

1980

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INDUSTRIAL ARCHAEOLOGY: WORLD SYSTEMS AND LOCAL ENGINEERS
WORKSHOP REPORT

Report prepared by David R. Starbuck

Workshop Participants:

Karl Finison, University of Massachusetts/Amherst
Mike Folsom, Massachusetts Institute of Technology
Frederick J.E. Gorman, Boston University
Ross McGuire, SUNY/Binghamton
David Poirier, Connecticut Historic Preservation Office
Ed Rutsch, Historic Conservation & Interpretation, Inc.
David R. Starbuck, Boston University
Fred Warner, Central Connecticut State College
John Worrell, Old Sturbridge Village
John S. Wilson, U.S. Army Corps of Engineers

Our discussion covered many of the concerns which industrial archaeologists have, with some of these interests being shared by prehistorians and historical archaeologists, while others are not. Our group consisted chiefly of anthropological archaeologists and field archaeologists, and as a result, our discussions had a decidedly anthropological bent, placing our conclusions outside the mainstream of the field. Because industrial archaeology is numerically dominated by historians of technology, architectural historians and engineers, their absence from this workshop led to more uniformity of opinion than might otherwise have been the case.

Our workshop covered five key topical areas, and these will be discussed in the following sequence:

1. Definition of the field.
2. The current state of the field.

3. Ways in which to improve the quality and scope of future research.
4. Specific projects to be undertaken by workshop participants.
5. Means of implementation.

Definition of the Field and the Role of Anthropology

We began by discussing what we are, and what we hope to accomplish as industrial archaeologists. This theme was raised frequently, but there was little agreement as to what defines an "industrial archaeologist." Industrial archaeology deals with all aspects of industrial society including "industrial sites," systems of production, and related aspects of technology, such as transportation systems. However, this is not the same as knowing precisely what our objectives should be and how we should accomplish them. It was agreed, nevertheless, that industrial archaeologists must be eclectic, not just borrowing ideas from other disciplines, but actively collaborating with professionals from many fields, pooling resources and approaching the complexities of industrial sites with a rigorous team approach. Prehistoric archaeologists often work alone, or with only one or two colleagues. While this may sometimes be justified, industrial archaeologists cannot afford to be so pretentious about their own skills. Available data from industrial sites is infinitely more complex than that available to prehistorians and its study usually requires many more specialists working together. Anthropologists can contribute to this work, chiefly in the form of excavations at sites and in terms of specific anthropological theories and methodological approaches. However, anthropologists, by virtue of their training, do not know the vast literature on American technological history and are better prepared to research industries for which little is presently known (e.g., rural industries of the seventeenth and eighteenth centuries). Also, they should try to devise and answer those research questions which archaeology is best-equipped to answer. Duplication of effort has not yet been eliminated by better communication among the experts in the various subfields of industrial archaeology, and until this happens there will continue to be little awareness of what meaningful research questions are.

Specific topics which were discussed included the following:

1. What is the likelihood that industrial archaeologists will be accredited by the Society of Professional Archaeologists (SOPA)? It was agreed that this was a distinct possibility, but that this would be desirable only in the case of those who excavate industrial sites.
2. Who is qualified to dig an industrial site? Very few persons are qualified to dig industrial sites, and no one is qualified to dig more than the few categories of sites for which he/she

has specialized training. Historians of technology and architectural historians who lack excavation training are not qualified to excavate sites, nor are anthropological archaeologists when they are not familiar with the industry being studied. "Knowing the industry" or "knowing how to dig" are not adequate qualifications by themselves unless, perhaps, in a salvage situation. Instead, a collaborative approach--combining the skills of both groups-- is required.

3. Can anthropology play a role, or are anthropologists qualified only to deal with other, non-Western societies? It was agreed that an anthropological, problem-oriented perspective can make useful contributions to industrial archaeology. This applies both to the corpus of social anthropological theory, especially that dealing with urban societies, and also to the more explicitly problem-oriented, hypothesis-testing aspects of anthropological archaeology.
4. Are historical and industrial archaeologists doing basically the same thing, or are the two fields qualitatively different? While historical archaeologists also work with written documentation, sites, and artifacts, they are rarely qualified to undertake most aspects of industrial archaeology. This is not to say that historical archaeologists haven't dug industrial sites--they have and very often using exactly the same techniques that they previously used on domestic sites (frequently these are techniques developed by and borrowed from prehistoric archaeologists). However, the level of technology represented at most industrial sites is usually much higher and requires more specialized knowledge than the historical archaeologist can normally bring to bear. Historical archaeologists cannot assume that their digging and archival skills will see them through the complexities of industrial sites. Consequently, while aspects of both fields can be seen as overlapping, at the same time they are qualitatively different.

The Current State of the Field

Industrial archaeology is still in its infancy and has been going through a purely descriptive state with much collecting and inventorying of data, but rarely with any effort being made to pose or answer specific research questions. The Historic American Engineering Record (HAER), the governmental agency responsible for much of the inventorying of industrial structures in this country, has chiefly recorded above-ground buildings and machinery, the remains of 19th century industry, and especially the remains of the textile industry. Inventory work of this type has commonly been done for single industries and for limited geographical areas, but not very systematically and without sufficient regard for below-ground industrial resources.

Data collection per se is essential in view of the rate at which industrial sites are being written off and destroyed. After all, we must first know what is there and what is significant before we can take steps to protect it for the future. However, a concern with sites and with objects is not enough over the long-term. Even as data is being collected, we must be concerned with questions about the industrial dimension of human behavior, cultural changes and processes, with systems of interrelated industries, and with "the person behind the object." These are areas in which industrial archaeology is poorly developed and falls behind other types of archaeology.

Clearly a sound theoretical base for the field is lacking, yet many industrial archaeologists insist that inventorying is sufficient in itself. This was not the sentiment of most members of our workshop, who urged the development of a more explicit problem orientation in industrial archaeology.

Group Research Goals

We discussed the areas in which industrial archaeology can hopefully improve over the next five years and beyond. These are problems or topics which were individually suggested, but which the whole group agreed were important (many other suggestions could, of course, be added to this list):

1. We must develop better techniques for conducting both field inventory and analysis.
2. We must share data more effectively and publish more (even purely descriptive reports are better than none.)
3. We must better educate the public and other professionals and demonstrate the relevance of industrial archaeology to other fields of endeavour.
4. We must develop greater research diversity in terms of geographical areas, topical areas, and types of industry being studied.
5. It is especially important to concentrate research upon the proto-industrial period, stages of technological transition, and the role of industrial technology in promoting extreme cultural change.
6. We should study the effect upon manufacturing of changes in the physical and cultural environment (e.g., changes in agricultural practices, in water runoff, etc.).
7. There should be more energy studies that focus on the dynamics of inputs and outputs from specific industries.
8. It is necessary to develop a more systemic and holistic

approach, not just studying relationships among primary industries, but also analyzing the contributions of low technology industries.

9. We should study the evolution of market structures as they relate to production and concurrently study the change from a purely local orientation to a broader world view.
10. We must look at theories of industry and management to learn how perceptions of industry have changed through time.
11. We should develop both a practical and a theoretical justification for what we're doing. It isn't adequate to record data or to urge preservation merely because the resource exists.
12. We will have to establish the significance of specific industrial sites and of categories of sites, and to do so we must be able to generate research questions which are significant for each type of industry. Not all sites can be protected, and we cannot expect all new construction to cease while we decide what can and cannot be disturbed. Instead, we must determine what is and is not significant if any industrial sites are to be conserved for the benefit of future research.

Individual Research Goals

The above research questions were proposed on a broad, general level because the group wanted to reach some unanimity on future directions for the field.

Going beyond this, we wanted each participant to be able to set some goals and priorities for himself for the next five years so that our discussions would move from the realm of the abstract to that of reality. It was here that our respective interests proved to differ the most, with concerns ranging from inventory work to problem-solving to explicit hypothesis-testing. Each set of goals is summarized as follows:

1. Karl Finison (U. of Massachusetts, Amherst) wants to develop models to demonstrate the structure and functioning of socio-cultural systems in America during the nineteenth century. He wants to understand the relationships among changes in demographic, social, technological, and environmental variables; to study changes in time and energy relationships, and the forces leading to the decline of agriculture and the rise of industry in the Northeast. On a somewhat more specific level, Finison wants to develop energy flow models for nineteenth century rural agricultural communities and regions.
2. Mike Folsom (Massachusetts Institute of Technology) wants to do representative studies of specific industrial communities, using these as models for understanding community structure elsewhere. While it is necessary to do region-wide inventories as well as

intensive, comprehensive studies of representative industrial sites and communities, it is the latter which Folsom plans to focus upon.

3. Frederick J.E. Gorman (Boston University) is evaluating the relevance of industrial management theory for an anthropological understanding of the interaction between social and technological dimensions of glass manufacturing at the New England Glassworks (1780-82), Temple, New Hampshire. He has developed an analytical framework that combines fundamental aspects of Organization Theory with Operations Research to yield a set of basic management decisions that are known to confront modern industries and quite likely the colonial glass factory as well. Organization of glassmaking operations at this rural industrial community is defined in terms of raw resource procurement, labor holding, materials transformation, or manufacture and product release. Managerial cost-benefit decisions in each of these components are modeled in terms of the archaeological remnants of basic industrial operations, i.e., allocation of activities to resources, inventory holding, maintenance versus replacement, waiting or delay time, and competitive strategy.
4. Ross McGuire (SUNY/Binghamton) wants to do two projects: a) to conduct a regional survey to examine the relationship between the development of regional and interregional infrastructure and the growth of centers of rural manufacturing in central New York; and b) to develop a model for environmental change and technological adaptation for hydropower sites throughout the course of the nineteenth century.
5. Ed Rutsch (Historic Conservation & Interpretation, Inc., Newton, N.J.) would like to make a series of films or television programs on vanishing American industries. The focus would be on people working in their everyday industrial settings. Additionally, Rutsch plans to continue research on the West Point foundry site in Cold Spring, New York incorporating into his research design the work of other specialists, developing a design for stabilizing the site's resources, and establishing an interpretive design for the site's use. Rutsch also wants to write books on the nineteenth century industrialization of the Hudson River Valley in New York and the Passaic River Valley New Jersey. Further he wants to prepare a master plan of presentation and interpretation for the industrial sites in the New Jersey State Park System.
6. David R. Starbuck (Boston University) is currently conducting an inventory of rural Shaker craft industries, mills, dams, and land modifications at the 4000-acre Shaker Village in Canterbury, New Hampshire. This work will be continued for the next 2-3 years in order to understand better how labor was mobilized in a communal society and to learn the extent to which the development of Shaker industry was a function of limited

local agricultural potential. On a larger scale, Starbuck would like to organize a state-by-state survey or inventory of all rural mill sites in New England (gristmills, sawmills, carding mills, etc.) in order to facilitate their definition and preservation. This would minimally include walk-overs and the assembling or preparation of photographs, line drawings, dates of operation, information on power systems, production capacity and other historical data for each site, coupled with recommendations for preservation or adaptive reuse.

7. Fred Warner (Central Connecticut State College) wants to examine periods of rapid growth in Connecticut, especially with regard to: a) transportation (horse, canal, railroad); b) power (water, steam, electricity); and c) location. Additional variables to be studied will include access to raw materials and fuel; entrepreneurial expertise; and labor sources, especially the pool of skilled labor.
8. John Worrell (Old Sturbridge Village) wants to conduct a holistic investigation of a proto-industrial community, including field research into both primary and support (low technology) industries. This would involve much documentary research, study of demographic fluctuations, architectural analysis, research into all material culture categories, field excavation and recording, and natural and physical scientific analyses (e.g., soil analysis, dendrochronology, trace-element analysis by neutron-activation on domestic and imported redwares, etc.) This would be accompanied by technology studies; historical (archaeological) experimentation; energetic studies; contextual comparisons with sampled community systems in similar and differing situations; and finally the community would be restored to function for purposes of education and experimental research.
9. John S. Wilson (U.S. Army Corps of Engineers) wants to test an explicit, preliminary hypothesis involving decision-making by mill-builders among small, early, low-capital industries. The hypothesis states that the earliest mill(s) in a given township would have been located at the site(s) of optimal horsepower potential. Later mills would have been constructed at sites of decreasing horsepower potential when viewed diachronically (except when there was multiple use of a high horsepower potential site by several mills). Data to be considered in the study would include: a) the present horsepower potential for small dams; and b) locations and date for known mill sites within the study area. Some of the factors which might affect the hypothesis would include the horsepower requirements for each industry; transportation networks; capitalization; and markets, labor, and resource loci.

Implementation

The above-mentioned objectives, those of individuals as well as those of the entire group, suggest many different directions in which we can and should be moving. However, recognition of deficiencies and achievement of partial consensus on future objectives are only a preliminary step in changing the goals and focus of the field. This led to a discussion of possible means of implementation, ways in which we could bring our goals to fruition.

It was agreed that training programs must be developed which will raise our level of professional competency, bring more, better-trained students into the field, and interest the public at large in visiting, recording, and preserving industrial remains. Two ways in which this process can be accelerated are: 1) to encourage our respective universities or institutions to create internships or scholarships to fund students desiring to work in industrial archaeology; and 2) to develop field schools for industrial archaeology which will expose students to all aspects of the field (i.e., industrial history, above-ground recording techniques, subsurface excavation, and aspects of problem-solving).

The Historic American Engineering Record, while it trains small numbers of summer interns in recording techniques, cannot and should not be expected to provide all of the training in this area. Furthermore, training is not the primary objective of HAER. HAER offers its interns no experience in archaeological excavation; it has no true research orientation (it simply records); and it is severely limited in what it can accomplish on each project by the availability of local matching funds.

Unfortunately, there are very few universities at the present time which offer extensive training in any of the subfields of industrial archaeology, and too much has been neglected and left undone because of the assumption that "only HAER" is qualified to do field surveys. This is ridiculous, both practically and conceptually, and it behooves interested institutions to become more active in developing recording methods and training programs in their respective geographical areas. We agreed that we all must do more to encourage historic preservation and, when desirable, adaptive reuse of industrial structures. However, no firm decision was reached as to how to accomplish this objective.

Finally we addressed the issue of significance and agreed that an important initial step in the monitoring and protection of industrial resources would be to prepare a series of "how-to" manuals in industrial archaeology, describing what categories of remains could be classified as "significant" resources and listing research topics which should be addressed in each of the specialized subfields of industrial archaeology. Each industrial archaeologist in the region would have to describe significant resources and research questions for his own particular specialty, and the composite product would be an essential sourcebook for State Historic Preservation Offices, urban planning offices, other professionals, and the public. Only this type of group approach to

establishing significance could begin to give us an awareness of all that is worth preserving. An essential prerequisite to beginning such a publication project would be to receive advance funding at the state level (perhaps involving the SHPO's of several Northeastern states) to guarantee the costs of publication once the manuscripts had been prepared. Industrial archaeology can hope to continue its rapid growth only as long as each of us agrees to collaborate in establishing what is significant and then works to generate useful research questions and procedures.