and Grubb 1988).

In Maryland, Hurricane Agnes revealed several experimental sections of the original Baltimore and Ohio roadbed, which was reported by industrial archæologists. Even though the experiments had been documented 160 years ago, unrecorded details were revealed by industrial archæological examination (White and Vogel 1978).

If industrial archæological remains are to receive attention in Delaware equal to their historical importance, the planning process must explicity include the tools of industrial archæology. Usefulness of any evidence can be assessed only after it has been recognized, which is not always the case.

ABOVE-GRADE ARCHÆOLOGY

As the Secretary of the Interior's guidelines point out, "Archeological documentation may be an appropriate option for application not only to archeological properties, but to above-ground structures as well, and may be used in collaboration with a wide range of other treatment activities." (*Federal Register*, volume 48, number 190, Thursday September 29, 1983, p. 44736).

Standard practice today requires that standing buildings be evaluated archæologically, on the assumption that the archæological approach can extract cultural information as easily from a building as from a hole in the ground (National Park Service 1985: 38, 72). This concept was considered radical in the extreme when Kenneth Hudson introduced it, 25 years ago.

The landscape itself is an artifact rich in cultural information. Plantings, fencelines, ditches, and even plowscars may eloquently testify to the education, sophistication, and ethnic background of a site's occupants. While formal garden layouts have been lavishly recorded since the earliest days of HABS, only recently have archæologists begun to appreciate the potential value of landscape analysis as a mirror of the human condition (Kelso and Most 1990).

RECORDATION STANDARDS

Above-grade engineering and manufacturing sites are recorded and evaluated within a documentary framework established by the Historic American Engineering Record (HAER), which differs little from traditional, "dirt," archæological documentation (National Park Service 1989).

Although it is an administrative offspring of the older HABS architectural documentation program, HAER is more concerned with the history and technology of its subjects than with superficial appearances. A longtime collaboration with the American Society of Civil Engineers has resulted in the acclaimed HAER bridge documentation program, which chronicles civil engineering, sometimes in a multimedia format (Allen 1983). Delaware bridges were inventoried by HAER, and a later survey with different parameters was published by the Department of Transportation (Spero 1991).

HAER explicitly recognizes "that manufacturing or other processes that took place in the building were often more important than the building itself." An example of this orientation is the report on the Wilkerson brickyard in Milford (DE-5), in which one of the three sheets is devoted to a pictorial flowchart of the brickmaking process (Bruegmann 1983:220). HAER recording teams usually are interdisciplinary, including historians of technology, architects, and engineers.

Documentation may take the lead role in an industrial archæology project. A recent North Carolina archæological project was designed primarily to shed light on patents held by a former owner, which were significant in the history of the naval stores industry (Robinson 1991).

ETHNICITY IN CULTURAL RESOURCES

The ethnic dimension of cultural resource surveys can be narrowly restricted or broadly misapplied. In only a few cases has ethnicity played a major role in Delaware survey designs, but most surveys, intentionally or unintentionally, focus on specific ethnic and social groups.

Prehistoric studies deal exclusively with long-dead native Americans, which is logical in view of the fact that they were the only people who were here during the period.

Less logical is Herman's assertion that his book on Delaware rural architecture represents a "cross-section" of rural life in central Delaware. In spite of its claim to universality, the book deals exclusively with the works of prosperous white males, who were in fact a minority (Herman 1987:10).

Delaware cultural resource surveys seldom focus on the ethnicity of site creators, but there have been exceptions. A Nanticoke Indian survey in Sussex County resulted in registration of a group of buildings with ethnically identifiable builders. On Wilson's Run in New Castle County, inclusion of stone walls in a project area prompted discussion of the Italian stonemasons who built them (Heite 1992).

Opportunities to archæologically identify material manifestations of ethnicity have been missed, sometimes because other evidence of ethnicity seemed more easily obtained. Mere existence of a coherent ethnic

enclave has been sufficient to declare a site's significance, without marshalling cultural information potentially available from examination of either buried or exposed artifacts.

The result of reaching broad conclusions on scant evidence is a hollow and self-limiting survey that succeeds in labelling resources without fully assessing their ethnic significance under criterion D.

Belltown, an African-American enclave near Lewes, was found eligible for the National Register under criterion A, because of social continuity reaching back to the early nineteenth century, even though most of the standing built environment belongs to the present century (John Milner Associates 1990:63-104).

This continuity, evident from the documentary record but absent from the above-grade remains, could have been demonstrated by reference to below-grade remains. Potential archæological significance in the Belltown district was dismissed on the basis of sixteen shovel test pits in three tofts. Moreover, there was no attempt to identify physical evidence of the documented voodoo-like cult practices that have long distinguished the community (John Milner Associates 1990:55-59).

Other groups of Delawareans have been lumped. While obvious ethnic associations are irregularly noted in survey input, literature about Delaware historic sites does not contain coherent large-scale surveys of sites associated with particular ethnic or racial groups.

On the other hand, it is easy to define "worker housing" or "tenant houses" or "peach houses" from data provided by existing synoptic surveys (Catts and Custer 1990:34-38). Thematic studies under these titles have been part of the Delaware cultural resources program since it began.

Such classifications reflect the dominant culture that built the houses, and not necessarily the persons from other backgrounds who used them. Tenant houses, as well as the owners' mansion houses, belonged to symbolic spatial systems that reinforced the dominance of the European-American hierarchy. Any label that describes a position in this hierarchy is, therefore, merely a relative economic or social determnation, and not descriptive of the occupant himself.

Consequently, we have no body of survey data organized or indexed in a way that will permit us to define site-types peculiar to nineteenth-century native American remnant groups, or to differentiate them from blacks, or from any other such divisions of people.

A good prototype for an ethnic property-type survey was an Ohio study. Researchers identified nineteenth-century African-American residents in a predominantly European-American region. These peoples' residences were then mapped and compared to other demographic information. Then "typical" or "characteristic" architectural features were identified and distinguished from housing stock built for the surrounding culture (Brown 1982).

If, on the other hand, the housing stock is not originally designed and built to reflect the self-perceived needs of the resident culture, it becomes necessary to study the features the residents add to the imposed housing. Urban settings in and around Wilmington have yielded considerable artifact data about ethnic urban neighborhoods, but the buildings themselves possess little interest in this regard (Goodwin 1986:33, 42, 108).

Poorly-endowed groups, notably slaves and groups represented largely by poor people in cities, were compelled to reside in domestic settings imposed by the dominant culture. Some of the imposed housing types did not conform exactly to a resident group's concept of a proper home, and modifications occurred. These modifications might be as obvious as the placement of yard ornaments (Sciorra 1989), or as subtle as the distribution of activities within component parts of the toft.

Too frequently, academically qualified architectural surveyors with an art-historical orientation have dismissed ethnic adaptations as "tacky" intrusions that compromise a property's integrity. Instead, such changes are integral to understanding a site's history (Bishir 1984:12).

If a standing structure is evaluated archæologically, rather than merely architecturally, such adaptations logically should be evaluated as culturally significant

artifacts, contributing to an understanding of the property, and not merely as intrusive later decorations.

Archæological treatment of ethnicity in above-ground resources is an established and proven methodology. Archæologist Jo Ann Cotz, as part of an industrial archæological project, studied ten lots in a workers' housing area called Dublin, Paterson, New Jersey. She observed that the original Irish owner-occupant builders had conformed roughly to a community standard, but with individual variations. Changes wrought by each successive ethnic group could be traced in the architectural artifact inventory. Remarkably, the report contained only passing reference to excavated materials, even though the study was published in an archæological journal (Cotz 1975).

Leland Ferguson's archæological and ethnographic study of slave-occupied ante-bellum sites recounts the friction between African concepts of housing and the buildings imposed upon slaves by masters. By finding elements of African house types and spatial organization in slave dwellings, Ferguson was able to give meaning to otherwise ambiguous documentary references, and to attach significance to peculiarities of slave housing that had gone unrecognized (Ferguson 1992). Other archæologists interpret the architecture of slave dwellings as an expression of owners' ideology imposed on a subject group (McKee 1992).

It is clearly possible to determine, through archæological survey, spatial and architectural patterns that define a particular ethnic group's domestic arrangements, value systems, and taste. As Ferguson, Cotz, and others have shown, it is first necessary to identify those attributes that could have been controlled by the subject group, and then to determine, by survey, how those characteristics were manipulated in an ethnically peculiar way that can be recovered archæologically.

A remarkable example of artifact patterns yielding ethnic evidence occured in recent re-analysis of formerly reported London medieval Jewish sites. By reviewing the artifact assemblages from several sites, the researcher found a Jewish artifact pattern as clearly defined as South's Carolina pattern (Pepper 1992).

ETHNIC RESOURCES IN DELAWARE PLANS

Delaware's "framework of historic context elements" (Ames, Callahan, Herman and Siders 1989:21) is arranged according to a group of 18 themes, ten of which refer to occupations, such as forestry and manufacturing.

The other eight themes, classified under "cultural trends," refer to diverse aspects of human activity, such as religion, major families, and engineering, with no apparent internal organization among them. Ethnicity is absent as a separate theme, but is discussed under "11. Settlement patterns and demographic changes," which is identified in the state plan as the highest priority for planning purposes.

Since ethnicity is as universal (and probably as ancient) among mankind as bipedalism, it is a logical way to organize surveys. However, if ethnic data was not systematically gathered during the collection phase of a survey, it is nearly impossible to extract ethnic information after the fact, from inadequately designed survey data.

Sites with ethnic significance, including the buildings on them, may be eligible for registration as possible sources of information under criterion D, if

1. there is documentation of ethnic affinities that unite a group of properties; and
2. integrity is sufficient to potentially provide data on distinctive ethnic traits.

These data requirements are similar to the data required under other historical archæologial categories by the state plan.

ARCHÆOLOGY OF AGRICULTURE

In the first report of this project (Heite and Blume 1992:80-97), the authors discussed the archæological potential of agricultural features. In that report, it was suggested that examination of a field might shed light on the economic and educational levels of the farmer. Drainage structures, plowscars, fertilizer residues, hedgerows, and artifact scatters might provide valuable social or cultural evidence.

Toward this end, British industrial archæologists have applied their techniques

and approaches to agricultural sites with some success. A study of the industrial archæology of farming in England and Wales (Harvey 1980) identifies nine areas of archæological investigation as chapter heads:

Reclamation of waste
Fields and field systems
Water supplies and irrigation schemes
Sources of fertility
Field drainage
Historical crop varieties
Historical breeds of livestock
Tools, implements and machines
Farm buildings

These chapter headings could be adopted as a framework for developing a specifically agriculture-oriented industrial-archæological thematic study.

Gentrification, an important theme in Kent County history during the eighteenth century, took a practical turn during the nineteenth century. The gentry kept in touch with ideas from throughout the world. Educated and worldly, they were likely to introduce new fashions quickly. They sent their children away to schools and bought their clothing in the cities (Heite and Blume 1992:22).

During the nineteenth century, the educated and worldly-wise elite turned their attention to agriculture, and introduced new tools and techniques. These "book farmers," as they were sometimes called, should have left their imprints on the fields.

Innovations included the introduction of hedge plantings, new cultivation equipment, ditching systems, draintiles, and new crops, all of which should leave an imprint on the archæological record. Plow scars might betray the exact type of tillage equipment being used. Soil chemicals and the remains of manure can speak volumes about husbandry practices.

Each introduced plant species has a story to tell about the farmer who planted it. Osage orange in the hedges almost certainly was planted during the early nineteenth century. White mulberry trees were planted during the silk craze of the first half of the nineteenth century. Even grass species can be traced to specific introduction dates through the agricultural literature.

Such features could testify to the social and educational level of the farmer. If acceptance of technological change is a badge of the nineteenth-century gentleman farmer, absence of change may indicate the opposite.

However, survey data is not yet sufficient to compile a valid social and class scale that can be applied to agricultural remains. In order to use this valuable class of data, it will be necessary to accumulate more input than is currently available. Cultural resource studies should gather agricultural data, so that someday it can be evaluated against a meaningful data base.

Agricultural remains, such as ditches, hedgerows, chemistry, manuring residues, plow scars, abandoned machinery, outbuildings, and other features, should be evaluated under criterion D, like any other archæological evidence, above-grade or buried. To exploit the information potential of agricultural technology sites, the classic industrial archæology collaboration of an archæologist and an historian of agricultural technology is indicated. The outcome, while archæological in format, should address the research requirements of the agricultural historian.

Ethnicity, Status, and Agriculture

In the current project area, the community west of McKee Road was farmed by an identifiable and tight-knit ethnic group, the moors, whose farming practices may exhibit distinct characteristics. These characteristics might, in turn, reflect educational level, ability or willingness to obtain up-to-date equipment, and attitudes toward expenditure of labor.

From documents, we know that these people bought unproductive, poorly-drained wasteland and turned it into self-reliant small farms. Their undeniable industry increased the value of their land. Since their fields remain untouched by surrounding suburban sprawl, they are potentially a valuable resource for studies of status, social scale, ethnicity, and agricultural technology. The relatively small project area contains examples from virtually the entire socio-economic scale of nineteenth-century farmers. The project area potentially provides unparalleled opportunity to study *both* agricultural dimensions of historical archæology and the industrial archæology of rural occupations.