

Contributions to Global Historical Archaeology

Industrial Archaeology

Future Directions



Edited by
Eleanor Conlin Casella and James Symonds

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New Directions in Industrial Archaeology



Sir Neil Cossons, OBE

Over the past 50 or so years the study of the industrial heritage has become one of the most vibrant and progressive areas of research and practice. This growth and consolidation can be seen across the developing discipline, not least the range of academic courses, specialist publications and research projects, all seeking to promote a better understanding of the historic industrial environment and its surviving remains. It reflects a growing realisation not only of the immense importance of Britain's role as the first industrial nation but of the extent and significance of the evidence all around us. And that recognition is now embracing the need for more than historical and archaeological knowledge. Today we have to engage knowledgeably and confidently with the change process in order to open eyes to opportunities for recycling buildings and whole landscapes back into new and productive uses while securing their integrity and their meaning in the landscape.

Understanding the complexities of this historic industrial environment is crucial if we are to develop a structure for its protection and management. This is particularly so now, for the industrial landscape is under pressure as never before, from renewal and development, some ill-considered some thoughtful. Proper understanding can reduce the former and ensure the success of the latter.

The nature and consequences of this pressure can be seen everywhere and not only in urban areas. It can be seen wherever regeneration programmes have led to massive and sustained change, and as much in the countryside as in towns and cities—in rural landscapes which themselves sustained prolific industrial activity in the past. Whether the adaptive reuse of a mill or factory, the wholesale removal of Victorian terraced housing, radical changes to the transport infrastructure or the restructuring of the rural economy, the speed and scale of this transformation poses huge challenges for us.

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Here and there, change will result in removal for preservation in a museum such as the Manchester Museum of Science and Industry or sometimes *in-situ* as part of a project like Ironbridge. Or, the value of the landscape may be such that World Heritage status is an appropriate means of preservation, prompting the need for the most perceptive and measured of responses based on deep and thorough understanding. But for by far the majority of industrial buildings and structures, in city, town or countryside, the future will depend on new, appropriate and imaginative uses being found. The challenge here is to achieve a use which secures the intrinsic character and quality of a building or structure. For this, knowledge and understanding are essential. But this is only the first step. It must lead in turn to carefully crafted design briefs and management frameworks which are flexible enough to allow for both preservation and for managed change.

I have spent much of my life involved in the conservation of the industrial heritage in some form or another. Throughout that time, I have been particularly struck by the importance of encouraging both research in industrial archaeology, as well as history and development of appropriate management regimes. Key to both is widespread public acceptance, and the key to that is informed and open debate.

I am especially pleased therefore that English Heritage has been able to support the publication of this volume which arose out of a thematic session at the Theoretical Archaeology Group in 2002. That the conference was held in Manchester is particularly fitting in that the city is being nominated by the British Government as a World Heritage Site on the basis of its powerful and persuasive claim to be the world's first industrial city. It is here also that some of the challenges of balancing regeneration and conservation are at their most critical. Inspired solutions that reconcile the voices of the past with the needs of the present and our aspirations for the future need wisdom and creativity, goodwill and ingenuity. I am certain that the papers in this book will advance the discussions over the nature of the industrial past and its role in all our futures. As the Chairman of English Heritage, my interest and optimism continues to grow. I very much hope that these papers will encourage the continuing debate which characterises such a vibrant and challenging subject.



Sir Neil Cossons, OBE
Chairman of English Heritage

Introduction



**Eleanor Conlin Casella
and James Symonds**

The essays in this book are adapted from papers presented at the 24th Annual Conference of the Theoretical Archaeology Group, held at the University of Manchester, in December 2002. The conference session “An Industrial Revolution? Future Directions for Industrial Archaeology,” was jointly devised by the editors, and sponsored by English Heritage, with the intention of gathering together leading industrial and historical archaeologists from around the world. Speakers were asked to consider aspects of contemporary theory and practice, as well as possible future directions for the study of industrialisation and industrial societies.

It perhaps fitting that this meeting was convened in Manchester, which has a rich industrial heritage, and has recently been proclaimed as the “archetype” city of the industrial revolution (McNeil and George, 2002). However, just as Manchester is being transformed by regeneration, shaking off many of the negative connotations associated with factory-based industrial production, and remaking itself as a 21st century city, then so too, is the archaeological study of industrialisation being transformed.

In the most recent overview of industrial archaeology in the UK, Sir Neil Cossons cautioned that industrial archaeology risked becoming a “one generation subject”, that stood on the edge of oblivion, alongside the mid-20th century pursuit of folklife studies (Cossons 2000:13). It is to be hoped that the papers in this volume demonstrate that this will not be the case.

Although the conference session upon which this book is based had a theoretical remit, it is interesting to note that the range of speakers went far beyond the usual list of college professors that one might expect

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to see participating in such an international symposium. Aside from academia, speakers were also drawn from government agencies, archaeological units, and consultancies, local voluntary societies, and period societies. This surely reflects the diversity of stakeholders that share an interest in the industrial past, and are actively involved in the preservation and study of industrial remains. While purists might argue that this diversity lends itself to a lack of focus, or to blurred disciplinary boundaries, we feel that that this diversity adds strength, and should be celebrated. Gone are the days when industrial archaeology was a one-issue subject, driven by the needs of the physical preservation of individual monuments. The success of earlier preservation movements has, nevertheless, ensured that a far more holistic approach is now taken to the historic environment, in all of its manifestations.

Although it has not been possible to include all of the papers that were given in the conference session, this book broadly retains the structure of the session. Section One: Rethinking Industrial Archaeology, comprises four papers (Casella, Symonds, Palmer, Cranstone) that provide a general overview of the subject and offer some programmatic thoughts to guide future research.

Section Two: The Conservation of Industrial Monuments and Landscapes, comprises four papers (Clark, Gwyn, Worth, Cooper). These papers explore issues arising from the role of industrial archaeology in conservation philosophy, as well as considering the wider dissemination of industrial archaeology through the medium of scholarly publication.

Section Three: Archaeologies of the Factory and Mine, comprises three papers (Nevell, Rynne, McGuire) that explore the development of studies into the textile industry, as well as an insight into the working-class archaeology that may be constructed around the labour history of a coal field war. Within this section the theme of dissemination is explored through both the transfer of industrial era technologies that linked broad regions into relationships of practice and production, and the transmission of our own research results to community-based interest groups, who create a sense of affiliation or solidarity through their engagement with industrial heritage.

Section Four: Consumption Studies, has three papers (Mrozowski, Hall, Lawrence). These papers expand the boundaries of traditional industrial archaeology to investigate the contribution that may be made to the study of consumption, with case studies from the urban archaeology of 19th century New England, the post-modern landscapes of the international gaming industry, and the 19th century goldfields of Australia.

Together, these chapters further the process of meaningful engagement with such weighty issues as globalization; post/modernity; power;

production and consumption; innovation and invention; class, ethnic, and gender identities; social relations of technology and labour; and the spread and diversification of western capitalism. Through these international contributions, we hope this volume will both highlight the current “state of play” within Industrial Archaeology, as well as convey future theoretical and methodological directions.

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**RE-THINKING
INDUSTRIAL
ARCHAEOLOGY**

I

“Social Workers”

New Directions in Industrial Archaeology

Eleanor Conlin Casella

Since the 1990s, Industrial Archaeology has developed new encounters with social theory. And as our scholarship has begun to expand beyond descriptive site-specific studies, we are increasingly confronted with the task of understanding sophisticated multi-scalar networks of production, exchange and consumption. Descriptive accounts of local resource processing now provide us with a solid material framework for wider interpretations of *diversification* in capitalism, of hierarchical and exploitative organisations of labour, and of differing expressions of power within systems of industrial production. Theories of social identity have helped further illuminate material patterns of gender, ethnic, class, age, and religious affiliations within the Industrial Era. In this introduction, I will attempt to highlight some of the underlying debates and invigorating theoretical possibilities offered through the papers of this volume. These discussions will provide a platform for a subsequent presentation of preliminary excavation results on an industrial period site in Alderley Edge, Cheshire.

WHAT IS INDUSTRIAL ARCHAEOLOGY?

Stacks remind us—orange sawdust piles, slag foothills, brown pine-stump humps, yellow sulphur mountains, calcium chloride moraines, pulpwood log sierras, and fuel tank farms—that the business of cutting, crushing, refining, pumping, hauling, and handling basic materials holds the key to understanding the workings of hundreds of urban places. (Clay, 1980:128)

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As a starting point, one intrinsic debate surrounds the identity of this archaeological subfield. Although such introspection may appear a purely nostalgic exercise, the creation of a common language does require some acknowledgement of variations in regional dialects. What *exactly* is Industrial Archaeology, as practised internationally today?

An Archaeology of Production?

David Cranstone has defined the field as focused on “the processes of invention, innovation and development” (Cranstone, 2001:183), and traces its British origins as a distinct archaeological practice back to the 1950s. However, in presenting this definition he has also noted the underlying question of sub-disciplinary identity. Is Industrial Archaeology defined by period (an archaeology of the recent industrial past), Or is it a study of industry regardless of period? What about single sites that have been used for industrial production through millennia? At the natural rocky outcrop of Alderley Edge, perched within the Cheshire plain of Northwest England, substantial archaeological evidence of copper mining has been traced back through the Romano-British and Bronze Age periods. Does the study of this landscape only become Industrial Archaeology when we consider remains of non-ferrous extractive practices that occurred after 1740 AD?

Further, as our field expands, we are also faced with an ever broadened definition of “industrial” related sites. Although gardens have traditionally remained the intellectual domain of such trans-Atlantic subfields as Landscape Archaeology or Archaeobotany, scholars have begun to examine transformations in productive economies through the analysis of plant remains from post-medieval urban deposits (Giorgi, 1999), record books from colonial agricultural plantations (Landers, 2000), and intensified transport systems for fertilizer distribution (Clark, 1999; Wade Martins, 1991). Similarly, with the advent of material culture studies, analysis of leisure, fashion, and even information technology “industries” suggest possible new frontiers for our disciplinary subfield (Miller, 2001; Schofield, 2000; Falk and Campbell, 1997; Gronow, 2003; Lally, 2002).

Particularly when we turn to understand the major industries that shape our world of “late” capitalism, issues of consumption and distribution (as opposed to classic production) gain dominance within our interpretations (Spencer-Wood, 1987; Cook et al., 1996; Gibb, 1996; Mullins, 1999). The relationship between consumer “industries” and “Industrial Archaeology” are explored within this volume as contributors explore

the class identities forged through consumer practices (Mrozowski, this volume)¹, and the dramatic materiality of gaming casinos—arguably one of the most aggressive manifestations of the modern leisure industry (Hall, this volume)². In his study of early 20th century landscape transformations in Broome County, New York, Randall McGuire similarly traced the “maturation of capitalism” to an intentional expansion of the consumer economy into working-class households (McGuire, 1991). With the late 19th century saturation of middle and upper class markets for consumer goods, an emerging ideology of “industrial democracy” renegotiated relationships between commodities and labor. Quoting the archetypal industrial populist Henry Ford, McGuire highlighted the mutual dependency of production and consumption under late industrial capitalism:

They [workers] have time to see more, do more and incidentally buy more. This stimulates business and increases prosperity, and in the general economic circle the money passes through industry again and back into the workman's pocket. (Ford, 1929:17, quoted in McGuire, 1991:106).

Thus, for Industrial Archaeology of 20th century sites, patterns of increased mass production becomes inextricably enmeshed with processes of conspicuous consumption and commodity fetishism among all socio-economic classes.

Industrial Archaeology as Heritage Practice

Other scholars have suggested a more practice-oriented disciplinary identity. Both Marilyn Palmer and Don Hardesty have emphasized the systematic recording and preservation that are required to enlarge our understandings of the “socio-technical systems and landscapes” created by industry (Hardesty, 2002). Marilyn Palmer and Peter Neaverson correctly distinguish between the management of industrial places enacted through “industrial heritage research” and broader archaeological interpretations of the diverse economic and social landscapes created by industrialization, arguing for greater communication between these two forms of subdisciplinary practice (Palmer and Neaverson, 1998).

¹Mrozowski, S., (in press), Cultural Identity and the Consumption of Industry. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

²Hall, M., (in press), The Industrial Archaeology of Entertainment. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

The methodological implications of this focus on disciplinary practice include a concern with the scope of fieldwork on industrial sites. Within Britain, these debates have led to the development of a hierarchical four-tiered recording system for standing structures by the Royal Commission of the Historical Monuments of England (RCHME, 1996), and since adopted by English Heritage. The four levels of recording attempt to standardize the degree and type of archaeological detail recorded according to the scale of national significance afforded to the industrial site. According to this method, a “Level 1” site (one of local significance) would produce a visual record of exteriors only, while a “Level 4” site (one of high national or international value) would require a full range of recording, including detailed external and interior photography, site plans and elevations, three-dimensional projections, phased reconstructions of the built environment, a detailed analysis of the documentary history of the site, a significance statement, descriptions of past and present uses, and subsurface evaluations. A similar model of systematic tiered recording of industrial sites has been developed in the United States under the Historic American Engineering Record (HAER) through the National Park Service (Burns, 1989).

The important benefits of these systematic approaches to industrial landscapes include the comparative value of recorded data, and a more strategic investment of limited archaeological resources. When rigidly applied, these recording methods can be criticized for a lack of flexibility—sites deemed to be of Level 1 or 2 overall significance may contain specific features or structural elements worthy of higher levels of recording. Nonetheless, by recognizing differences in global, national, regional, and local dimensions of industrial sites, archaeologists have begun to incorporate a much wider diversity of heritage management options within their methodological practices.

Historical Archaeology, Neo-Marxism, and the Modern Era

Colleagues such as Kate Clark suggest we end the disciplinary isolation of Industrial Archaeology, and embrace our subject as “the archaeology of the late second millennium AD” (Clark, 1999:283). However, in re-joining the world of Historical Archaeology (if we were ever separate), the problem of subfield identity is only exacerbated. Are we part of the “archaeology of European colonial diaspora and indigenous response” (Deetz, 1977), or the “archaeology of literate societies” (Moreland, 2001), or the “archaeology of capitalism” (Johnson, 1996)?

And how do these wider disciplinary identity debates relate back to our particular subjects of enquiry?

Many would adopt Charles Orser's argument for an "archaeology of the Modern Era" (Orser, 1996), and this intellectual pathway would seem to hold some purchase for Industrial Archaeology. We inhabit a distinctive period characterized by the rapid, global, and unprecedented absorption of *all* human societies into capitalist economic systems. Such an exceptional period within the span of human experience would surely appear to necessitate a unique subdisciplinary set of practices and theories. Keith Matthews has adopted a similar approach by drawing a clear distinction between *industry*, defined as "work that generates a tangible product," and *industrialization*—"a system of production that involves full-time specialists, working in factories designed to produce maximum profits for their owners, who do not actively produce..." (Matthews, 2003:52).

By acknowledging this unique Modern Era, as Marilyn Palmer and Peter Neaverson do by default in their seminal volume *Industrial Archaeology* (1998), our subfield can explicitly focus on the modern capitalist practices of production and consumption. But would such an approach provide a distinct identity for Industrial Archaeology? Or would it annex our sub-field into a wider corpus of Marxist-flavored scholarship? And would this somehow be a problematic outcome?

TOWARDS COMMON THEMES

Abandoning this sub-disciplinary identity crisis, a few common research themes can be traced through the diverse practices of Industrial Archaeology. While debates continue to refine the theoretical scope of our subfield, at least three interrelated topics appear central to our archaeological work.

On Production, Distribution, and Consumption

Most would agree that our subject of enquiry explicitly concerns the production, distribution and consumption of commodities. And our scholarship ranges widely within that general topic. The forms of production we investigate span from the classic 18th and 19th century industries of extractive mining works, steel mills, iron forges, textile mills, and potteries, all the way through to the 20th century production of rubber tyres, silicon chips, and even digital information. Similarly, we can consider "distribution" as the traditional forms of canal, rail, road and shipping networks. However, research by Mike Nevell (this

volume)³ and Colin Rynne (this volume)⁴ expands our concept of “distribution” to include the diffusion of technological innovations that interconnected the 19th century textile milling industries of Ireland and Northwest England.

Finally, as archaeologists, we offer a longer-term perspective on the transformations of capital that have shaped the Modern Era. Particularly over the last 50 years, western nations have experienced a proliferation of “service” industries replacing their traditional primary and secondary production, as labour-intensive and environmentally destructive industries relocate to the developing world. Our subdiscipline is uniquely situated to not only provide an essential historical context for our current experience of *globalization*, but to also critique the production of irresistible media, recreational, and “lifestyle” related commodities that result from these new patterns of consumption.

The Role of Community in Heritage Practices

As a community of scholars we have also reached consensus on the central importance of heritage practices. We have an active commitment to furthering the preservation of a shared industrial past. And, as presented earlier, we honour this commitment through systematic practices of recording, promoting and disseminating our understandings of past industries.

Through our shared commitment these heritage practices, we have long acknowledged an underlying responsibility to community-based interest groups. Such community groups typically consist of amateur enthusiasts, former employees, or descendants of site occupants. However, as Randall McGuire notes in his chapter, they can also include broader affiliates—including members of the United Mine Workers of America, who have maintained the heritage of the Ludlow Massacre site as a more symbolic and generalized emblem of American labour activism⁵. In many cases, it is the members of these interest groups who

³ Nevell, M., (in press), The Social Archaeology of Industrialisation. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

⁴ Rynne, C., (in press), Technological Innovation in the Early Nineteenth-Century Irish Cotton Industry. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

⁵ McGuire, R., (in press), Building a Working Class Archaeology. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

have not only sustained, but enhanced our scholarship through their dedicated research and field recording. By acknowledging our ongoing relationships with these various communities, we bear a simultaneous responsibility to our scholarly and interested public for the timely publication of our research, in order to ensure the widest accessibility to both our field results and specialist interpretations.

When we offer archaeological evaluations of industrial resources, we become enmeshed in definitions and debates over the “values” that we hold the authority to interpret and record. Thus, we share a recognition that such heritage “values” can often exist in tension or outright competition between community groups, as Malcolm Cooper presents in his study of English Heritage’s advocacy efforts to preserve examples of 19th century urban terraced houses in the Northwest region⁶. With the growing international links between industrial archaeologists, we ourselves exist within a dynamic community. And as our own interest group has expanded, forms of best practice have become more effectively shared through our own regional, national, and international distribution networks. Kate Clark highlights this aspect of our shared heritage practices within her presentation on the British application of Australia’s Burra Charter for interpretation of cultural values.⁷

Social Workers: on the Formation of Identities, Affiliations, and Belongings

We study the variety of ways people worked and lived during a revolutionary period of socio-economic transformation. As a result, we are developing a recognition of the significant *social* dimensions of the industrial past—or in the words of E.P Thompson, the experiences of social class that happen “. . . when some men, as a result of common experiences (inherited or shared), feel and articulate the identity of their interests as between themselves, and as against other men whose interests are different from (and usually opposed to) theirs” (Thompson, 1966:9). To this seminal definition, we obviously contribute essential *material* perspectives.

⁶ Cooper, M., (in press), Exploring Mrs. Gaskell’s Legacy. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

⁷ Clark, K., (in press), From Valves to Values. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

Our research has developed to interrogate not only the formation of class identities, but issues of gender, ethnicity and age affiliations. By interpreting our assemblages as “artifacts with active voices” (Beaudry et al., 1991) we can add to wider understandings of modern era class relations, of power negotiations within the workplace, of domestic relations of production and reproduction, of basic transformations in kinship and family ties, and of diaspora of ethnic working communities. We can thereby make significant contributions to a social archaeology of the recent past.

Expressions of social affiliation are frequently communicated through patterns of consumption, as mass produced, and increasingly homogeneous commodities become invested with social meaning through their use, display, exchange and discard (Baudrillard 1996 [1968]). While commodity consumption has been traditionally interpreted as patterns of disciplinary practice and class aspiration (Leone and Shackel, 1987; DiZerega Wall, 1994), scholars have begun to recognize that artifacts of the modern era, as increasingly mass-produced homogenous commodities, can be invested with alternative (or even contradictory) social meanings. More recent approaches have embraced the multivalence of artifacts as both products of capitalism, and rebellions against it:

... we find that artifacts and commodities not only help in the performance of tastes, but also make people happy. Some people are able to reject advertising's packaged meanings and reshape things into something intensely personal and meaningful, and personal meanings are grafted onto objects that can be seen, touched, and held. Groups defined by race, age, gender, geography, or ethnicity can supply their own meanings and uses for things. (Leone, 1999:18).

Thus, to understand the impacts of industrialization on the working *peoples* of the recent past, industrial archaeology has turned to examine material patterns within the primary site of commodity consumption—the domestic household (Matthews, 1999). Expanding the focus of Industrial Archaeology to include sites related to settlements and households does not dilute our traditional concentration on patterns of production or distribution. Particularly for the labouring classes, a strict division never existed to distinguish workplaces from residential dwellings (Rule, 1986; Matthews, 2003). Large households not only commonly operated as places of employment, but strategies of production also shaped complex relations of age, gender, and kinship within most households (Beaudry, 1999). Cottage industries, including various textile and finishing trades, co-opted the domestic household as a primary site of production. Even when adopting a strict

"industrialization" focus to define our subfield, the symbiotic relationship between workplace and domestic practices of production and consumption inextricably link the household to the factory floor. Thus, to appreciate the social dimensions of the industrial past, our research has turned to consider the revolutionary transformations of how working people both laboured and lived.

THE ALDERLEY SANDHILLS PROJECT

The Alderley Sandhills Project was explicitly designed to illuminate the transformative roles of industrialization and subsequent de-industrialization on working-class life in rural Northern England. By focusing on a domestic site, our project examined how the men, women and children of ordinary working households struggled to maintain and improve their conditions of everyday life in the face of the rapid socio-economic revolutions of the 18th through 20th centuries. Funded by English Heritage, through the Aggregates Levy Sustainability Fund, the Alderley Sandhills Project formed a new research partnership between the Archaeology Department and the Manchester Museum at the University of Manchester. Field results of the 2003 season were made publically available through the project website: <www.alderleysandhillsproject.co.uk>.

The Hagg Cottages

Located on private land, the site is adjacent to Alderley Edge, a public parkland owned and managed by the National Trust. The study area became locally known as "The Sandhills" because of the large quantity of acidic sands dumped as a by-product of lead and copper mining activities conducted around the Edge from the 1780s through the 1880s. During this industrial period, the Alderley Edge Mining Company utilized an acid leaching extraction method for ore processing. By the 20th century, the distinctive mountains of acidic waste sands created by this industrial processing were in turn "mined" as an aggregate for local road building and airport runway construction projects. Since the late 19th century, a unique ecology of regrowth species developed over the remnant acidic sands, causing the Sandhills region to be notified as a "Site of Special Scientific Interest" (SSSI) by English Nature in 1993. Because of archaeological evidence of Bronze Age and Romano-British era mining sites, the wider region of Alderley Edge was



Figure 1. Detail of 1872 Ordnance Survey Map of Alderley Edge. Ore processing facilities (plot 119) and Hagg Cottages (plot 125).

granted Scheduled Ancient Monument status by English Heritage during 2001.

The Sandhills archaeological site consisted of the remains of two cottages, used during the 19th century by the Alderley Edge Mining Company to accommodate the families of mine workers (Figure 1). Both were two-storey brick structures, internally divided to accommodate four separate households. The site also contained associated outbuildings, privies, wells, middens and domestic gardens. Within the English landscape, such dispersed hamlets of clustered workers' cottages formed a very common rural settlement pattern from the 17th through 19th centuries (Rule, 1986). Parish records indicated that the eastern house, a two-storey Georgian-style brick cottage, was built in the 1747 by Sir John Stanley, as part of a general landscaping, enclosure, and rehousing project intended to "improve" his Cheshire estate. A regionally distinctive architectural design, the "Stanley cottage" was externally characterized by the tall end chimneys and prominent entrance gable (Figure 2). The date of construction and original function of the southern building was unknown. Both structures appeared on the 1787 Stanley Estate Plan, the first detailed archival record for the Sandhills region of Alderley Edge. Located along Hagg Lane, the



Figure 2. Hagg Cottages, c. 1930. Photo courtesy of R. Barber.

settlement became known and recorded as the Hagg Cottages. Because of its linear design, the southern building was originally assumed to be a brick and sandstone barn associated with agricultural activity at the Stanley Estate, and secondarily converted for residential use during the establishment of industrial mining at Alderley Edge. However, excavations during summer 2003 revealed the existence of an entrance porch of handmade bricks to the “rear” of the southern building (Figure 3). Evidence of structural changes to, and reorientation of, this structure suggested continuous domestic use, possibly pre-dating construction of the eastern “Stanley Cottage” during the 1740s (Casella and Griffin, 2003).

While the provision of “improved” rural housing for “strong-tenant” (or rent paying) farmers did occur throughout 18th century England, such labour investment was unusual, undertaken by only a handful of especially paternalistic landowners (Gauldie, 1974). Oral histories collected during the Alderley Sandhills Project demonstrated that Stanley Family had maintained their philanthropic reputation into the 20th century. During the 2003 field season, Hagg Cottages former resident



Figure 3. Detail of Brick Structure, Area B.

Mrs. Edna Younger described The Family's enduring paternalistic status to an American student interviewer:

Devin Hahn: So the Stanleys were looked upon . . .

Edna Younger: Well, they were Lords and Ladies.

DH: They were looked upon favorably by everyone?

EY: Very. Oh very. They were very good squires. They were the squire. And he was a very *good* squire. Very good to the people. . . . They looked after everybody very well. And if they took someone on to work there, they were there for life. There again, it all added to a very nice way of life. You felt secure. Which is a lot more than can be said today! [laughs].

During the late 18th century, industrial lead, copper and cobalt mining were established by the Alderley Edge Mining Company, with the particular method of industrial ore processing gradually creating the dramatic Sandhills that came to characterize this local area. The Hagg Cottages were converted and sub-divided in 1808 to increase available accommodation. By the end of the 19th century, as English copper extraction became increasingly superseded by imported ores, the Alderley Edge Mining Company ceased industrial mining. However, local families continued to occupy the Hagg Cottages through the immediate post-war period of the early 1950s. During this 20th century occupation period, residents increasingly relied upon employment

through some form of the growing service economy—shop work in the commuter town of Alderley Edge, housekeeping, laundry, and gardening work for local elite households, newspaper routes, blacksmithing, roadwork, even charging curious tourists for trips down the abandoned mineshafts.

In 1938, the Stanley Family subdivided their estate at Alderley Edge. The Sandhills region was purchased at auction by Thomas Nield, a small-business contractor and local resident. From the 1940s through 1960s, Thomas' son Fred Nield sold off the acidic Sandhills to the local council, first as wartime sandbag fill, and subsequently as an aggregate road base. He also reused the abandoned mine shafts for extensive land-fill operations. By the early 1950s, Nield evicted the final resident of the Hagg Cottages, and demolished the dilapidated structures, removing a sample of the building materials for recycling purposes.

Fieldwork at the Hagg

During the summer 2003 field season, following geophysical and topographic surveys of the Sandhills site, four excavation trenches were opened (Figure 4). Areas A and B were originally two 10 × 10 meter open area trenches, positioned to locate structural remains of the two Hagg Cottages. Area C consisted of a 1 × 1 meter test trench opened in order to investigate an anomaly from the soil resistivity and magnetometry geophysical surveys. Despite surface scatters of artifactual materials hinting at the presence of subsurface middens, the Area C trench did not reveal any significant material deposits. In addition, we were granted permission to open Area D, a 2 × 2 meter trench located on the adjoining National Trust property, in order to investigate the nature of an artifact scatter that was actively eroding from one of their walking tracks. Excavations revealed a subsurface midden associated with the Hagg Cottages, the date and identity of the artefacts established through post-excavation analysis of the glass, metal and ceramic assemblages (Casella et al, 2004).

In addition to excavation and archival research, the Alderley Sandhills Project greatly benefited from the active involvement of the local community of Alderley Edge (Figure 5). During the 2003 excavation season, former residents of the Hagg Cottages toured the site, and participated in oral history interviews. Their memories, stories, and family photos provided unique personal perspectives on the domestic lives of working rural households in northern England over the inter-war period of the 20th century (Figure 6).

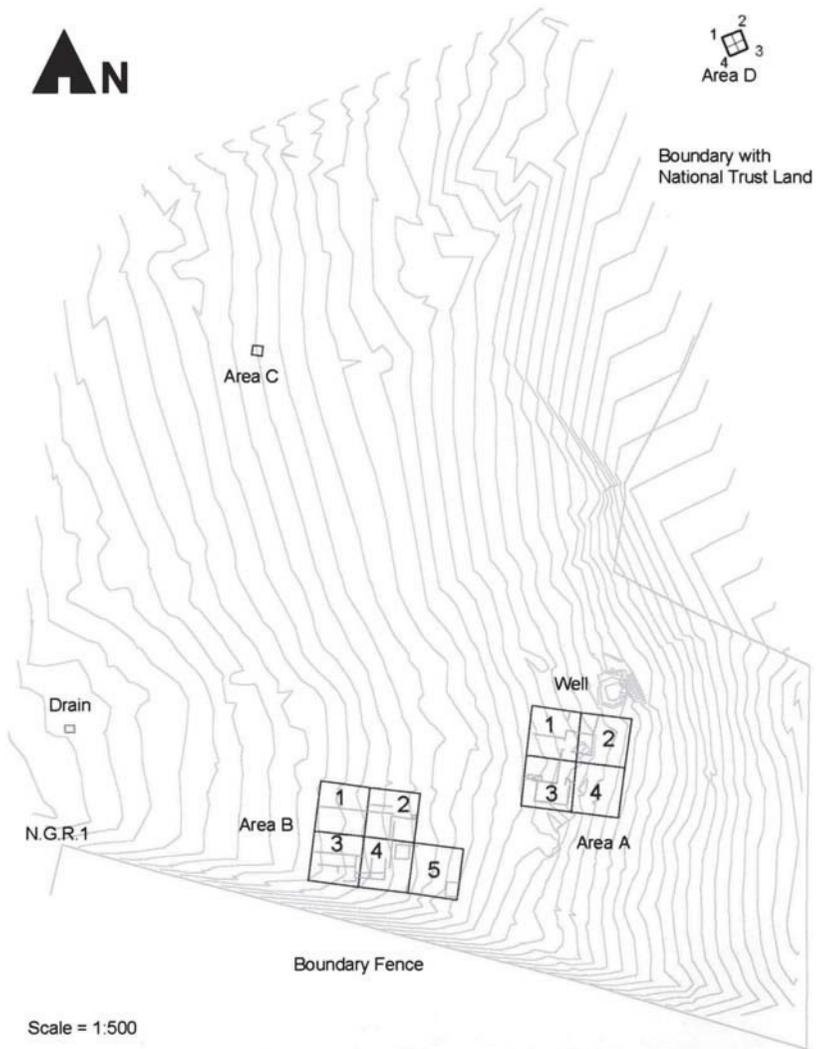


Figure 4. Alderley Sandhills Project 2003, Site Plan. Topographic contours set at 50 cm intervals.

How does oral history add to our understanding and appreciation of the industrial past? While the use of oral history has been correctly criticized for presenting a nostalgic, idiosyncratic, and sometimes inaccurate representation of the past, these stories provide a personal and emotional link to the past. When approached as a unique



Figure 5. Edna Barrow, Roy Barber and Molly Barber at the Hagg, c. 1930. Photo courtesy of E. Younger.



Figure 6. Roy Barber, Edna Younger (nee Barrow), and Molly Pitcher (nee Barber), September 2003.

data source, one with its own “difficulties, constraints and grammars” (Purser, 1992:28), oral history offers scholars a narrative experience of the recent past. It brings the material record back to life. Within British industrial archaeology, the acknowledgement of responsibilities to interested community groups has led to an increasing incorporation of oral history recording as a crucial element of primary data collection, as demonstrated in recent projects conducted through both Ironbridge Archaeology (Belford, 2003) and Stoke-on-Trent Archaeology Service (Barker, 2003).

Through the collaborative process of “remembering and recounting,” our project participants offered us relevant “historical *facts* articulated through the more immediate personal and political *truths*” that configured their lives at the Hagg Cottages (Purser, 1992:27). Thus, when combined with archival and material sources, the oral histories collected as part of the Alderley Sandhills Project offered a fresh understandings of the nature of everyday working life in England before the socio-economic dislocations of the post-war era.

AN ARCHAEOLOGY OF RURAL WORKING-CLASS LIFE IN (POST)INDUSTRIAL NORTHERN ENGLAND

Although post-excavation stages of analysis are currently underway, two central themes have already emerged from our preliminary examinations of the archaeological results and research interviews.

Adaptations: Transient Improvisations versus Flexible Continuities

Previous archaeological studies of 19th century mining settlements from both Australia and the American West have emphasized the flexible and highly varied economic strategies that structured community life. In his research on silver and copper mining communities in the American West, Don Hardesty drew upon Gordon MacMillan’s ethnographic work (1995) to identify this type of mixed economy as “informal mining systems” characterized by “smallholder farmers who engage in mining as a part-time activity during the farming off-season” (Hardesty, 1998:82). In her study of the late-19th century copperfields of North Queensland, Australia, Ruth Kerr similarly characterized the frontier mining camp of Calcifer as a “rich and raw social fabric,” consisting of miners, entrepreneurs, promoters, investors, engineers, smeltermen,

teamsters, charcoal burners, hoteliers, storekeepers, butchers, and vegetable farmers (Kerr, 1995).

Within the frontier mining camps of Australia and the American West, this economic flexibility, when combined with the rapid growth required by the "boom-and-bust" cycles of non-ferrous mineral extraction, tended to produce a high mobility of settlement. In her study of a mid-19th century gold-rush mining community in Victoria, Australia, Susan Lawrence (2000) found settlements distinguished by impermanent and seasonally occupied domestic dwellings. Although her study drew a distinction between the makeshift and improvised dwellings of early short-term Australian gold-rush mining camps, and the more substantial dwellings and domestic assemblages of later subsistence miners' hamlets, the archaeology of both settlement types was characterized by mobility:

... transience had become a permanent way of life and their homes and goods reflect the decisions they made when balancing freedom of movement and a modicum of comfort. (Lawrence 2000:124)

As a result, her study of the Dolly's Creek settlement revealed simple, small dwellings constructed of either highly portable materials, such as calico and tentcloth, or readily available materials, such as timber, tree bark, and local stone. Household possessions were kept to a minimum, "not necessarily because of poverty, but in order to reduce the quantity to be packed and carried" (Lawrence 2000:125).

David Emmons' study of 19th century Irish mining communities in Butte, Montana also identified the culture of waged seasonal miners as distinctively transient, describing "thousands of 'industrial cowboys' riding (the rails in this case) from one mining town or lumber camp to another" (Emmons 1994:449). Even the farming activity identified in Hardesty's informal mining systems consisted of cattle ranching—a form requiring large tracts of semi-arid land and a highly mobile workforce. Economic flexibility created a sense of "anticipated mobility," described by Hardesty as encouraging "minimalist material culture such as dugout housing and tin tableware" which served to equalize material expressions of gender, class or social status within American mining communities (Hardesty 1998:84).

Preliminary results from the Alderley Sandhills Project suggest a very different settlement pattern within English mining communities, with issues of social and economic *continuity* outweighing those of transience or mobility. Census data collected from 1841 indicated that Hagg Cottage residents, like their American and Australian contemporaries, also engaged in a flexible combination of mining and agricultural

related employment. However, the records suggest a far greater focus on traditional agricultural labor, with specialized mining related occupations not widely reported until 1861 and 1871—towards the final years of industrial extraction at Alderley Edge. Thus, within the English context, a mixed economy indicated the continuation of earlier pre-industrial landscape practices rather than a newly introduced strategy for frontier subsistence. Furthermore, in parts of northern England, the active extension of agricultural activity into less arable regions of upland moors and downs represented an ideology of paternalistic discipline by landowners keen to attract waged miners away from the inns and public houses. As one mine steward wrote in 1802:

Whenever this has been tried around this neighbourhood the happy effects have soon been perceived. In the course of a few years they have been able to rear up little cottage houses . . . and instead of meeting them staggering from their former haunts, the Brandy Shops . . . you may now see them busily employed in cultivating their little fields. (quoted in Rule, 1986:84).

With the Hagg Cottages constructed and occupied as a reflection of socio-economic continuity for the labouring classes, the structures themselves reflected the durability of their presence within the landscape. The nature of English rural housing represented the quality of pre-existing stock far more than any practices of new production. Social historian John Rule has noted that the working populations of rural districts:

. . . occupied the old homes built-up by their ancestors and repaired and extended over generations by the labourers themselves. . . . Since most of the housing . . . had been in existence from the eighteenth century or even longer, there is little reason to presume any significant change in the period under study in the physical quality of rural housing. (Rule 1986:76–77)

As a result, the economic flexibility required of working-class inhabitants became materially expressed through sequential vernacular additions, adjustments, and adaptations of the built environment. Excavations at the Sandhills site revealed structural remains of a brick lean-to addition on the southern side of the 1740s Georgian-style “Stanley cottage” (Figure 7). This extension was floored with a patchwork of black and red stoneware “quarry” tiles. Other excavation projects in the wider north-west region have recorded similar decorative features within ground floor rooms, kitchens and sculleries of Victorian era farms and terraced houses (Barker 2003). With the mid-19th century establishment of railroad distribution networks, locally produced building materials, including the excavated sandstone flagged floors



Figure 7. Detail of Victorian Era extension, Area A.

of the “Stanley” cottage, became gradually replaced by decorative architectural ceramics manufactured by the industrial potteries of the English midlands. Since access to the vernacular extension was gained through a kitchen, we interpreted it as a mid- to late-19th century elaboration of domestic workspace added to the original 18th century cottage. The structure was probably related to the diversification of income-generating activities undertaken by household members.

Work-related modifications of this structure appeared to continue into the 20th century. Excavations revealed a cement reflooring event in the east of the structure, possibly undertaken as a mitigation of the persistent structural subsidence mentioned by all three former site occupants. Additionally, two parallel lines of cement-bonded recycled bricks laid atop the decorative flooring on the western side of the extension. They appeared to have once supported something of great weight, as the flooring had buckled in patches below them. During site tours, Mr. Roy Barber remembered his father, primarily employed as an assistant at the Chemists’ shop in Alderley Edge, using the space as a home workshop and storage area. His father had installed a heavy sandstone work bench along the western wall of the room. Mr. Barber memory of the feature related to the time he had found and played with some “gelignite” explosives on the bench after his family had abandoned the

house in the late 1930s. He believed his father had used the explosives for destroying rabbit warrens in the local fields.

Oral histories related to the southern cottage in Area B demonstrated similar patterns of continual architectural additions, recycling, and reuse. The immediate exterior space around the cottage was particularly adaptable for income-generating activities. When questioned about the location of the front door during a site tour, Mrs. Edna Younger instead related her mother's use of the area for laundry processing. Contributing to the family income by taking-in laundry from local elite households, her mother had positioned her washtub and mangle next to the exterior drain, thereby adapting the paved courtyard as an extension of her workplace. Mrs. Younger couldn't remember the location of the front door because she had always used the kitchen entrance at the side of the cottage.

Spaces to the rear of the cottages were also adapted for flexible economic use. Mrs. Younger recalled the "Miss Ellams" occupying the adjoining portion of her family's semi-detached cottage. A pair of unmarried sisters, they lived with their elderly father until his death in the mid-1930s. Gertie, the more "robust" of the pair, worked in domestic service for elite households in the wider community of Alderley Edge. Her sister, who suffered a frail constitution, kept their house. She supplemented her sister's waged income by jarring fruit and drying vegetables for sale, and brewing hooch in the rear pantry "for medicinal purposes only." Archaeologically, the multiple layers of structural adaptations and modifications to the rear of the Area B cottage suggested that such informal domestic economies had been continuously practised, albeit in flexible and opportunistic forms, throughout the entire Industrial Period. Evidence from oral history interviews, when used to interpret excavation results, demonstrated the continuity of socio-economic practices within the rural landscape. This continuity formed the backbone of English industrialization, as argued by historian E. P. Thompson:

... most of the new industrial towns did not so much displace the countryside as grow *over* it.... But there was nothing in this process so violent as to enforce a disruption of older traditions. In south Lancashire, the Potteries, the West Riding and the Black Country local customs, superstitions, and dialect were neither severed nor transplanted: the village or small town craftsman grew into the industrial worker. (Thompson, 1966:405, original emphasis).

Thus, in stark contrast to mining communities in Australia and the American West, the built environment of Alderley Edge represented a durability of occupation by working families.

You felt belonging to everybody: the role of community in rural working life

As a result of the long-term continuities of practice within English mining settlements, the community-wide scale of social belonging retained a central role within workers' households. Given the complex networks of kinship, affiliation, support, competition, and obligation that cross-cut this landscape, an appreciation of this community scale begs a critique of the nuclear family as the primary social unit of production, distribution or consumption during the (post) Industrial Era.

What constituted a working-class household? British social historians have frequently dismissed the nuclear family as a meaningful unit of social organization because of patterns of increased overcrowding in the rural population from 1800⁸. The first two decades of the 19th century witnessed an average increase of 37% in the labouring population of rural English counties. An 1864 government inquiry found similar demographic evidence of overcrowding. In this survey of 821 rural English parishes, a total of 69,225 cottages were recorded, housing 305,567 persons—producing an average of 4.4 occupants per household cottage:

Less than 5% had more than two bedrooms, while 40% had only one. Single-bedroomed cottages averaged four persons per bedroom and two-bedroomed one 2.5. The amount of air space available at 156 cubic feet in the bedrooms was only about three-fifths of that required by law in common lodging houses. Typical was a 10 ft. square bedroom with a 7 ft. ceiling for 4.5 persons. (Rule, 1986:78).

For the average worker, an overcrowded household would expand to accommodate not only members of their immediate family unit, but also members of their extended kin group, and even non-related rent-paying lodgers. From 1841 through 1901, parish census data on the Hagg Cottages demonstrated the prevalence of extended and multi-generational households—most frequently consisting of renting lodgers, fostered nieces, and elderly relatives.

Neighbourly and kinship affiliations linked households into the wider rural community. Although the Stanleys were famous for their paternalism towards their tenants, overcrowding was frequently exacerbated by the deliberate depletion of rural housing stock by landlords keen to avoid the duty of maintenance for those inhabitants "who were too poor or too improvident to pay their rent regularly, whose age or

⁸ see also, Palmer, M., (in press), *Industrial Archaeology: Constructing a Framework of Inference*. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

infirmity or whose large number of children might make them burdens on the poor rate, or those whose independence of spirit made them bridle at the restrictions of estate life, so that they seemed rebellious and dangerous . . .” (Rule, 1986:79). Faced with the threat of eviction, workers maintained and elaborated their community and kinship networks to ensure survival for those vulnerable members of their households. Distinguishing the English working-class by an “ethos of mutuality,” E. P. Thompson argued:

Every kind of witness in the first half of the 19th century—clergymen, factory inspectors, Radical publicists—remarked upon the extent of mutual aid in the poorest districts. In times of emergency, unemployment, strikes, sickness, childbirth, then it was the poor who ‘helped every one his neighbour.’ (Thompson, 1966:423)

While such a concentration on “mutuality” has been disparaged as an overly romanticized perspective, these historical studies have emphasized the community as a dominant social unit in the formation of English working-class culture. During oral history interviews, Hagg Cottages former resident Mrs. Edna Younger recalled her breakfasts with Mr. Ellam, the elderly father of her neighbours in the adjoining cottage:

And their father, of course, was a very old Cheshire man. He used to say “Oo wants a strawberry, doesn’t Oo.” [Laughs]. You know, the old fashioned way of talking. . . . And I used to share his porridge in the morning. Father would bring the paper up from the night before, and the following morning, I used to deliver it. Before I went to school, this was. When I was very young, I’d go round with the paper to Mr. Ellam, and he’d be sat, having his porridge. And he’d say, “Oo wants a bit of porridge, doesn’t Oo. Sit ‘r’ on me knee.” And I’d sit on his knee, and he’d give me another spoon, and we’d both have it out of the same dish. [Laughs].

Characterizing small agricultural settlements as “complete and integrated” communities, John Rule described the “intermingling of neighbourhood, friendship and kin links developed over time” as a product of the reciprocal relationships that structured their world (Rule, 1986:157). Importantly, this sense of community belonging emerged from the ability of inhabitants to “know” each other both *socially* in the present, and *temporally* through the dimension of previous generations (Figure 8). Later in interviews, Mrs. Edna Younger explained:

You felt part of a very big family. That’s gone now hasn’t it? I mean, if you live in a town, you don’t belong to anyone but your own few people, do you. Whereas, you felt belonging to everybody in the parish. You felt safe with everybody.



Figure 8. Edna Barrow, with her mother, gran, and great-granny, c. 1930. Photo courtesy of E. Younger.

Perhaps as a result of the migrant origins of mining settlements from Australia and the American West, archaeological interpretations of community affiliations within these comparative sites have tended to focus on sub-groups defined by ethnicity. At the Overseas Chinese tin mining settlement of Garibaldi in north-eastern Tasmania, outdoor ovens constructed of local, unworked stone were interpreted as focal areas for socio-religious festivals (Gaughwin, 1995). In her survey of this late 19th century settlement, Denise Gaughwin interpreted the

fragmentary surface scatters of gin case bottles, and imported Chinese porcelains and brownwares surrounding these stone ovens as material signatures of the community feasts that accompanied the communal consumption of pit-roasted pork. Similarly, the presence of overseas Chinese cemeteries associated with the goldfield settlements of Warren and Pierce (Idaho, USA), Beechworth and Ballarat (Victoria, Australia), and Croydon (Queensland, Australia) have been interpreted as expressions of ethnic inter-generational obligations of ritual and responsibility between the host overseas community and the family of the deceased who remained in China (Abraham and Wegars, 2003).

In studies of the frontier mining camps of the American West, archaeologists have also interpreted a sense of community consciousness as emerging through chain-migration of regional and ethnic subgroups. In contrast to English settlements, individual camps lacked stability and longevity. Thus, within these American sites, a sense of community developed from the shared experience of integrating new business and workplace affiliations with the pre-existing kinship networks transplanted as extended families immigrated to the western mining districts. In his study of early 20th century goldfields of Tonopah, Nevada, William Douglass noted the ethnic groupings that frequently influenced settlement patterns within the regional camps:

Tonopah's Italian contingent came mainly from Delamar. . . . The Chinese in Tonopah came primarily from Candelaria and Bodie, two communities in which several hundred Asians established residence after constructing the Carson to Bodie railroad in the early 1880s. The Slavs, like the Italians, were a well-defined ethnic element in Delamar's population prior to coming to Tonopah. Candelaria and Douglass Camp were dominated by the Irish, whereas Austin and Belmont had significant German contingents. (Douglass, 1998:106)

Regardless of whether we attribute the community-scale of social belonging to shared experiences of class or ethnicity, our research indicates its structuring influence on the distribution and meaning of resources within workers' settlements. Complicated relationships of affiliation, support, kinship, competition, and obligation interlaced the Sandhills occupants both to each other, and to the wider Alderley community.

Informal systems of resource exchange helped express and maintain membership in that community, as demonstrated during the oral history interviews collected over the 2003 field season. As former residents and neighbours of the Hagg Cottages toured the excavations, they would offer memories of the recovered structures and artifacts. Questions on specific details of ownership and dates of occupation would inevitably generate a nostalgic narrative of social belonging, situating

the structure, object or feature into its wider place within the local community. These recollections, or personal "truths," frequently provided ethnographic perspectives on local socio-politics more ultimately valuable than the historic "fact" we had been originally seeking. When asked about the final occupant of her former house at the Sandhills, Mrs. Edna Younger related the story in terms of the community networks of informal exchange:

Edna Younger: She was quite old. It was Arthur Royle's mother. And she liked it up here you see, but she was too old to be up here. And Arthur decided she must come down. Mrs. Skelton had a cottage, at the end of Stephen Street, and she said she could rent that. Arthur in the meantime had bought one in Stephen Street. Which eventually we bought off him because she was going in the other one. So she'd have been in *my* house up here, and I ended up in the house she should have gone into down there.

[Laughs]

Clare Pye: It all goes round in circles!

Edna Younger: It does, it does.

For residents of the Hagg Cottages, these informal neighbourly exchanges linked their individual material world to that of the wider community. It was through this daily process of making ends meet that residents created, nurtured, and sustained their sense of belonging to everybody.

CONCLUSIONS

In an attempt to rejuvenate the relationship between Industrial Archaeology and social theory, this chapter has offered some comparative perspectives on how we currently define our sub-discipline. By revisiting our intellectual ties with the existing fields of heritage studies, post-medieval and historical archaeology, we bring new theoretical depth to our archaeological scholarship. From its early origins in the 1950s, Industrial Archaeology has been expanded and enriched through the dedicated participation of community based interest groups. Whether descendants, former employees, local residents, or passionate enthusiasts, these interest groups have helped inspire an enduring commitment to community outreach within Industrial Archaeology. This commitment now forms a unique hallmark of our particular sub-discipline.

As we shift from descriptive site-specific studies, to confront the sophisticated multi-scalar networks of production, exchange, distribution and consumption that transformed the Modern Era, we are expanding our primary subject of enquiry to include the complicated links between households, settlements and workplaces. And by considering the

impacts of industrialization on the working *peoples* of the recent past, our archaeological research has led us to consider both the material consequences of social affiliations, and the complex ways those obligations function on household, community and regional scales.

The Industrial world of the Modern Era was an increasingly global one. By adopting an internationally comparative perspective, we can consider the diverging patterns of flexible continuity and adaptive improvisations that dramatically reshaped worker's communities throughout the world. Finally, by approaching our assemblages, whether materials, documents, or oral histories, as active manifestations of everyday life, our research continues to contribute to wider interdisciplinary understandings of how working people both laboured and lived.

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Experiencing Industry

Beyond Machines and The History of Technology

James Symonds

INTRODUCTION

If Marx were alive today, he might well muse that a spectre is haunting Europe, the spectre of industrial archaeology. How delicious it might seem to him that the modern-day bourgeoisie is earnestly engaged in an activity that maps the decline and failure of its own capitalist forebears, and moreover seeks to preserve individual monuments, and even whole landscapes, in *homage* to the generations of workers that struggled to create the modern world.

In the British Isles, the self-styled former “workshop of the world,” industrial archaeologists routinely pick over the remains of the industrial past (Fig. 1). It has been estimated that some 70% of our built environment dates from the period of the industrial revolution (Cossons, 1987:12, cited in Clark, this volume)¹ and Britain’s role as the birthplace of the industrial revolution has been recognised as its unique contribution to World Heritage (see Cooper, this volume)².

However, an appreciation of the significance of industrial remains has sometimes been hindered by their overwhelming presence and familiarity (Tarlow and West, 1999). The long history of human

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¹ Clark, K., this volume, From Valves to Values: Industrial Archaeology and Heritage Practice. *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

² Cooper, M., this volume, Exploring Mrs Gaskell’s Legacy: competing constructions of the industrial historic environment in England’s north west. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.



Figure 1. ARCUS archaeologists excavating the former Leadmill in Sheffield, 2001
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settlement in these islands has meant that there is an embarrassment of possible pasts to choose from. There can be no doubt that even though the interests of archaeologists have now broadened to include all periods, including the recent and contemporary pasts (see Buchli and Lucas, 2001) the popular imagination is still fired by the archaeological remains of the early civilisations of the Mediterranean and Near East. In Britain, when we require a past to serve as a convenient back-drop to the present, we are far more likely to choose a mystical time of pre-historic stone circles, with imagined links to ancient celtic religions, or the disciplined practicality of Roman legionaries, with their perfectly constructed roads, than the mundane world of an 18th century handloom weaver, or the brutal day-to-day grind of the 19th century railway navy.

Of course it may be that the majority of industrial remains are simply not *old* enough to be considered truly archaeological by most people (Fig. 2, Fig. 3). As recognisable features of the modern world



Figure 2. Crucible furnace men from Jessops' Brightside Steel Works, Sheffield. c. 1911.



Figure 3. Men teeming crucible steel at Jessops' Brightside Steel Works, Sheffield. c. 1911.

(albeit early modern in many cases) they may even be regarded as being in a sense, *after* history, i.e., belonging to a slightly earlier version of *us*, just beyond living memory, rather than to a pre-modern period of historical *others*. The popularity of Victorian Christmas Markets at industrial heritage museums perhaps derives from the fact that the period is perceived as being a less complicated version of the present day, with boiled sweets, fruitcakes, steam-power, and wholesome family values. As a period of transition, the industrial period sits uneasily between the past and present, linking the two, and yet at the same time also transforming both.

In 1951 the Festival of Britain portrayed the pageant of the past (the industrial revolution included) as a *prelude* to the achievements of the present age. Today the past is more likely seen as an *alternative* to the present, a “foreign country” (Samuels, 1994:221). This does not mean that the past is an unknown territory, but rather, that like any tourist destination some locations are favoured over others. The motivation for doing archaeology is often cited as a desire to “find out”. The wealth of sources available to industrial archaeologists, which can include detailed contemporary accounts and plans, and in some cases even photographs of things in use, has led to the common criticism that industrial archaeology is just an expensive way of finding out what we already know. This argument can of course be easily countered by pointing out that the range and richness of sources that are available to us allow far more opportunities for analysis and interpretation than would otherwise be possible (Leone and Potter, 1988:372–373).

The upsurge of interest in 19th century history that has occurred in Britain since 2000 has, nevertheless, stimulated a new fascination with the ingenuity and engineering achievements of the Victorian age. It would seem that the turn of the millennium has served as a point of closure on the events of the 20th century, and that the 19th century, or the *century before last*, as it has become, is now at a suitable temporal distance from the present to be worthy of serious study.

In this chapter I will explore some possible future directions for industrial archaeology. Although some would argue that the term “Industrial Archaeology” is now obsolete, and therefore should not have “future directions” (Cranstone, this volume)³. I would counter this suggestion by making two points. First, the term “Industrial Archaeology”, is well

³ Cranstone, D., this volume; After Industrial Archaeology. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

established, and should not be lightly dismissed, even though, as in other fields of archaeology, such as Palaeolithic or classical archaeology, the thrust of research has changed beyond recognition in the last 50 years. Second, my co-editor and I are aware that “industrial archaeology”, although changed, still lags behind in terms of archaeological theory. We therefore consciously chose to maintain this term in the belief that those that call themselves “industrial archaeologists” will find this volume of interest and benefit from the new approaches and theoretical insights that are presented by the various international contributors.

My basic point is a simple one, and to some extent a fairly hackneyed one for archaeology. We should spend more time thinking about people, and less time cataloguing things. Robin Skeates’ recent book *Debating the Archaeological Heritage* rightly concluded, in my opinion, that what people want from archaeologists is new stories (Skeates, 2000:122). Human actions have a central role to play in the structuring of narratives. We should therefore not lose sight of the people behind the processes that we are attempting to study. To paraphrase E. P. Thompson, it is our task to rescue these individuals from the “enormous condescension” of posterity.

THE CRAFT OF INDUSTRIAL ARCHAEOLOGY

The term “industrial archaeology” first appeared in print in Britain almost 50 years ago. However, since Michael Rix, a Birmingham University extra-mural tutor, coined the phrase (Rix, 1955) its meaning and scope have changed significantly. The growth of British industrial archaeology has been comprehensively described in two recent publications, and need not detain us here (Palmer and Neaverson, 1998; Cossons, 2000). It may, nevertheless, be helpful to outline in brief how industrial archaeology has traditionally been conducted, before going on to outline some possible ways forward.

More often than not the rationale for doing industrial archaeology has had a hint of triumphalism about it, similar to that which was seen at the Festival of Britain. Studies invariably overlooked (or simply failed to see) the fact that in the 18th and 19th centuries, when the industrial revolution was taking place, British imperialism was systematically stripping the colonies of settlement of valuable raw materials, thereby impeding their indigenous development. The introductory

remarks to *Industrial Archaeology in Britain*, by R. A. Buchanan doubtless reflect the prevailing popular opinion of the time:

[Industrial archaeology] . . . is concerned with that common heritage of the people of Britain, their shared past, and in particular with the outstanding national achievement of the last two centuries. The gist of this achievement may be summed up as success in maintaining a rising standard of living for an ever-increasing population: it is the achievement of higher productivity which has resulted in the comparative affluence of Western societies in the twentieth century. (Buchanan, 1974:19).

How, one might ask, has this view been reflected in the types of fieldwork that have been undertaken, and the published output of researchers? Until comparatively recently most industrial archaeologists were content to simply describe the physical remains of former industries, establishing technological functions and detailed chronologies, but rarely relating their material evidence to the wider social relations of production (Palmer and Neaverson, 1998:3).

This is perhaps understandable, given the origins of industrial archaeology as an amateur past time, stimulated by extra-mural classes and special interest groups, and yet nonetheless on the periphery of the academic world. Buchanan has recently described how industrial archaeology in the early 1960s was polarised between a strong voluntary lobby that actively campaigned for the conservation of industrial monuments, and a far weaker official contribution from the academic establishment (Buchanan, 2000:21). There can be no doubt that it was the former group, of enthusiastic amateurs, that made the first steps towards the preservation of the industrial heritage, and encouraged the discipline of industrial archaeology to grow. As Raphael Samuels has observed:

It was not the economic historians but the steam fanatics—and after them the industrial archaeologists—who resuscitated the crumbling walls and rusting ironwork of eighteenth century furnaces and kilns; who kept alive, or revived a sense of wonder at the miracles of invention which made mid-Victorian Britain the workshop of the world; and who treasured those cyclopean machines and clanking monsters that dieselization or electrification consigned to the scrap heap. (Samuels, 1994:276).

Of course, a movement that was above all motivated by the practical concerns of conservation could not resist the challenge to locate the earliest or most complete examples of particular processes or sites for protection (Palmer and Neaverson, 1998:3). With the benefit of hindsight it can be seen that this quest for origins and the *authentic*, which was also a feature of British 20th century folklore and folklife studies, placed

undue emphasis upon the individual monument. The desire to create physical monuments to commemorate the achievements of the industrial revolution had much in common with the emotive process through which religious shrines had been created in earlier centuries. This can be most readily seen in Coalbrookdale, where Abraham Darby's coke-fired blast furnace was restored in 1959, and continues to provide a tangible link to the miraculous discoveries of early-18th century iron-working (Buchanan, 2000:24).

The mid-20th century emphasis upon preserving individual monuments ensured that many iconic features were saved from destruction. However, on occasion this object-fixation failed to grasp the wider scheme of things. It is interesting to note that despite more than 50 years of study, and the publication of a multitude of local and regional studies (see Buchanan, 2000:34) no comprehensive and up-to-date archaeological synthesis of the "big picture" has been attempted since the pioneering work of Buchanan, and Cossons (Buchanan, 1972; Cossons, 1975). Although several overviews of the industrial revolution have been published, these are for the most part the work of economic historians, and generally ignore the evidence of industrial archaeology.

This situation is likely to change. In the last 20 years industrial archaeology has benefited greatly from improvements in recording and presentation. It has also gained more widespread recognition through its informed contribution to the conservation-led regeneration of urban areas, and to the advancement of integrated landscape management plans (Falconer, 2000:77).

Industrial archaeologists have also started to consider more fully what Marilyn Palmer, quoting Collingwood, terms the "inside of the event" (Palmer, this volume)⁴. A better appreciation of the experience of work and the nature of industrial workplaces is now being gained in a variety of ways. Firstly, a number of thematic studies have appeared of the buildings that housed former industries, e.g. the Birmingham Jewellery Quarter, the Sheffield metals trades, (Cattell and Hawkins, 2000, 2002; Wray et al., 2001). Secondly, in recognition of the fact that industrial processes are driven by people, state agencies have also placed more effort into recording existing industries at work, especially those that are about to undergo structural change. Thus impressive photograph surveys were undertaken of Arrol's Works, a structural steel contractors work, near Glasgow, prior to closure in 1987, and Hunterston, a

⁴ Palmer, M., in press, *Industrial Archaeology: Constructing a Framework of Inference*. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

nuclear power station in Ayrshire, prior to decommissioning (Falconer, 2000:76).

This kind of active “process recording”, developed by Brian Mallaws (Mallaws, 1997) and modified by Anna Badcock to take into account the active role of people in the performance of processes (Badcock & Mallaws; 2004) takes industrial archaeology to a new level of social relevance. Rather than lingering over the decaying remains of past industrial achievements, industrial archaeologists are now charged with the responsibility of objectively recording the performance of contemporary working practises. The unique ability to record and comment upon the moment of transformation, which in some cases can mean witnessing the end of practices that have endured for generations, places industrial archaeology at the heart of contemporary culture. Indeed, one might argue that the labour of industrial archaeology is now required *before* major social and economic change can be fully effected.

To return to my opening allusion of Karl Marx chuckling through his beard, industrial archaeologists are now very much part of the industrial process which they study. This of course raises a whole new set of epistemological problems that are familiar to anthropologists and sociologists, and relate to the role of the ethnographer, and the use of surveillance as a tool for coercion and social control. It is perhaps only a matter of time before CCTV footage and transcripts of e-mails are suggested as suitable materials for inclusion in project archives.

WRITING THE REVOLUTION

I have described how industrial archaeology has its origins among the volunteer conservationists of the 1950s and ‘60s. This begs the question why such individuals were motivated to give up their free time in order to save traces of the industrial past. At one level it is clear that the 1950s and ‘60s were a time of uncertainty and post-war WWII modernisation. Agriculture became mechanised, railways became rationalised and electrified, and the growth of car ownership led to a major programme of road-building. All of these factors contributed to the feeling that “heritage was in danger” and encouraged the growth of local amenity societies and protest groups (Samuels, 1994:242–247). But why should anyone feel the need to physically save the *industrial* past, as opposed to any other past? To answer this question we need to take a step back to consider the historiography of the industrial revolution in Britain.

Although the term “industrial revolution” had been in use in England since the 1840s, it did not enter into the vocabulary of historians until 1884, when the lectures of the Oxford don Arnold Toynbee were published (Hudson, 1992:11). Toynbee viewed industrialisation and the rise of free market economics as an inherently bad thing. In his opinion the industrial revolution was linked to a short period of intensive technical innovation that commenced c.1760 with the invention of the rotary steam engine, and was essentially completed by 1850. In this period the old order of medieval regulation was “suddenly broken in pieces by the mighty blows of the steam engine and the power loom” (Toynbee, 1884, cited in Hudson 1992:11).

Toynbee’s view was no doubt coloured by the work of a range of early Victorian writers, such as Dickens, Carlyle, Mrs Gaskell and Engels, who had commented upon the “condition of England” between the 1830s and 1850s. Dickens’ description of “Coketown” in *Hard Times* (1854) is still taken by many to epitomise the horrors of industrialisation, with an oppressed industrial workforce struggling to survive in squalid and overcrowded urban conditions. Other prominent Victorian intellectuals promoted the idea that the 19th century was the crucible of modernity, a turning point between the old world and the new. Thomas Arnold, for example, regarded the sight of the first train passing Rugby as marking the end of feudalism, and William Cobbett thought that important social ties had been severed by the act of parliamentary enclosure (Price, 1999:4).

In contrast to this interpretation of change as an inherently bad thing, much of the thinking that has underpinned approaches to industrial heritage in Britain has been based upon a Whig interpretation of history. By this I mean that there has been a tendency to view technological changes as being linear and progressive. This positivist or modernist conception of history in which progress is seen as an inevitable consequence of the growth of the material forces of the state, was first conceptualised in the 1890s, by the historian J. R. Seeley (Price, 1996:221).

During the 20th century economic historians advanced several models to explain the industrial revolution. Industrial change was seen as being revolutionary, then evolutionary, then cyclical, as each generation reassessed the interpretations of the generation before (Coleman, 1992). Arguments centred upon such issues as the role of demography, the stages of economic growth, the nature and timing of technological innovation, the influence of capital formation, and the standard of living of the working classes (see Hudson, 1992:14–34).

The arguments between historians over the proper use of statistics, and the most suitable measures of industrial growth although at times heated, and often protracted, had little impact upon the work of industrial archaeologists, who laboured on regardless, and felt little need to draw upon theoretical developments in either history or archaeology.

I have argued elsewhere that there are two versions of the industrial revolution in common currency (Symonds, 2003). On the one hand there is a scholarly version, which currently favours a gradualist explanation for change. On the other hand, there is the version of sudden and dramatic change, which still prevails in the popular imagination. The second of these explanations is sustained by the belief that there was a clustering of inventions in the generation that followed 1760, and that this remarkable outpouring of ingenuity sparked unprecedented economic development. Herein, I believe, lies much of the fascination with the industrial revolution, the idea that a special and quintessentially British genius was at work in this period that helped to define national identity, but which has rarely been seen since. Christine MacLeod has provided a useful de-construction of the representation of James Watt in this pantheon of heroic inventors (MacLeod, 1998).

These reservations aside, the term “industrial revolution” is likely to remain in widespread use as a way of describing the period of Britain’s early industrial growth. The term has arguably become indispensable in that it encapsulates the sometimes bitter, sometimes sweet, memories of an earlier stage of collective development. In the words of Maxine Berg:

The industrial revolution has been conceived of as a period of transition, however long the period and varied its characteristics. It is part of the “life story” of the nation, conceived generally as its formative childhood and adolescence. (Berg, 1994:13).

BEYOND MACHINES AND THE HISTORY OF TECHNOLOGY

Can industrial archaeology move beyond its traditional fixation with monument-centred technologies and conservation to become a fully-fledged archaeology of industrial society? In order to achieve this aim our work must become more relevant, indeed I would argue central, to the historical understanding of the period. Crossing the disciplinary divide may not be as difficult as some might fear. Maxine Berg’s

Age of Manufactures highlights the following features of the period 1780–1820:

1. Industrial growth was sustained over the whole of the eighteenth century, not just after 1775.
2. Technical change started early and was widespread. Change was not simply to do with mechanization, and was “above all a conjuncture of old and new processes.”
3. Industrialisation was about the re-organisation and decentralisation of work. Extended workshops and sweated labour were important new departures in production.
4. Technical and industrial change had a variable impact upon the division of labour, skills, and employment in different regions (Berg, 1994:281)

Many of these aspects of early industrial society had material expressions and can be investigated using archaeological techniques. The question inevitably arises, however, what can archaeology add to conventional historical interpretations? Although it should be clear that our interpretations must be based upon material evidence, we must be careful to avoid what Grace Karskens has termed “history with a bone thrown in” i.e. a straight retelling of history from documentary sources, with a few artefacts added to spice things up (Karskens, in press).

THE EXPERIENCE OF INDUSTRY

How can we hope to touch upon the lives of those who experienced the social upheavals associated with industrialisation? In this section I offer some preliminary thoughts on possible future research areas for the social archaeology of industrialisation.

Apart from widespread technical and organisational advances, the industrial age had two major discontinuities that distinguished it from preceding periods. The first of these was a huge increase in population. The population of England and Wales trebled in the four generations from 1751 to 1861, rising from c. 6.5 million to 20.1 million. Second, the rise of industrial society went hand-in-hand with the rapid expansion of towns and cities, as workers were drawn to urban centres from surrounding rural areas by new opportunities for employment.

This demographic growth had a distinctly regional dimension. While London, with one million inhabitants, remained the largest city in Europe, and by far the largest in Britain, proportionately more

growth occurred in the towns of the English north and midlands (Prest, 1988:271). Thus Manchester and Liverpool displaced Bristol and Norwich as the country's second and third largest towns. Birmingham, Leeds and Sheffield also grew appreciably. In 1801 there were just 15 towns in England and Wales with over 20,000 inhabitants. By 1851 this number had risen to 63 (Prest, 1988:272).

The massing of the population in manufacturing towns and cities is a critically important feature of the industrial revolution, and should be central to any analysis of the period. Many of these new towns and cities shared similar physical characteristics, in the form of factories, towering smokestacks, canals, railways, and densely packed back-to-back housing. However, the rapid growth, and differences in the types of manufacturing activity that were being carried out in different regions also ensured a measure of diversity. The architecture of the new industrial towns both influenced, but at same time reflected their wider hinterlands. This brings me to my first suggested area for investigation by industrial archaeologists, the contribution that industries have made to the shaping of local and regional identities.

REGIONAL INDUSTRIES AND LOCAL DISTINCTIVENESS

The morning after our arrival we were startled out of our sleep by an immense rattle along the cobbled street, as though a regiment of cavalry had been suddenly let loose on the town. . . . Hundreds of men and women, lads and girls, were hurrying to the mills. All wore clogs on their feet and it was just the click of iron-shod clogs on pavement that produced the din. The noise died down . . . and then began the hum of machinery, and the rattle of looms, which went on for the rest of the day. (James and Hills, 1937, cited in Girouard, 1990:247).

The pre-modern economy was based upon highly distinctive regional industries, such as that witnessed by Mrs Mary Brown in 1897 (above), in the Lancashire cotton-spinning town of Burnley. These industries had a specific geographical location, and lacked the overall national integration of 20th century industrial production. Mrs Brown would have witnessed a quite different scene had she lodged beside the workshop of a "little mester," producing cutlery in a Sheffield backstreet, or beside the smoking cones of a Burslem pottery.

The industrial revolution should be viewed as the transformation of several distinct regional economies (Price, 1990:46). The timing and extent of the onset of industrial specialisation varied greatly between

one region and another, and some regions, such as the north east of England, witnessed several shifts in regional specialisation. The most frequently cited examples of specialised economic regions in England include:

- Southern Lancashire, parts of Derbyshire, and Cheshire (cotton)
- West Riding of Yorkshire (wool)
- Shropshire (iron)
- Staffordshire Potteries (ceramics)
- Birmingham and Warwickshire (metalworking)
- Tyneside (coal, iron, salt, glass)
- Cornwall (copper, tin-mining and smelting) (from Prest, 1988: 270).

A great deal of effort was made by landowners and industrialists in the second half of the 18th century to overcome the natural barriers to trade and communication that separated these regions. By the first quarter of the 19th century the construction of 20,000 miles of turn-pikes road, 2,125 miles of navigable river, 2000 miles of canal, and c. 1,500 miles of horse-drawn railway had enabled a national market, that incorporated the products of these diverse regions, to be envisaged for the first time (Prest, 1988:245–246).

Was the impetus for industrial growth a local, or a nationally driven phenomenon? At one level it was undoubtedly local. The early economic development of a region depended to a large extent upon the influence of individuals and upon highly localised factors, such as the availability of natural resources, or the creation of an efficient transport infrastructure. A convincing argument has been made that the change from a domestic to a factory system of production in the woollen industry of the West Riding of Yorkshire that occurred between c. 1780 and c. 1840 was an essentially local transition (Gregory, 1982:2). Economic development and growth in Gloucestershire in the period 1500 and 1800 was similarly locally driven (Rollison, 1992:1–18). So how can developments on a national scale be explained? It has been skilfully argued that it was the “reverberation of new ideas” within such bounded but interconnected regions that provided the dynamism for national industrial growth in an otherwise “mostly unreceptive island” (Pollard, 1981:19).

The economic region would, therefore, seem to be an appropriate subject for investigation by industrial archaeologists. Only by comparing and contrasting regional differences in industrial structures and remains, both above and below ground, can the complex interplay of economic and social factors that shaped British industrial growth be truly revealed. At a basic level the simple question might be posed, how

did the economic development of a particular region differ from that of its more or less economically developed neighbours? If a region shows evidence of retarded industrial development, what factors inhibited its growth?

Economic historians have debated long and hard over whether technological innovations are to be explained in terms of exogenous or endogenous factors; yet despite their attempts to explain innovation as a normal feature of economic growth, their interpretations are often unconvincing, and are “certainly not conceptually rich enough to understand either the springs of invention or the complexity of the processes of innovation and diffusion” (Berg and Bruland, 1998:4). Industrial archaeology has the ability to throw new light upon such issues, and can bring new evidence to the debate.

As important, if not more so, than this last point, is the contribution that can be made by local and regional industrial histories to a modern-day sense of place and local distinctiveness. Many of the former industrial regions that have been identified above are once again undergoing transformation as part of 21st century regeneration schemes. Under these circumstances industrial archaeology can provide positive reinforcement to communities in the form of narratives that highlight the skill and resilience of former populations, as well as addressing such sensitive issues as social inclusion (see Symonds 1994; and in press).

THE PLACE OF WORK

My second suggested area of study relates to the first, but narrows in the field of enquiry to examine the experience of the individual workplace. Technological and industrial change had a variable impact upon the division of labour, and the growth of skills in each of the distinct topographical and economic regions. We can therefore expect highly localised patterns of work and technology to have emerged, a fact that has been acknowledged by leading economic historians (see Hudson, 1990).

One way that differences in economic organisation and working practices can be seen is in the architectural form of buildings. The seminal work of Thomas A. Markus has stressed that it is important to view industrial and other buildings as “social objects” and to move beyond simple descriptions of building types, e.g. hospital, prison, school, factory, to view structures as a form of discourse (Markus, 1993). Markus, acknowledging a debt to Lefebvre, Hillier and Hanson, and others, has advanced the proposition, following King (1980), that “the study of

buildings is one way to understand society and the study of society one way to understand buildings” (Markus, 1993:26). This approach exposes the sheer variety of places, which were sometimes purpose built, but were often merely an extension of the home, where goods were made and finished. Major differences in the organisation and scale of production are also highlighted. We may learn a great deal by studying buildings such as Josiah Wedgwood’s Etruria pottery factory of 1769, with its spatial flow of production that transformed raw materials into finished goods in a semi-circle that began and ended at the Grand Trunk Canal, or the humble lean-to sheds of Cradley Heath, where the wives of Black Country miners hand- forged chains.

Further insights may be gained into the social aspects of technology, by examining the role that machines played in the struggle for control between factory owners and workers. By incorporating the skills of workers into mechanical devices capitalists were able to control and regulate production, and thereby remove their reliance upon skilled individuals (Lubar, 1993:200). In the woollen industry of the West Riding of Yorkshire, the mechanisation of working practices reduced skilled and semi-autonomous artisans to casual wage-labourers. The knock-on effect of this change was the deskilling and routinization of work, increased gendered divisions of labour, chronic unemployment, and the imposition of harsh systems of work-discipline upon all (Gregory 1982:21).

Was the de-skilling of the workforce an inevitable consequence of the industrial revolution? We have already seen that in many cases it was the organisation of work that changed as a result of industrialisation, but how did innovation occur? And how were traditional craft skills maintained, safeguarded, or transmitted between members of a community or workforce?

INNOVATION AND THE RETENTION AND TRANSMISSION OF SKILLS

Technology, is, after all, not a thing, but a culture. (Berg and Bruland, 1998:14)

The commonly accepted evolutionary succession of major British industries since the 18th century runs as follows: cotton to coal, to steel, to engineering and shipbuilding, to motor vehicles, to electrical goods, to pharmaceutical and petro-chemical products. (Lloyd-Jones and Lewis, 1998). The simple logic of this scheme has sometimes had

the unfortunate effect of discouraging industrial archaeologists from investigating less visible, but no less significant industries. It has also obscured the process of technological change by implying that innovation was necessarily linear and always homegrown within the British Isles. The peculiar inventive genius of the British, as suggested by many histories of the industrial revolution, may be questioned in relation to innovations in a number of industries with European counterparts, including Italian glass makers and jewellers, Flemish weavers and potters, and German, French, and Walloon iron and steel makers.

In the case of iron and steel making, I have already referred to the event in, 1709, when the Quaker Abraham Darby first smelted iron with coke at Coalbrookdale, in Shropshire. The use of coal in the form of coke as a fuel for blast furnaces, in place of the more customary charcoal, is rightly regarded as a significant advance in the history of metallurgy, and enabled a massive increase in national production rates to take place. However, the background to this innovation is rarely discussed. Little emphasis is placed upon the fact that Darby first became familiar with the use of coke in malting in the late-17th century, while serving an apprenticeship to a Birmingham malt mill maker, or even more significantly, that he gained experience in using coal, and possibly coke, to smelt copper, by emulating the working practices of the metalworkers of Aachen, while working as a member of the Bristol Wire Co., in 1702 (Harris, 1988:31).

A further significant point is that Darby's innovation was only widely adopted beyond Coalbrookdale some 40 or 50 years after 1709, in the 1750s, when a rise in the cost of charcoal forced ironmasters to reduce their expenditure and thereby turn to coke as an alternative source of fuel (Hyde, 1977:57). A similar time lag, of at least a generation, intervened before crucible steel, a refined form of blister steel developed by Benjamin Huntsman in South Yorkshire in the 1740s, was widely accepted and used by the cutlers of Sheffield. Inherent conservatism was an important factor that impeded the adoption of new technologies in many sectors of industry, and merits further detailed investigation by industrial archaeologists.

If technological innovation and industrial growth were limited by conservatism, and initially by expense, how were new ideas developed and transmitted? McCloskey, drawing upon approaches from cultural history, has suggested that close attention needs to be paid to the social and economic context of innovation, and that "speech communities" — i.e. "the rhetorical environment that makes it possible for inventors to be heard" were of critical importance to the advancement of knowledge (McCloskey 1994:269). On a broad canvas, it may be that the "culture of

disagreement and of debate” that existed in North-West Europe (Berg and Bruland 1998:15, citing McCloskey 1994) created a suitable environment for invention, or indeed that Protestant materialism, and the practical mechanical aptitude of northern Europeans allowed them to outpace their technological rivals in the East (see Landes, 1998).

In many industries knowledge was acquired and transmitted within households, or other close family groupings. In the case of bar iron making, Evans and Rydén (1998) have shown how skills transmitted through kinship networks operated in quite different ways in Britain and Sweden. Father and son teams of forgers were of critical importance to the charcoal iron industry of pre-19th century Britain, and frequently moved as a team from site to site, confining their skills to kin, in order to ensure a good wage for their labour. This practice infuriated many ironmasters, who took the opportunity to adopt coal technology as a means to break their reliance upon dynastic iron-working families. In contrast, the Swedish response to the growth in cheap puddled iron on the British market was to intensify the dynastic basis of high quality charcoal-fired Swedish bar iron (Evans and Rydén, 1998:204–205).

Extended kinship networks were not limited to the aristocracy, or the skilled working classes, and operated to the advantage of individuals at every social level, admittedly over varying territorial scales. Important dynastic families of ironmasters, such as the Foleys or Crowleys of the West Midlands, or the Spencers of Yorkshire, successfully maintained their social position and wealth over several generations, and controlled the market in iron through the use of a series of close-knit business partnerships, and cartells (Harris, 1988:66). My point is that whereas historians have traditionally used the household as a means of analysis, and anthropologists, kinship, industrial archaeologists have failed to appreciate the importance of individuals and family networks to the industries that they study.

THE RISE OF CONSUMERISM

The different trajectories of industrial growth, and the local and regional variations in industrial practices that have been suggested above provide a framework for investigation by industrial archaeologists. However, the questions that may be addressed by this scheme relate almost exclusively to the archaeology of production. Of equal importance, but far less studied, is the archaeology of consumption. What happened to the masses of materials and finished items that flooded

out of factories, forges, mills, and potteries as a consequence of the intensification of production?

Did manufactured goods enable the emergence of a “triumphant middle-class,” whose “values (were) imposed through material culture on the poor,” as has been suggested by the most recent overview of post-medieval archaeology in Britain (Newman et al., 2001:9)? Or did the working classes create a self-styled taste of their own (Casella, in press)? Perhaps the rise of consumerism was fuelled by an increase in the disposable income of women, who were keen to spend their new found wages improving their appearance, and that of their home and family (McKendrick, 1974).

Several scholars in North American, and beyond, have suggested that historical archaeology should adopt the study of Capitalism and the rise of consumerism as a focus for their research (Handsman, 1983; Johnson, 1996; Leone, 1977; Leone and Potter, 1999; Paynter, 1988). In contrast, far too little attention has been paid to the material evidence for consumption by industrial archaeologists working in the UK. It is therefore impossible to evaluate the important recent suggestion that has been made by Wurst and McGuire, that the correlation between wealth and the material expression of status is far from linear, and that, “The issue is not what people buy, but the social relations that enable and constrain what they buy” (Wurst and McGuire, 1999:196).

FINDING FRANCIS PECK: SOME CONCLUDING THOUGHTS

Solomon Grundy
 Born on a Monday
 Christened on a Tuesday
 Married on a Wednesday
 Sick on a Thursday
 Worse on a Friday
 Died on a Saturday
 Buried on a Sunday
 And that was the end
 Of Solomon Grundy

On a Sunday afternoon in late-September 2000, I travelled with my partner Victoria to a small village in south Lincolnshire. We stood

for some time in a country churchyard, peering at inscriptions on headstones, in search of the grave of her Great-Great Grandfather. As we turned to leave, frustrated by the undergrowth and the fading light, the low autumn sunlight clipped the side of the church tower, and magically lit up the headstone that we had been searching for: "Here lies William Peck, 5 of his children, and Francis Peck, his son."

Victoria's Great-Great Grandfather, Francis Peck, was born to an undistinguished Lincolnshire agricultural family in 1858. He died from a seizure at the age of 35 while bringing in the harvest, on a blistering hot day summer day in 1893. Francis had been born in the midst of the industrial revolution, and his short life spanned the years in which the British Empire approached its apogee. From Victoria's personal research the following story has been reconstructed.

At the age of 21, Francis was married with a child, and working as a horseman. He lived, with his wife Annie, and their young child, in a small room above a barn, two miles from the village where he had been born. Ten years later, he was living in Nottinghamshire, and working as a casual labourer in an ironstone quarry. From Census returns, and other official records, it appears that Francis moved to find employment on several occasions. His six daughters were born in three different counties, Lincolnshire, Leicestershire and Nottinghamshire. By comparing the birthplaces of his daughters with the location and dates of ironstone quarries, it can be seen that Francis had effectively followed the network of ironstone quarries and interlinking tramways and railways as they extended north from Grantham to Lincoln.

Francis' death during the harvest in 1893 is partially remembered in the collective memory of Victoria's family as the sudden death of a relative that suffered heat stroke after drinking ice-cold water from a stoneware jug. Francis was buried in the same grave as his father William, and five of his ten brothers and sisters, who had all died in their infancy.

The inscription on his gravestone indicated that Francis had died and been buried within a matter of weeks of his elderly father. We may envisage Annie, dressed in her black widow's weeds, and Francis's six daughters, gathered in a state of shock over the freshly opened grave of their Grandfather, for the second time in a month. By 1901 Francis's widow Annie and her daughters had left the countryside, and were recorded in the Census as living in the industrialised city of Nottingham, several miles further north. All seven women now earned their living as lace factory workers.

What is the point of this story about an ordinary man and his unfortunate wife? Were it not for Victoria's interest in genealogy, the

little that has been gleaned about Francis and Annie, and the story of his tragically short life, would have remained untold. Indeed just three generations after his death, his descendents had forgotten his name, and were unaware of his Lincolnshire origins. As far as Victoria's family were concerned, they had always lived in Nottingham, and their female ancestors had always worked in the Nottingham lace-making industry.

It is clear that the large-scale migration of individuals and whole families to urban areas that accompanied industrialisation in Britain has led to a degree of social amnesia. Very few families in modern cities know the details of their ancestors' lives beyond four generations, at least not without recourse to genealogical research. Individuals and events fade quickly, and memories of the past only endure because they are "bound to the present for [their] survival" (Hutton 1993:17). Hence, the chance survival of a blue and white tureen, or some other heirloom, may recall the farmhouse kitchen of a distant country cousin. The writing of history, always partial, and selective, compartmentalises facts to fit the story in hand. We segment, and then re-order linear time to create a credible narrative, "linking the segments along the arc of progress that leads, inevitably, to us" (Glassie, 1982).

Francis Peck is long dead and gone, and cannot be known. Like the character in the nursery rhyme Solomon Grundy, all that remains of his life are a few bald facts, assembled from official documents, and the partially remembered story of his premature demise. The rest is conjecture. Professional historians and industrial archaeologists would approach the evidence that pertains to his life and work in very different ways. In some histories Francis would be lost, subsumed within a head-count of agricultural labourers—or "ag.labs"—that populated the 19th century parish. In other histories the peripatetic nature of his employment might be taken as evidence for the erosion of local agricultural practices and customary rights to tenure by the rise of agrarian capitalism.

Archaeological studies, employing a more materialistic lens, would probably not even notice Francis. Some of the ironstone quarries in which Francis laboured—at least those that appear on the First Edition Ordnance Survey maps—will have been described and included for the purposes of cultural resource management in the relevant County Council Sites and Monuments Records. Local enthusiasts have also published detailed studies of the quarries, mineral tramways, and branch railways that supplied the iron-making centres of the English midlands (see Tonks, 1991). However, Francis and his contemporary labourers do not figure prominently in such studies, which focus upon the physical remains of the quarries and their related transportation systems.

The nuances of working life and the varied social experience of individuals, even within one family, are lost in any analysis that regards Francis as an agricultural labourer and quarryman, and his widow and daughters, as industrial workers. Linda Colley has observed, "Identities are not like hats. Human beings can put on several at a time." (Colley, 1994:6). While this phrase neatly expresses the overlapping ways in which status and gender differences can be played out, we should acknowledge that the repertoire of individual identities changes over the course of an individual lifetime. This was perhaps never more so than in the period of the industrial revolution, when new forms of employment were devised and new types of workplace constructed, leading to the dislocation of rural communities, and the growth of densely populated manufacturing towns.

This should not be taken to suggest that those that left the countryside simply discarded their customary ways, and passively adopted new ways of behaving, but rather that new "symbolic constructions of community"—such as the close-knit working class solidarity of northern mill towns—were made possible by these movements and changes (Cohen, 1985:21). The major challenge that faces the archaeology of the industrial period in future years is the need to move beyond the documentation of machines and the history of technology, to create stories that highlight the individual and collective social experience of industrial worlds that are now fading, but which still cast a long shadow over our post-industrial lives.

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Industrial Archaeology

Constructing a Framework of Inference

Marilyn Palmer

INTRODUCTION

Industrial archaeology, as practised in Britain since the 1950s, is not a homogenous discipline but has two main meanings. On the one hand, like any other form of archaeology, it is the interpretation of the surviving physical evidence to understand past human activity, generally the working lives of our immediate ancestors although there are arguments for extending this back much further, even as far as Neolithic flint mines (Raistrick, 1970). On the other, industrial archaeology is recognised as a preservation movement concerned to ensure the survival of a significant proportion of industrial monuments from the past. This second role might be better described as “industrial heritage” as it is, for example, in Scandinavia (see Westin, 2001), but in Britain the terms industrial heritage and industrial archaeology are often taken to be synonymous. In the 1950s and 1960s, this did not really matter but in the more professional and institutionalised climate of the last two decades, the distinction between the two meanings has become crucial to the acceptance of industrial archaeology as an academic discipline.

A FRAMEWORK OF INFERENCE

Industrial archaeology, as industrial heritage, has achieved considerable recognition in the eyes of the statutory bodies of England, Wales and Scotland—English Heritage, Cadw and Historic Scotland. As archaeology, it is extensively carried out by both local authority

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and contract archaeologists (see, for example, Allen, Cotterill and Pike, 2001; Gould 2001). In universities, however, its acceptance among academic archaeologists still lags behind and so training for those who undertake work on industrial sites in the public sector is inadequate. Industrial archaeology informs the conservation of the industrial heritage but is often seen, wrongly, by many academics as a preservation activity undertaken by amateurs. Another and probably more important reason is that, in both Britain and the USA, it has taken a long time for it to be recognised that “archaeology” is concerned with the remains of the past both below and above ground. Industrial archaeology is largely concerned with surviving standing structures, but if the purpose of archaeology is to understand the development of man as a social animal through the consideration of the material remains he has left behind, then whether a building is above or below the ground in the 21st century is hardly relevant: it is still evidence for man’s activities in the past. A standing building is as much a stratigraphic sequence as the side of an excavated trench and has to be interpreted with even more caution, since alterations can be made to it at anytime without destroying the original structure (see Palmer, 1990).

However, the reluctance of academic archaeologists to accept industrial archaeology as a sub-discipline is perhaps not so much explained by its use of both standing buildings and documentary sources as evidence than by the tendency to explain that evidence in terms of technological paradigms rather than social meanings. Somehow, industrial archaeologists have to bridge the gap between theory and practice and accept that a theoretical stance is not an end in itself and will actually enhance site interpretation. This author’s preferred basis from which to start is a historical one, which perhaps reflects her background as an Oxford-trained historian who had to read the work of R.G. Collingwood. He argued that the study of history was an attempt to get at purpose and thought: that historical events were really actions which expressed the purpose and thought of the agent or agents behind such actions: and, even more elegantly, that historical knowledge is “the discerning of the thought which is the inner side of the event” (Collingwood, 1946: 222). Industrial archaeologists, using a greater range of data than that available to historians, have perhaps even better opportunities than historians to “discern the thought which is the inner side of the event” if they approach their sites prepared to extract the maximum meaning from the material on which they are working. This is, of course, where the theory and practice come together: the full meaning of a site can only be extracted if the material evidence is considered within a framework of inference which seeks to establish social as well as economic and technological significance. Archaeologists of any period need to “read”

the society behind the material culture, and this applies as much to the material culture of the working past as it does to that of the prehistoric past. Industrial archaeologists should be even more successful at deducing the actions and purposes of the individuals responsible for that material culture since they have a much broader range of data with which to work.

The framework of inference within which industrial archaeologists approach their sites is clearly very important, and is undoubtedly influenced by the work of economic and social historians. However, the latter, working from manuscript and printed sources, lack detailed information about the motives and actions of the non-literate in society, who constituted the majority of the workforce in the 18th and 19th centuries, and what information they do have is often transmitted through the biased medium of reports compiled by employers or by the government. Archaeologists here have the advantage of artefactual evidence although this is far more plentiful in parts of the world such as the USA and Australia where adequate attention has been paid to assemblages of excavated data from the historical period. In Britain, much of the evidence for the industrial period is provided by standing buildings. It is perhaps richer in these than most countries of the world, hence the number of British industrial sites which have made their way on to the World Heritage Register. However, the lack of artefactual data in British industrial archaeology is a serious flaw which is only now being remedied by, among others, the editors of this volume (Symonds, 2002, Casella, this volume)¹.

CLASS AND STATUS

A possible framework of inference in seeking an understanding of industrial sites would be that influenced by the writings of Karl Marx. These emphasise the growing contradiction between the forces and relations of production and its consequent effect on the class structure, and have been used as a means of interpretation by American historical archaeologists such as Randall McGuire and Robert Paynter (see McGuire and Paynter, 1991). In Britain, however, recent work has served to emphasise how industrial development was, in some ways, the product of more than one social class, including the tenants of landlords as well as the landlords themselves. Michael Nevell and John Walker of the

¹ Casella, E. C., in press, "Social Workers": New Directions in Industrial Archaeology. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

University of Manchester Archaeological Unit have developed a methodology for describing and understanding industrial change based on intensive fieldwork in Tameside on the outskirts of Manchester (Nevell and Walker, 1999). Using the classification proposed in the *Thesaurus of Monument Types* devised by the former Royal Commission on the Historical Monuments of England (RCHME, 1996), they noted when new types of industrial site first appeared in the landscape and then by reference to documentary sources ascribed their introduction to one of the three social classes identified in the region: lords, freeholders and tenants. In the period 1600–1900 in Tameside, 28 new archaeological site types across 13 monument classes could be ascribed to the lords of the manor, the most prominent being manorial halls and town halls; 48 site types across 10 monument classes to the freeholders, the country house and the textile complex being the most common; and 24 new archaeological site types across only five monument classes could be associated with the tenants, the weaver's cottage and farmstead accounting for the majority (Nevell, 2003:21). Nevell's and Walker's approach linked social class to particular types of archaeological monument and showed that even the tenants built some industrial structures, especially those relating to textile production. The social structure of Tameside was quite well-defined, and the authors point to the potential problems of applying their methodology to regions where contemporary social structure was more developed, making simple categorisation difficult. It remains to be tested elsewhere (see Nevell, this volume)², but provides a valuable insight into the contribution of various social classes to industrial development. The Tameside study does not lay the same emphasis on the contradiction between the forces and relations of production as do the American studies referred to above. It deals largely with what might be described as the proto-industrial period rather than full-blown factory-based industry but indicates that at this stage the various social groups pursued their own distinctive strategies designed to seize opportunities presented by economic growth (Nevell, 2003:25). This did not necessarily bring them into conflict with each other and, indeed, each group often complemented the interests of each other.

In Britain and Europe, it is possible that conflict between social classes did not play such a major role in the development of industrialisation as it did in the USA, at least until the 19th century. In the medieval period, the guild system created a stratified industrial

²Nevell, M., in press, The Social Archaeology of Industrialisation: The Example of Manchester During the 17th and 18th Centuries. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

society which was generally accepted if occasionally resented, while large companies, particularly in extractive industries, and individual entrepreneurs exercised control over a substantial workforce as early as the 16th and 17th centuries. Here, perhaps, redefinitions of status rather than class are important in the development of industrial society. Successful entrepreneurs such as Richard Arkwright actively sought recognition as members of the county gentry, while working conditions in mills and mines reinforced the differences between, say, machine operatives and overlookers or foremen. These are often interestingly revealed in modes of dress, as can be seen in this photograph of a tin dressing floor in Cornwall at the turn of the 19th century (Figure 1). Here, different types of headgear and other forms of dress reflect differences in status within the workplace, something which deserves more research. The foremen then tried to establish their new-found status outside the workplace, and could be helped to do this by their employers. Shiftwork, and the consequent need for the workforce to reside close to the place of work, encouraged the formation of company or paternalistic villages in which different types of housing provision reinforced the differences in social status within the workplace and, in a sense, transferred the discipline of the workplace to the residential community



Figure 1. Ore dressers at Basset Mines, Cornwall, in the late 19th century. Note the foreman with his bowler hat, the flat caps of worn by the other men and the hessian aprons of the women (Mr Johns, Carnkie).

outside it. This can be seen clearly in, for example, the model village of Saltaire developed by Sir Titus Salt in the mid-19th century as well as in many company coal-mining settlements.

However, the workforce did not always accept the paternalistic intentions of their employers. A considerable amount of research is being carried out in England and Europe on housing provision (see Palmer and Neaverson, 2001), some of which reveals the cultural divides in the expectations of the workforce both between different regions in Europe and between employer and employees. In the latter case, paternalistic employers often failed to consider the differences in cultural norms between their own class and that of their employees. It is important to remember when looking at working-class housing, especially that where the home was also the workplace, that the rhythm of family life provided an essential context for the domestic workforce. The handloom weaver, for example, lived within what was usually a large family, since weavers—along with other groups of workers who could earn a cash wage at an early age—tended to marry early and have large families. This undoubtedly led to overcrowded cottages. One of the Commissioners appointed to enquire into the conditions of the handloom weavers commented on the state of cottages in Cam in Gloucestershire in 1840, saying that it was “an unavoidable consequence of large families and small cottages; thus you find them washing, drying, cooking, weaving, quilling and all the other necessary culinary and working duties performed in one small, confined apartment” (BPP, 1840:493). Yet this is the view of a man from a different walk of life and not that of the weavers themselves, who complained about the decline in wages but not about their living conditions. The integration of home and workplace and the lack of privacy was something to which they were accustomed, even though the grease and fluff created in the weaving process made it difficult to keep their cottages clean. The hubbub of family life, often with their relatives living next door, was preferable to walking long distances to work in a town loomshop or a factory, even if the wages were higher (Palmer and Neaverson, 2003).

Yet many paternalistic employers who provided houses for their workforce were determined to provide more than one or two bedrooms so that children of different sexes did not have to sleep together, but this kind of modesty was not necessarily part of working class norms. Edward Akroyd built rows of houses at Copley, on the outskirts of Bradford in the 1840s with the intention:

... not merely for the purpose of aggregating a sufficient number of operatives for the supply of labour, but also with an eye to the improvement of their social condition by fitting up their houses with every requisite comfort and convenience. (quoted in Webster, 1988:39).

However, the workers proved unwilling to pay higher rents for houses with two upstairs bedrooms and so the second group of houses he built had only one upstairs bedroom with the provision of a fold-up bed in the downstairs living room. Equally, the Ashworths, owners of cotton mills in Lancashire, again provided houses of different sizes to persuade employees with large families to occupy houses with the requisite number of bedrooms to keep the sexes separate, but the evidence would suggest that this just did not happen (Timmins, 2000). The attempt on the part of the Ashworths to impose their own perceptions of modesty and decency in family life were not appreciated by their employees, most of whom had been brought up in small cottages and seem to have preferred their communal existence.

At the other end of the social scale, the practice of paternalism was an important factor in enabling many entrepreneurs to enhance their status in the eyes of their peers. The architecturally simple village of Cromford in England, established by Richard Arkwright in the 1770s, is echoed by the village with an identical name established in Germany in 1783–4 by Joseph Brugelmann. Brugelmann's mansion (Figure 2) is considerably grander than that of Arkwright, but both men established their homes overlooking their industrial settlements, a material reflection of strategies of domination and control. Half a century later,



Figure 2. The splendid mansion built by Joseph Brugelmann in the 1790s alongside his cotton mill at Cromford, Germany: the adjoining building originally contained flats for some of the supervisors in the mill.

Sir Titus Salt established his mill and community on the outskirts of Bradford, presenting a social challenge to his fellow-entrepreneur, Joseph Lister, who met it by an even more architecturally splendid mill whose chimney at Manningham still dominates the Bradford skyline. Although perhaps less common among entrepreneurs in extractive industries, architectural grandeur was still utilised for purposes of status and control. A French capitalist, Henri du Gorge, purchased coalmines in Belgium in 1810 and a decade or so later began construction of a vast classical complex, Le Grand Hornu, to house his colliery workshops, placing his own house to overlook the complex with the streets of workers' housing clustered around (Figure 3). If his motive was the improvement of his own social position as an immigrant to Belgium, he certainly succeeded, becoming a member of the first legislative assembly established in Belgium after Independence in the 1830s, just as Sir Richard Arkwright—originally a barber from Preston in Lancashire—succeeded in becoming Lord High Sheriff of Derbyshire. The social aspirations of manufacturers as well as their need to maximise profit by increasing production have to be carefully considered in the interpretation of industrial sites, since these are often, to quote Collingwood once again, the “the thought which is the inner side of the event.”



Figure 3. The statue of Henri De Gorge (1774–1832) in the centre of his colliery workshop complex at Le Grand Hornu, Belgium.

STRATEGIES OF RESISTANCE

The social complexity of the workforce in a large industrial concern is inevitably hierarchical and generates social inequalities, as we have seen. Within such a society, strategies of domination played an important role. Equally interesting is the material evidence for strategies of resistance (see Miller, Rowlands and Tilley, 1989). As I have argued elsewhere (Palmer, 1994), studies of industrial development based on documentary sources tend to exaggerate innovation and technological progress, since change rather than continuity is seen as more important by entrepreneurs, industrial spies, government officials and others who were responsible for the records of the industrial period. The material remains provide evidence of attempts by the workforce to escape from domination and social control. For example, the hosiery industry in Britain remained outside the factory system for longer than any other branch of the textile industries. The reasons were only partly technological, in that a machine capable of narrowing and widening a piece of knitted fabric was not successfully developed until the 1860s. Hosiery workers had been involved in the Luddite riots against the introduction of new machinery in the first decade of the 19th century and continued their efforts to remain as domestic outworkers. In 1833, Edward Sansome, a Leicester knitter, told the 1833 Childrens' Employment Commission that:

... we work, however, when we please; each man has full liberty to earn what he likes, and how he likes, and when he likes. We have no factory bell—it is our only blessing. (BPP, 1833:10).

His claim is somewhat exaggerated, as outworkers were, by the 19th century, to all intents and purposes a dispersed industrial workforce subject to the demands of their employers whose only form of resistance was their determination to retain their domestic mode of production. And they succeeded: the material evidence shows that houses adapted for framework knitting, as hosiery production was generally known, were being built well into the 1850s and 60s (Figure 4). This is equally true in boot and shoe production, where again the material evidence indicates a dispersed pattern of production, some of the processes being factory-based, the others firmly home-based. So, when entrepreneurs constructed new factories for cutting out the leather, speculative builders were quick to establish nearby rows of terraced houses with back garden workshops where stitching and lasting were carried out, and this was still the case at the beginning of the 20th century (Menuge, 2001).



Figure 4. Purpose-built housing with ground-floor workshops for framework knitters in Calverton, Nottinghamshire: the date of 1857 can be made out on the gable.

In the textile industries of south-west England, speculative builders again capitalised on the demand for purpose-built houses including weaving shops in the first half of the 19th century (Palmer and Neaverson, 2003).

Strategies of resistance to machine-based, factory production in the nail and chain industries of the Black Country in England were recorded by an American visitor in 1868, Elihu Burritt who reported that:

They are poorly-paid and have to work long and hard to earn bread in competition with machinery. Indeed, it shows the superabundance and exigencies of labour that nails should be made at all by hand at this late day of mechanical improvements. But thousands of families in this district have inherited the trade from several generations of their ancestors, and they are born to it, apparently with a physical conformation to the work. Then thousands of cottages are equally conformed to it in their structure. For each has a little shop-room attached to it generally under the same roof (Figure 5). Thus the whole business becomes a domestic industry or house employment for the family, and frequently every member, male or female, young or old, has his or her rod in the fire all the day long and often far into the night. (Burritt, 1868:228–9)



Figure 5. Nailshops in Dudley, West Midlands, now demolished (Dudley Leisure Services)

Despite the obviously poor quality of their housing, the nailers fought against the increasing trend to mechanisation in order to retain their domestic environment. But, as Burritt said, “it is almost painful to see how patient human labour clings to a sinking industry... these changes must come, but thousands must suffer in the transition.” (Burritt, 1868:234–5).

A final example of successful resistance is one where the manufacturers compromised with their employees by allowing them to work in a domestic setting in which, nevertheless, production was speeded up by the provision of steam power. In the town of Coventry, after silk handloom weavers had destroyed the first steam-powered factory erected by Joseph Beck in 1830, neighbouring weavers began to co-operate in renting steam engines which were installed in nearby yards and the power was taken to their workshops by overhead shafting. The idea was adopted by a number of manufacturers who presumably saw this as a way of minimising the resistance to the introduction of new technology which they had previously encountered. Rows of purpose-built, three-storey weavers’ houses were erected around a central engine house which supplied steam to the power looms housed in the top-floor workshops (Figure 6). According to the factory inspectors, there were



Figure 6. Home and workplace: some of Cash's "Hundred Houses" in Coventry in the 1970s. The top floor workshops housed jacquard ribbon looms, supplied by power from a central steam engine.

343 of these "cottage factories" in existence by the 1860s, each separate weaver's house being classed as a factory because it was supplied with power. The cottage factories represent an unusual combination of artisan determination to retain independence and entrepreneurial attempts at control of the workforce. It would be interesting to know why this system was not adopted in other weaving colonies which had access to coalfields, as in Yorkshire and Lancashire, but there is little evidence that this happened. Silk handloom weavers were highly skilled and it may be that the employers were prepared to go to the lengths of building the cottage factories to retain their workforce.

GENDER

This strong desire felt by many workers, particularly in Britain, for retaining the domestic mode of production after alternative modes of production were available, perhaps helped to mask the growing separation of the sexes within manufacturing industry. Gender is undoubtedly an important part of the framework of inference within which industrial sites need to be considered, as has been shown by Donald

Hardesty in his research on mining frontiers in the USA (Hardesty, 1998) and Susan Lawrence in her work on Dolly's Creek in Australia (Lawrence, 1998). Even in Britain, where the landscape of mining camps is practically unknown, government legislation in the mid-19th century reinforced existing gender differentials by forbidding women to work underground, the result being that even larger numbers of them sought work on the surface as ore-dressers (Figure 7). The role of women in manufacturing industry has been explored by the economic historian Maxine Berg (Berg, 1994) but insufficient use has yet been made of her work by industrial archaeologists. It is undoubtedly true that women were increasingly employed outside the home on machines in mills and factories, but gender stereotypes already existed in domestic industry: both the knitting frame and the weaving loom had long been male preserves, the role of women generally being limited to spinning, winding bobbins and seaming stockings. However, the dexterity of female fingers was highly valued in textile mills and was exploited in, for example, lace-mending (Figure 8) while traditional male skills in boot and shoe manufacture were transposed into a factory environment (Figure 9), reinforcing existing gender roles.

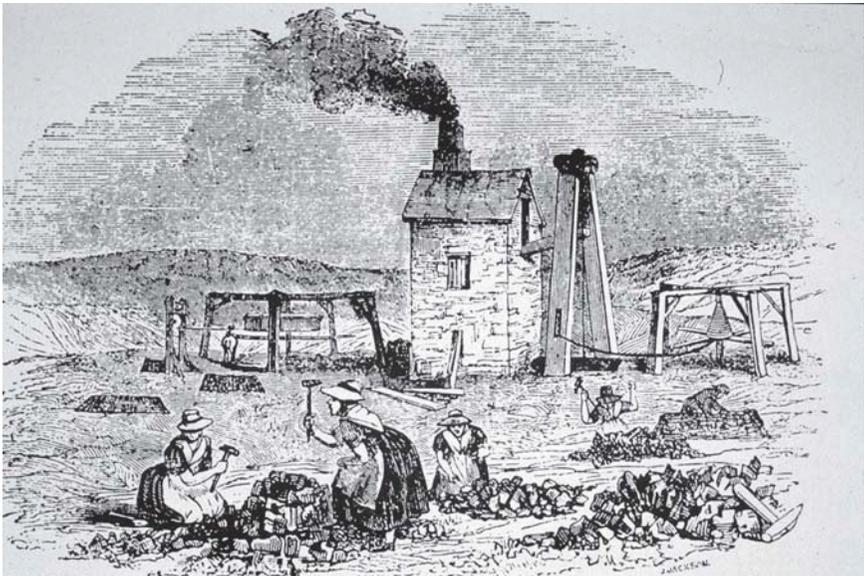


Figure 7. A familiar engraving of women breaking and sorting copper ore at a Cornish mine in the early 19th century (C. Tomlinson, *Cyclopaedia of Useful Arts*, Vol. II, part 1 (1854), p. 260).



Figure 8. Women mending lace on the well-lit top floor of a Nottingham lace factory c. 1900 (Nottingham Lace Hall).



Figure 9. The lasting department of a Leicestershire boot and shoe factory in the early 20th century (*Leicester: a souvenir of the 47th Co-operative Congress*, 1915).

CONCLUSION

These are just some examples of the ways in which the use of a framework of inference in industrial archaeology can draw out the social meanings of surviving structures studied in conjunction with pictorial and documentary evidence, and result in considerable additions to the understanding of the process of industrialisation in the 18th and 19th centuries, which was by no means one of steady and spectacular progress. The issues discussed in this paper have a relevance beyond the study of industry in the past. The increased exploitation of cheap human labour in the textile industries at a time when it was superabundant in the 19th century rather than investment on the part of the entrepreneurs in new technologies is echoed in the use made today of equally cheap and exploitable labour in the Far East. Worker preference for established modes of production and reaction to major change is not only a feature of the early phases of industrialisation, as has been seen in the British coal industry and the rail industry, for example. The issue of gender in the workplace is equally still important. In the late 18th century, men saw their traditional skills threatened by machines which could be operated by the lesser physical strength of women; today, women play an even more active role in industrial production in an age when traditional male-dominated industries such as mining and heavy engineering are in decline. Issues of power, control, domination and resistance are equally still current, and compromise between the entrepreneur and his workforce—as in the case of the silk workers of Coventry—has played an increasing role in modern industrial relations. Finally, there are issues of ethnicity, which were not so much a feature of the early period of industrialisation in Britain and Europe as they were in both the USA and Australia—Britain was often an *exporter* of skilled labour rather than an *importer* of casual labour. This ceased to be the case in the 20th century, yet little work has been done in Britain and Europe on the material evidence for an increasingly ethnically diverse workforce in both manufacturing and extractive industries. Industrial archaeology can contribute greatly to our understanding of the development of industrial society in the modern world, but will only make a real impact both here and in academic archaeology if it moves beyond its traditional techno-centric paradigm to consider the social dynamic of the material remains. This is beginning to happen as graduate students in industrial archaeology, who are perhaps not so influenced by the way the discipline developed in the second half of the 20th century, make their own names and the 21st century is already beginning to see the further academic development of industrial archaeology within universities.

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After Industrial Archaeology? | 4

David Cranstone

The purpose of this paper is to challenge the assumption built into the title of the volume in which it appears; that “industrial archaeology” should have “future directions.” I agree wholeheartedly with the second part of this aspiration, and have no doubt from the TAG session at which the volume originated that new directions in the study of the industrial past are emerging, and that both the session and the volume will contribute substantially to their development. My challenge is to the assumption that these future directions will, or should, label themselves as “industrial archaeology,” and I will argue that this label, and the concept of “industrial archaeology” as a separate study or even—to at least two of its leading practitioners (Palmer and Neaverson, 1998:15)—a discipline is itself now obsolete. Instead, the archaeological study of industry and technology, and of the broader processes of industrialisation, should take its rightful place as a fundamental strand within a holistic archaeology of the later 2nd millenium that does not separate industry from its broader context.

To develop this argument, it is necessary first to look at the three main headings (“industrial archaeology”, “post-Medieval archaeology”, and “historical archaeology”) under which archaeological approaches to the period have developed, and to relate them to the broader academic and intellectual trends of the late 20th century; it is also necessary to look particularly at the relationship of archaeology to history, our fellow-study of the human past.

“Industrial Archaeology” originated in the 1950s, and took off in the 1960s and ’70s (Buchanan, 2000, and other papers in Cossons, 2000b). It developed largely outside the structures of either archaeology or the academic system, originating largely from the interests of engineers and other working professionals in the history of their industries, and finding its academic home largely in extra-mural departments (to

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use the contemporary title). It had (and to an extent still has) great strengths in its wide participation and the way in which this fed through into practical site conservation, and in the depth of practical industrial expertise deployed by its practitioners. Its methodologies had strengths in the recording and practical understanding of industrial structures and machinery, but were slow to adopt modern standards of landscape survey and archaeological excavation. Publication and academic study have also been slow to develop beyond data-gathering, description and functional analysis (valid and necessary though these activities are as an element within any healthy discipline), and to engage meaningfully with the broader social context of industrialisation in the past, and with broader intellectual currents in the present. The scope of “industrial archaeology” remains unclear. Some workers, notably Raistrick (1973) and the recent series of industry-by-industry surveys commissioned by English Heritage for its Monuments Protection Programme (Cranstone, 1995; Stocker 1995)¹, have defined the subject as the study of “industry” of all periods. Most workers have, explicitly or implicitly, taken a chronological definition in which “industrial archaeology” relates to the period of massive innovation and industrialisation in the 18th and 19th centuries (whether or not this is referred to as the “Industrial Revolution”), and may or may not extend into or through the 20th century. However, “industrial archaeology” has not in general been treated by its practitioners as a fully-fledged period study within archaeology. For example Palmer and Neaverson (1998:1) define it as “the systematic study of structures and artefacts as a means of enlarging our understanding of the industrial past,” and hint (1998:14–15) at a definition confined to production within the factory and the capitalist system. By contrast, Clark (1999:283) firmly defines it as “the archaeology of the late 2nd millenium AD,” but does not in practice occupy the full territory claimed by this broad definition². In practice elements of archaeology and society such as religion, non-mechanised agriculture, rural settlement and landscape, and the country house have not been seen by industrial archaeologists as within their interests, and the opportunity to develop Industrial Archaeology as a period study following on chronologically from the Post-Medieval (see below) has been lost (if indeed it was ever desirable).

Industrial archaeology continued to develop through the 1990s, in particular by integration with professional and academic archaeology

¹ Individual industry “Step” reports by Cranstone, Trueman and others have been widely circulated by English Heritage, but remain formally unpublished.

² See Cranstone 2001, 183–5 for a slightly fuller discussion of the self-definitions of industrial archaeology

(though the latter, in terms of the whole-hearted integration of industrial archaeology into mainstream archaeology syllabuses, remained painfully slow). However, by the end of the decade a feeling of unease was apparent. At an academic and professional level, both archaeologists and industrial archaeologists (still all-too-often separate communities in terms of self-identification) commented on the lack of connection between the traditional focus of industrial archaeology and current thinking in academic archaeology and the intellectual world more broadly; at a grassroots level, the present author has increasingly heard comments that the subject “had run out of steam.” At the same time, the traditional well-spring of industrial archaeology as an activity of volunteers deriving their interest from involvement in modern industry was increasingly cut off, both by structural changes in the economy (the drastic decline in employment in the manufacturing sector), and by the increasing rate of change within industry³. This climate of unease was first noted in print by Cossons (2000a:13) with his hint that industrial archaeology might be a one-generation subject, dominated by “a self-defining elite [that] failed to evolve.” It is ironic that this volume, for me, exemplified the problem—a celebration of the millenium commissioned almost entirely from within the first-generation leaders of the subject, whose “perspective” looked almost entirely back over the history of industrial archaeology, rather than a forward-looking celebration or agenda-setting, bringing in both second-generation leaders such as Marilyn Palmer or Kate Clark, and rising third-generation figures such as Garry Campion, Paul Belford, Mike Nevell, or Shane Gould.

The development of “industrial archaeology,” with its disciplinary pretensions, contrasts in some respects with that of “historical metallurgy.” This latter also developed in the 1960s and 1970s, initially as a community of metallurgists and steel-industry professionals with an interest in the history of their subject, and forming part of the upwelling of industrial archaeology. However the links with “hard” science were, and remain, very strong (whereas most industrial archaeology has shown surprisingly little interest in archaeological science), and historical metallurgy rapidly developed into a science-based study of the past of metal-making and -working of all periods, firmly embedded within mainstream archaeology. It now forms a healthy specialist community (albeit somewhat detached from the more humanistic side

³For instance Ken Barraclough’s magnificent works on the blister and crucible steel industry (1984a, b) derived from a working life within the industry at the start of which he had trained in and seen technologies developed in the 18th century; an apprentice steelmaker now would be unlikely to experience working technologies older than the mid 20th century.

of academic archaeology), with no pretensions of forming a separate discipline except to the extent that the scientists within this community often refer to themselves as “archaeo-metallurgists”⁴. The reasons for the very different trajectories of industrial archaeology and historical metallurgy would form an interesting research topic in themselves; I suspect that they would illuminate contingency and the influence of dominant individuals within each group rather than any grand narrative.

By contrast, Post-Medieval archaeology developed from an archaeology centred on earlier periods, focussing initially on the 16th and 17th centuries (as its slightly negative name implies), though most practitioners would now see the chronological bounds as including the 18th and 19th centuries, and many (including the present author) would see the range as including the whole of the second half of the 2nd millennium AD. Post-medieval archaeology has also had problems in advancing from the empirical stage, due to the sheer bulk of relevant data. The major take-off occurred in the 1990s, strongly influenced by American “historical archaeology” (see below), but also centred to an extent round the distinctive voice of Matthew Johnson (1993;1996; 1999a; 2002)⁵. However, this take-off has taken the form of a switch of emphasis from data-gathering for its own sake, to a concentration on broad “big picture” issues (such as capitalism and colonialism) argued by cherry-picked example and assertion, with only selective and “top-down” use of archaeological data to illustrate the broader arguments; this has avoided swamping by the overwhelming volume of the data, but has as yet failed to fully integrate data-gathering and “bottom-up” development and testing of ideas from the data with the top-down intellectual concerns. The resulting discipline is interesting and exciting, but is arguably not yet fully rigorous and analytical, as recognised by Johnson himself (1999b:29–31).

The new approaches have also drawn their inspiration, both implicitly and explicitly, from the humanities rather than the sciences (thereby forming part of the broader “post-processual” movement, see below). They have put strong emphasis on the archaeology of

⁴ This paragraph is written largely from the author’s personal experience as a member of the historical metallurgy community; the processes described can be followed (largely implicitly) in the successive issues of the journal *Historical Metallurgy*, and other publications of the Historical Metallurgy Society.

⁵ See also the broader range of approaches in recent edited volumes such as Gaimster and Stamper 1997, Egan and Michael 1999, Tarlow and West 1999, and Gaimster and Gilchrist 2003. Newman *et al* 2001 is currently the most recent attempt at overall synthesis.

consumption, but (unlike the previous empirical phase, which had no hesitation in studying production sites) have initially failed to engage with production⁶. This may however be changing—a new generation of archaeologists interested in production does appear to be locating itself within “Post-Medieval” rather than “industrial” archaeology. This mirrors the earlier failure of mainstream academic archaeology to develop an interest in the archaeology of industry, lagging behind non-academic society in this respect. To dabble briefly in the psychology of archaeology, I suspect that both failures reflect wider attitudes in middle-class and academic Britain (and particularly England?) towards industry and manual labour—an attitude all too keen to move rapidly away from the understanding of technology in its own right into the study of more intellectually-respectable social and economic questions, reflecting the “two cultures” dichotomy of arts and sciences, and placing archaeology firmly, and limitingly, in the former camp—a point also recently made, from a rather different perspective, by Hume (2003:3). As so often in our subject, the past-present dialectic (Uzzell, 2004) rears its head; this attitude uncannily mirrors that of so many industrialist dynasties, moving over two or three generations from entrepreneur via large industrialist to country landowner firmly separated from (and arguably at times in denial of) the dirt and exploitation of wealth-creation.

Within Britain, therefore, archaeological study of the later 2nd millennium has developed from two separate roots, still bearing separate labels that carry separate baggage. To the extent that both traditions continue to function as separate research communities, the result is to separate production and consumption in the later 2nd millennium into separate sub-disciplines. This, surely, is not healthy, and again the past-present dialectic rears its head—arguably the gulf between producer and consumer in our own society is one of the adverse consequences of industrialisation and large-scale capitalism, as seen by current debates over (for instance) farming, fishing, and the power of supermarkets. To the extent that the labels “Post-Medieval” and “Industrial” perpetuate the limitations of their respective origins, some recent writers have preferred the term “later historical” (Tarlow and West, 1999), and “early modern” is widely used by historians; however both labels while fairly baggage-free are inherently relative, and probably obscure rather than clarify the chronological period involved.

⁶ See the rarity of both science- and production-based papers in all the edited volumes cited in note 5; by contrast, issues of *Post-Medieval Archaeology* from the 1960s to the early 1980s contain frequent papers on production, notably those by David Crossley on 16th–17th century iron- and glass-making sites.

In North America, the study of “industrial archaeology” has developed (from the author’s limited familiarity with this literature) on broadly similar lines to its British equivalent. It appears to remain sharply separate from North American “historical archaeology” whose development broadly parallels, and has been very influential on, British “Post-Medieval” archaeology. The American discipline has been particularly influenced by the structuralism and focus on the individual of James Deetz⁷. The term “historical archaeology” has occasionally come into use in Britain in its North American meaning, despite the fact that historical documentation for the British past is available (to very varying degrees) for all periods from the late Iron Age onwards. Its British usage in the North American sense therefore conflates “the archaeology of the later 2nd millenium” with “the archaeology of historically-documented periods” (discussed further below)—fundamentally different concepts with very different chronological implications within Britain (and indeed throughout the Old World)⁸. I would argue that the unthinking use of “historical archaeology” in its later-2nd-millenium sense by North Americans in a non-North-American context comes close to cultural imperialism; this is ironic given the strongly progressive stance of many practitioners, and hopefully it can be corrected by a wake-up call. The British use of the term, importing an American usage into a context where it is incorrect and inappropriate, may also be symptomatic of wider insecurities over the place of Britain in the world; it may be healthy for our own welfare both to cherish our own perspectives and terminology, and also to place more emphasis on later 2nd millenium Britain in its European context.

These potted histories should now be placed briefly in broader academic context. Space and the author’s ignorance do not permit an in-depth analysis, but I hope to suggest some new slants on what might otherwise seem an old and stale debate. The obvious immediate context, of course, is the debate between “processual” and “post-processual” approaches, following the demise (at least in explicitly theoretical circles) of “culture historical” approaches (to follow the conventional simplification of an intellectual history which is in fact far richer and more

⁷ Deetz 1977 is the classical exposition. The various papers in Yentsch and Beaudry (eds) 1992 illustrate the development of this school, and this volume is surprisingly little-known east of the Atlantic

⁸ This position has already been set forth strongly in Funari *et al* 1999, notably in the papers by Funari himself.

diverse than these simplistic labels suggest)⁹. Within this analysis, “industrial archaeology” could be classified either as dominantly “culture-historical”—in that it has largely avoided explicit theory, and at least one of its leading exponents (M. Palmer, pers. com.) acknowledges a strong debt to her initial training as a Collingwood-influenced historian, or as “processual”, in that it contains a strong emphasis on production and process, while some of the recent theoretically-aware contributions such as Champion’s use of access analysis (Champion, 1996) reflect the processual emphasis on rigorous analytical modelling and functional analysis. These recent contributions have also included more post-processual analyses such as Nevell and Walker’s (1999:2–3; 2004) Weberian closure theory, and Riley and Yoward’s (2001) explicit use of structuration theory, but these remain the exception, and both Champion’s, and Nevell and Walker’s works are published primarily in the mainstream archaeological rather than the industrial archaeological literature. The recent intellectual flourishing of “Post-Medieval archaeology,” on the other hand, has been firmly within the post-processual tradition.

More broadly, “processualism” and “post-processualism” can be seen as the archaeological manifestations of modernism and post-modernism respectively¹⁰, the dominant intellectual trends of the mid and late 20th century. Clark’s (2003:3–4) analysis of modernism as a theory of production, and post-modernism as a theory of consumption, may therefore offer a hint as to why “industrial archaeology” has failed to engage with consumption and the wider human spirit, while “post-Medieval archaeology” has (in its more recent development) slipped away from an engagement with production; both have been inhibited by their respective intellectual underpinnings at a high level. It is however interesting that archaeology thinks in terms of “processualism” and “post-processualism” rather than directly in terms of “modernism” and “post-modernism”—the implication is that archaeology still sees itself as having some separateness from the broader world of the humanities, within which “cultural theory,” no longer shows much respect for traditional boundaries (Eagleton, 2003). This probably reflects archaeology’s

⁹This conventional analysis is deeply embedded in modern archaeological theory—Johnson 1999a forms an admirable summary and analysis, though Johnson (1999a, xiii–xiv) himself makes clear that it is his personal voice in a wider debate, and a wider discussion of alternative models might open up this debate.

¹⁰To select references for this sweeping field is invidious—I have drawn heavily on the analyses of Malik (2000), Jonathan Clark (2003), and Eagleton (2003). My debt to Eagleton is clear from the title of this paper.

awkward, but interesting, location on the boundaries between the arts and sciences (and between both and social sciences). In general, the practical linkages with science strengthen backwards through time, whereas the links with the arts (and above all history) strengthen forwards. The processual movement can therefore be seen as a particularly forceful element of the modernist project, aiming to move the boundary and capture archaeology for science, and post-processualism as an equally forceful reaction. Stephen Jay Gould's analysis of the contested relationship between science and religion (Gould, 2001) may therefore be relevant, and his concept of "non-overlapping magisteria" offers an alternative to the unthinking assumption that intellectual contest should always be resolved by synthesis.

A further relevant context is the history of archaeology in Britain. Without wishing (or being remotely qualified) to embark on a psychological history of archaeology, it is possible to view the development of archaeology in Britain and northern Europe as that of the relationship of an offspring to the parent discipline of history (similar arguments can be made for the relationship of archaeology to classics in the Mediterranean, and to anthropology in North America). Until the 1960s, using this analogy, archaeology acted and thought of itself as an offshoot of history, attempting to use material culture to illustrate and, at best, advance historically-formulated questions; the underlying mindset is perfectly summed up in the classic description of archaeology as "the handmaiden to history" (Andren, 1998:106)—I have yet to track down the original British source of this much-recycled phrase. The rise of the "New Archaeology" (to use the contemporary name for what would now be seen as the early development of processualism) in the late 1960s and early 70s, as well as being an abrupt pendulum-swing from a humanities-based to a science-based view of the discipline, contained a large element of rebellion against the (perceived) repressive parent of history, part of the wider movement of student protest and revolt of its time. This came across clearly (from my own memory) in the lectures and tutorials of David Clarke, though as befits a largely-subconscious process it is only faintly implicit in his published writings (Clarke, 1973); Clarke's ideas of disciplinary development and maturity have of course been highly influential, not least on the present paper. In this analysis, it is no coincidence that the take-off of archaeology as an intellectual discipline was centred heavily in prehistory; the young adult had to move away from the still-overpowering parent in order to find and develop an independent identity. The development of Post-Medieval archaeology (which arguably in the 1990s and 2000s has taken over the cutting-edge role within the discipline that prehistory

held in the 1970s and 80s), and of historical archaeology more broadly, is then a sign of real maturity; the younger discipline is now able to re-enter the core territory of the older, as an independent and equal partner. The rejection of history that characterised early processualism has, very rightly, been reversed; conversely, the rejection of science that characterises many elements of the post-processualist mosaic also needs to be clearly resisted.

This leads into the wider issue of the relationships of archaeology (effectively the study of the human past from the material evidence) to history (effectively the study of the human past from documentary evidence, though for the 19th and 20th century the spoken record is clearly included). The first point to be made is that the whole of history now overlaps chronologically with archaeology (though not, of course, vice versa), whereas until recently “history” was at least in part the chronological successor to “archaeology.” The second point is that until the development of Post-Medieval archaeology from the late 1960s onwards, “archaeology” was seen as having some clear chronological cut-off (wherever this was put), and was therefore clearly moated-off from the present. At the point when “post-Medieval archaeology,” extending forward from earlier periods, overlapped and interacted with “industrial archaeology” looking back from the present, this moat began to be filled in; the whole context of past-present interactions in archaeology, and the role of archaeology in current society, changed. This does not seem to have been explicitly discussed in the literature.

The third point to be made is that the relationship between archaeology and history, and between the material and documentary records, is of fundamental importance for those periods and cultures for which both exist—in England this applies to every period from the Roman onwards, with a first glimmering of documentation (albeit from outside rather than within) in the later Iron Age. The urgent need therefore is to develop the theory and methodology of “historical archaeology” in this broader meaning as the matching twin to prehistory, rather than in any narrower chronological or cultural meaning.¹¹ “Post-Medieval” and “industrial’ archaeology” are therefore elements within this wider sub-discipline, and the features identified by Palmer and Neaverson (1998) as their case for regarding industrial archaeology as a discipline are surely merely the distinctive features of historical archaeology as a whole, manifest in spades due to the richness of both material and

¹¹As argued cogently in Funari *et al* 1999a, and forming a main theme of the overall volume; Andren 1998 is also a seminal text, and the discussion is taken further by Moreland (2001).

documentary records. However one fundamental point has not been adequately stressed in the developing discipline of historical archaeology; the documentary evidence that is the subject of history is the record of what people said (or, strictly, wrote), whereas the material evidence that is the subject of archaeology is the record of what people actually did. This clarifies the fundamental importance of archaeological approaches to any historical period (if this point still needs to be made—examination of the historical literature suggests that it does¹²). It also suggests that, while at the highest level of analysis a synthesis of the documentary and material evidence must be desirable, a degree of separation and dialogue may be essential at lower levels; the methodologies of historical archaeology, including the archaeology of industry, may therefore benefit from avoiding premature and seamless synthesis, in favour of actively examining the discrepancies as well as the concordances between what people said and what they did.

In the long term, we may question whether the existence of two separate disciplines of the human past remains desirable.

At the beginning of the 21st century, then, “industrial archaeology” faces fundamental questions over its future direction, and its existence as a separate sub-discipline. It is to be hoped that this volume, together with the fruits of a joint conference of the Association for Industrial Archaeology and the Society for Post-Medieval Archaeology (Barker and Cranstone, 2004) which, with hindsight, started this process of reassessment, have laid the table for a healthy and diverse debate. The author’s paper (Cranstone, 2004) in the volume just mentioned set out in rather more detail my own views on this debate—these are therefore briefly summarised here, with an emphasis on areas where my ideas have changed or developed since writing the previous paper.

Firstly, the broader intellectual climate. In the wider world, it seems clear that the linked opposites of modernism and post-modernism are under increasing challenge, and that the challenge seeks to move forward from the whole modernist/post-modernist mode of thinking¹³. The outline of the new ruling paradigm, if that is what is emerging, is not clear (at least to me); it is probably still forming. However common themes that are emerging seem to me to include renewed interest in truth, integrity, moral values, religion (in particular

¹² For example, Clark (2003) makes no mention either of the material record or of the archaeological literature.

¹³ From the most recent literature, it is notable that this theme figures strongly in both Eagleton 2003 and Clark 2003, works emanating from very different disciplines and intellectual perspectives.

the relationship between science and religion, morality and philosophy), and “grand narratives,” though without any interest in returning to the narrowly-mechanistic stimulus-response approaches of positivism and modernism. To an extent, these can be seen as a fusion of the best elements of modernism and post-modernism, but emphatically as the common foundation on which a new debate can be built, rather than an end (the “end of theory?”) in itself. Within archaeology, this may be reflected in a decline of the ritual antithesis of “processual” and “post-processual,” and an increasing interest in combining theory and data and using the one to test and develop the other¹⁴. In this connection, I have found the tripartite analysis of Whitley (1998a; 1998b) stimulating. He divides archaeological theory into “processual” (in the normal sense), “post-processual” (implying, in his analysis, a rejection of science) and “cognitive” (implying an interesting in mind and mentality, that actively engages with scientific approaches). This develops the “cognitive archaeologies” of Mithen (1996) and Renfrew and Zubrow (1994), centred in prehistory, into a broader stream that can only be enriched by the dialogues of historical archaeology. It also chimes with the broader developments of cognitive psychology and cognitive science (Malik, 2000:268–293), and one challenge for later-2nd-millenium archaeology is to contribute actively to the broader development of cognitive studies in this broad sense.

A second challenge is to integrate theory with data in a more rigorous manner than we have hitherto achieved. This however emphatically does not imply the abandonment of detailed studies—the detail of industrial sites and processes is emphatically a part of this broader picture, and to that extent those of us coming from an “industrial archaeology” or “archaeology of production” background can continue to wear our anoraks with pride. Our use of, and links with, archaeological and environmental science also need to be developed.

A specific area which, I suggest, should be the focus both of detailed data-gathering and of “cognitive” research is the historical archaeology of invention, innovation and technical development. Here the concept of dialogue between the historical record of what people (primarily industrialists, owners, and managers, as the most literate elements of industrial society) said, and the archaeological record both of what these same people actually did and of the contributions of those who have not left a written voice (including the skilled workers and craftsmen who, one suspects, may have paid a far greater role in the

¹⁴See for example the final chapter of Johnson’s *Archaeological Theory* (Johnson, 1999a:176–187)

innovations of industrialisation than the written record suggests), may be fundamental.

Developing from this, I suggest that we may usefully analyse both the archaeological and the historical record in terms of detailed “authorship”—who produced the individual elements of the archaeological record, and who controlled its production. For example, the slag from an 18th century forge can be seen as the product specifically of the forgerman, and may illuminate his understanding and operation of the technology (potentially both innovative, and different to the picture given in the documentary record of inventions), and even his worldview of the material world that he was manipulating.

A further element which needs consideration is periodisation. As noted above, “Post-Medieval” archaeology initially concerned itself largely with the 16th and 17th centuries, and “industrial archaeology” with the 18th and 19th. The more recent development of 20th century archaeology has tended not to use either label, at least in the military archaeology which has so far dominated the period (Brown *et al* 1995; Cocroft, 2000; Saunders, 2002); the developing study of 20th century industry has not unnaturally tended to label itself as “industrial archaeology” (eg Stratton and Trinder, 1997). The author’s experience, which seems to be shared by many workers in the period, is that despite the enormous changes in society that occurred during the “Industrial Revolution,” a period break in or near the 18th century simply does not work—my view is very firmly that the archaeology of the 16th–19th centuries (at least) needs to be considered as a unity in period terms. By contrast, the traditional division between “Medieval” and “Post-Medieval” archaeologies does continue to work for most purposes, though like all period boundaries it needs crossing and re-assessing from time to time (see for example Gaimster and Stamper, 1997). The case of the 20th century is more difficult. On the one hand, there was no fundamental change in the basis of society corresponding to the Medieval-Post-Medieval transition—20th century capitalism, industrialisation, and colonialism were not fundamentally different from their 19th century analogues. On the other hand, the 20th century approximates (for the moment) to the period of “living memory”, and the massive development of electricity and its consequent technologies, of concrete and metal construction, and (later) of plastics, do represent major changes in material culture and the material record that derives from it; the author’s practical experience is that the traditional archaeological methodologies in which he was trained work well for most 19th century sites, but not for 20th century archaeology. There is therefore a case

for seeing 20th century archaeology as a separate period study. On balance, however, I see the similarities and continuities as outweighing the differences, and prefer not to separate the 20th century from its immediate predecessors.

My view of the future for “industrial archaeology” is that, rather than seeking to survive as a separate period or disciplinary tradition, it should take its rightful place as a part of the broader archaeology of the later 2nd millenium, which engages as fully with production as it does with consumption (a challenge, therefore, to my “post-Medieval” as well as to my “industrial” colleagues), and with the spirit as well as the intellect, and which forms part of a broader sub-discipline of historical archaeology¹⁵. I think also that we may need to shed any remaining inferiority complex over our ability as archaeologists to contribute originally to the debates of the wider academic and intellectual world—we can be producers as well as consumers of both scientific and cultural theory, and our unique contributions must surely arise “bottom-up” from the archaeological record, rather than “top-down” from the imported insights of other disciplines.

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¹⁵The label ‘later 2nd millenium archaeology/ist’ is of course the obvious baggage-free and logical name for the period study, but for that very reason lacks all poetry and resonance—we can surely call ourselves something less dry! For all its baggage, I personally prefer to work on the archaeology of the later 2nd millenium as a Post-Medieval archaeologist.

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**THE CONSERVATION
OF INDUSTRIAL
MONUMENTS AND
LANDSCAPES**

II

From Valves to Values

Industrial Archaeology and Heritage Practice

Kate Clark

INTRODUCTION

At the time this chapter was being written, heritage management in England was under review. A government white paper had been published (DCMS, 2001), there was a new system of heritage audit (English Heritage, 2003) and radical proposals to change the way heritage was protected. In the midst of that very much wider thinking, the white paper briefly commended *Informed Conservation* (Clark, 2001a), a publication which explains why it was important to understand a building and its landscape before making decisions. That commendation marked the end of a personal journey which began in 1985, with an industrial archaeological survey of the Ironbridge Gorge.

This paper sets out to trace that journey by showing how the thinking behind that study came to play a small role in conservation thinking. It is an exploration of how an academic piece of archaeology then translated into practical conservation, which in turn shapes the places where people live and, to some extent, their lives. The experience shows that the practice of archaeology brings with it a degree of social and environmental responsibility which archaeologists cannot ignore.

HERITAGE MANAGEMENT TODAY

In this post-modern, post-ideology, post-nation-stage age, the search for values and meaning has become a pressing concern. In the field of cultural heritage conservation, values are critical to deciding what to conserve—what material goods will represent us and our past to future generations—as well as to determining how to conserve. (Avrami et al., 2000:1).

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The business of conservation or preservation in society today is not a small one. In the UK, for example, the Heritage Lottery Fund provides over £300m a year for heritage projects. The next largest funder, English Heritage, gives grants of around £34m per year. That funding levers in additional money, one study suggested that for historic townscapes, every £10,000 levered in an additional £45,000 (English Heritage, 2002:3). And there are other benefits. The National Trust has estimated that the conservation of landscapes in the south west of England generates £2.34m and creates around 97,200 jobs (National Trust, 1998). About 5% of Britain's building stock is protected, and there are about 19,500 scheduled monuments, 8,000 conservation areas and over a million records in sites and monuments data bases. About one third or more of all planning decisions may relate to the heritage in some way (Clark, 2001b:78). So decisions about what to preserve and why are not just a matter of idle speculation amongst archaeologists or architectural historians; they are decisions that ultimately will influence the places where people live.

Like any other discipline, conservation is based on a series of ideas and assumptions, which are subject to change. One of the major ideas that has emerged over the past decade, and which was fundamental to the government white paper, has been the idea of conserving the historic environment as opposed to a series of discrete heritage assets (DCMS, 2001).

The traditional building blocks of heritage protection in England have been different types of assets: listed buildings, scheduled ancient monuments, areas of architectural and historic interest, or protect landscapes. Yet it can be difficult to draw lines around what is important, when a building sits in a landscape, which is in turn part of a wider area. There is thus a growing tension between the protection of individual assets, and recognising that almost everywhere has some character or value. The idea of historic environment enables us to look at places as a whole. It also brings heritage closer to environmental thinking, as some of the same ideas about management, about diversity and sustainability read across to a more environmental approach.

The white paper also broadens the concept of the value of the heritage. When sites are protected, through listing or scheduling, it is because they are of special architectural or historic interest or national importance¹. However, the paper stresses the wider values of the heritage, as a learning resource, as a social resource that involves people,

¹ *The Planning (Listed Buildings and Conservation Areas) Act 1990* governs the listing of buildings in England, and the *Ancient Monuments and Archaeological Areas Act 1979*, governs the protection of monuments.

as part of the environment, and as something that contributes to the economy. It makes the link to sustainable development, and stresses the importance of involving people. This is particularly important, as it signals a move away from heritage as a narrow, specialist interest, to recognising that heritage is something that has relevance to many areas of modern life.

Nevertheless, the idea of a historic environment with broad-ranging social and cultural value as well as historical value, raises a number of problems, not least the often heard charge that if everything is valuable it must be protected, and how then can society function, the economy develop or people live their lives effectively? The key lies not so much in what is protected, but in how change happens. The government's own guidance on the system notes that:

The historic environment of England is all-pervasive, and it cannot in practice be preserved unchanged. We must ensure that the means are available to identify what is special in the historic environment; to define... its capacity for change; and, when proposals for new development come forward, to assess their impact on the historic environment and give it full weight along with other considerations (PPG 15, 1994:1–2).

The challenge for anyone operating the system is therefore less one of what to protect, and more one of how to manage change; how to ensure that what is important is kept for future generations, without compromising the ability of present generations to meet their own needs.

All of this seems a long way from industrial archaeology. Yet archaeology is at its most basic the study and interpretation of the material remains of the past. And it is the material remains of the past—buildings, landscapes, historic areas, buried remains—that form the historic environment. Archaeologists therefore have a great deal to contribute to the discussion of what to protect and why simply because they specialise in reading that fabric and finding in it the narratives that can inform decisions. Industrial archaeology is particularly relevant because the remains of the past 200 years dominate the landscape today. My own involvement in conservation practice was heavily influenced by an industrial archaeological survey, undertaken with Judith Alfrey in the late 1980s.

ARCHAEOLOGICAL LANDSCAPE SURVEY IN THE IRONBRIDGE GORGE

The Ironbridge Gorge in Shropshire, occupies a special place in the narratives of the industrial revolution in Britain. It was there that iron was first smelted using coke and not charcoal by Abraham Darby I. It



Figure 1. Ironbridge, on the River Sever, is one of the settlements in the Ironbridge Gorge. The Iron Bridge can be seen in the back ground.

is also the site of perhaps the first and certainly one of the best-known iron bridges in the world, a great cast iron arch, built across the River Sever in 1779 (Figure 1).

The Gorge is very much more than a bridge and a preserved furnace. Today the landscape is a World Heritage Site; it includes a complex of museums celebrating the many different industries of the area, including iron-working, china and tile manufacture. It is also very much a living place, incorporating the communities of Coalbrookdale, Ironbridge, Coalport, Jackfield and Broseley, each with distinctive architecture and character, and each peppered with the remains of tramways, ponds, furnaces, potteries, brickworks, limekilns and other industries from the medieval to the modern.

In the mid-1980s a team of archaeologists had begun to explore the archaeology of the Gorge, undertaking surveys and excavations with support from a government youth training scheme. The extraordinary archaeological potential of the area became clear and the Nuffield foundation agreed to fund a two year study, aimed at providing an archaeological context for the bridge and the better known furnaces.

At the time, the Gorge had been the focus of a huge amount of historical research. Barrie Trinder (1981) had produced a comprehensive study of the industrial revolution in Shropshire, much of which had

focused on the Gorge. Arthur Raistrick had studied the iron industry and the Darby family (1953), Neil Cossons (now Sir Neil Cossons) and Barrie Trinder (1979) had researched the history of the bridge itself, and Grant Muter had studied vernacular housing (1979). The excellent library housed reports on everything, probate inventories to brickworks, and much more. It may well have been one of the best documented industrial areas in Britain.

As an archaeologist, the fundamental question was, and still is, what a study of the archaeology of the area could add to 60 years or more of intensive historical research. Should the study simply tick historical boxes—i.e. trawl through the mass of historical data, identify potential archaeological sites, and then go out and spot them? Or could archaeology contribute more than that?

I came to that survey with archaeological fieldwork experience in deep, complex stratigraphy, drawing and phasing buildings and surveying landscapes. Judith Alfrey brought skills in social history, vernacular architecture and architectural history. I had also been influenced the early post-modern theoretical stirrings in archaeology as an undergraduate in the early 1980s. I had no background in economic history or 18th century technology, and only a very hazy grasp of iron-working, geology and transport history. How then to tackle a well documented industrial landscape, using fieldwork skills developed on medieval sites, and a theoretical framework which at the time had only ever been applied to prehistory?

The Death of the Site

The first casualty of the survey was the idea of the bounded archaeological site. There were no sites in the Gorge, instead, this was a complex landscape in which it was impossible to isolate individual sites. There were hundreds of buildings from cottages to villas, and from backyard brew-houses to major industrial complexes. There were water and transport networks laced throughout the woods and settlements, and buried beneath the surface was a three-dimensional mining landscape.

Nor did the idea of distinct industries work. An ironworks relied upon water, tramways, coal mines, workers, and a connection to the riverside. Nor did industrial locations stay in the same use for very long; coal mines became ironstone mines and then clay mines, bottle kilns became lipstick stores, blast furnaces became brickworks. No site was static, and no industry could be separated from another; even the divide between domestic housing and industry was not sacred. There were

no hard lines between the categories that defined most of the usual discussions of industrial archaeology, landscape or architecture.

We could not therefore create a list of sites from the documents to then tick them off in the field, nor could we divide the study by industry or by type of evidence. I could not use my undergraduate training to sample the landscape and use statistics to predict the likely survival of archaeology, as if there were no sites to be found, then the intellectual edifice of sampling falls down. Techniques developed for discrete prehistoric lithic scatters in the desert did not work in a populated, modern landscape. We were already grappling with the archaeology of historic environment; an archaeology of place rather than bounded entities. We needed to collect data in a way which did not rely upon discrete sites.

We chose the plots on the 1902 edition Ordnance Survey map as a base unit. Unlike archaeological sites—which are the creation of archaeologists, the plots themselves were a unit of record that had meaning in their own right. They were the parcels by which land had been utilised and conveyed over time, so by using plots we were already beginning to grapple with the ways in which the landscape had been historically and socially defined. We thus had complete coverage of the Gorge, and a way of integrating different types of evidence and of seeing connections.

But how then should one analyse this data? Were we still only ticking boxes, or could we go beyond the documentary sources in order to find out what the physical evidence could add the story of the Gorge?

We produced four reports on the work, now housed in the Ironbridge Gorge Museum, an article (Clark, 1987), an academic book (Alfrey and Clark, 1993) and a more popular one (Clark, 1994). The article was poorly received (Palmer and Neaverson, 1987), and both books are long out of print. But some issues did emerge that remain relevant to industrial archaeology today.

The Archaeology of Innovation

One of the great themes of industrial history has been the idea of innovation as a driver for the industrial revolution. Britain was transformed by a series of inventions that increased output and gave rise to a new mode of production, the factory system. New technology and new forms of power revolutionised industry, typified by the image of the steam-driven cotton mill, employing hundreds of people (Landes, 1987:41). In the Gorge, archaeological evidence shows that innovation was not straightforward, nor was that take-off confined to the 18th century.

The gorge has always been associated with innovation in iron-smelting. In the early-18th century iron was smelted with coke rather than the traditional charcoal; there were improvements in the way air was delivered to the furnace initially through water powered bellows and later direct blowing, and changes in the quality of iron produced. In 1700 there were several small iron furnaces in and around the gorge; between 1755 and 1758 at least eight big new ironworks were built.

Field evidence shows that that innovation was more complex. The Coalbrookdale furnace itself was a 17th century charcoal furnace later adapted to use coke, powered by water from a pool that was part of a medieval water-power landscape. After it was converted to coke, it remained in use with water-powered blowing long after direct blowing was introduced by the company elsewhere. Indeed, steam engines were installed to continue to keep the former water powered system in use, thus prolonging the life of a more traditional form of power, well after new forms had been introduced. Other furnaces too were built on the sites of former medieval water power sites, or located so as to make use of pre-existing facilities. By setting any of these in their landscape context it is apparent that industrialisation involved a mixture of innovation, and the retention of traditional technology (Alfrey and Clark, 1993:61–66).

Nor was the industrial take-off confined to the late 18th century; there are different transformations in different industries at different times. Pottery manufacture expanded in the later-18th century, but in the mid-19th century brick and tile manufacture dominated the landscape; whereas the biggest expansion in the mining of coal had taken place in the 17th century. Clay-pipe manufacturing only moved from a domestic to a factory system in the 19th century.

The Archaeology of Process

The survey integrated the study of buildings, the landscape and of buried archaeology, rather than seeing these as separate disciplines. Thus, the pattern of adaptive re-use seen in the landscape, could also be seen in industrial buildings, which were frequently adapted and re-used for one industrial purpose after another. The Severn Foundry was re-used as a 20th century toy factory, many of the former brick-works became motor garages, the china works at Coalport was re-used to manufacture powder compresses and rubber door mats (Figure 2). Indeed, the only industrial buildings that have survived were those that were re-used. It is not size or scale that determines whether a structure survives, but whether it has been re-used.



Figure 2. The Coalport China Works—this 18th century china manufactory was re-used after its closure for a number of different purposes.

There was not even a firm divide between industrial, agricultural and domestic buildings. Detailed archaeological analysis of the Brosely pipeworks showed that what had begun as a small barn, became a warehouse and cottages, and was only later converted in the 19th century into a clay pipe manufactory. Warehouses and malshouses were commonly reused for other purposes, a bakery, a cinema and an aluminium smelter for example. Indeed the survival of cheap and flexible premises remaining after industries closed in the early 20th century acted as an incentive for new industries to move into the area. Instead of the

area stagnating as it might have done, there were probably more new industries than at any other time, re-starting the industrial cycle.

The concept of the multi-storey factory or the move to centralised production does not help to understand the buildings and industries of the Gorge. The dominant industrial building type is in fact the industrial shed, a single storey, often open-sided building which might be used for ironworking, brick-making or other processes. Power might be applied to the building—for example a wheel might be added, but the building itself remains basic and multi-functional.

Sheds were often grouped into industrial complexes, in ironworks, tile works and china manufacturing; raw materials entered at one point and finished goods leaving at another. Whilst such works began as planned entities in which one can trace a logical process, for example the encaustic tile factory at Jackfield, over time the logic soon decayed. Kilns were regularly rebuilt, often in a different place, buildings added and transport networks altered. This was not simply a matter of adopting new technology, as changes that had happened in pottery making were not applied to brick manufacture for another 50 years. It was more a response to the local landscape or changes in the market (Alfrey and Clark, 1993:86–113).

Industrial archaeologists often seek to identify function and map processes (Palmer and Neaverson, 1998:75). Yet, as Stuart Brand puts it in his wonderful study of buildings, function melts form (1994). Close examination of the majority of industrial complexes and buildings in the gorge showed that function, form and process were fluid and could not be untangled without understanding the pattern of change through time. Nor can they be read without understanding their wider landscape context.

Industrialisation in Time and Space

It is tempting as an industrial archaeologist to focus on the period of greatest interest, the 18th century. But it soon became clear in the Gorge that in order to understand the events of the 18th century, it was vital to understand the nature of the inherited or human landscape (Alfrey and Clark, 1993:60–67). The innovations in ironworking which took place in the mid-18th century were set in a pre-existing industrial landscape. There were references to the medieval extraction of coal and limestone in the area, but there was relatively little physical evidence for that. Instead, there was good physical evidence that the expansion in coal mining in the 17th century had already created an industrial infrastructure. Wooden tramways crossed the landscape, there had been

winds to let coal down to the river, and barges and bargemen able to transport coal to markets down the river. Coal mines make heavy use of timber and of bricks, there were extensive woodlands, but also a burgeoning brick industry making use of local clays.

There was also an inherited landscape of labour or work. By the mid-18th century there was also an industrial labour force. Judith Alfrey, looking at settlement patterns over time, found a relationship between industrialisation and the patterns of domestic architecture. There were small cottages built in random patterns on the former industrial wastelands of Broseley, probably by incoming labourers (Figure 3). There was also an established industrial vernacular, small one and a half storey brick cottages built to a fairly uniform type across the gorge, which contrast with the stone or timber cottages in the more traditional settlements.

This was a labour force that was already industrialised. Evidence for the manufacture of clay tobacco pipes demonstrated that many cottagers produced clay pipes on their own premises, in the type of proto-industrialisation also seen in weaving or in the Black Country chain-making workshops. There was archaeological evidence for local



Figure 3. This cottage at Lightmoor to the north of the Ironbridge Gorge, is a rare intact survival of a cottages probably built by squatters. It sits on a small piece of wasteland between a former canal and a road, and is made of local materials including rubble, rough timbers and what was once mine-winding chain.



Figure 4. Saggars to hold salt-glazed pottery in a kiln were used to create garden walls in Jackfield. There is considerable archaeological evidence for local pottery manufacture which is not always well-documented.

pottery manufacture in Broseley and Jackfield, well before the better known ceramic industries of Coalport were established (Figure 4). Domestic industry or women's work can also be seen in the small brick brewhouses, used to brew beer or for other domestic tasks, behind many of the cottages.

The concept of the inherited landscape shows that in order to understand the processes behind industrialisation, it is vital to understand the temporal context in which they sit. It is impossible to understand what was happening in the Gorge in the 18th century without understanding the earlier social, economic, physical landscape in which those innovations took place.

It was equally important to understand the modern patterns of loss and survival. Much of the south bank of the river is now covered with several meters of waste from the 19th century brick and tile manufactories, and as a result two major ironworks have almost completely disappeared. During the 20th century, the recycling of cold blast

furnace slag for road mending also reshaped the landscape, making it hard to read some of the 18th century landscape.

Archaeological Evidence as History

Of course the narratives the survey created were as much a product of the documentary record as the archaeological one, but the field evidence did enable us to provide a critical perspective on that narrative. As Williamson has found with gardens (Williamson, 1999:251), so it is with industrial sites. Parts of the Gorge were extremely well documented, others were not; the limestone quarries of Benthall Edge were largely undocumented in comparison to, the Victorian brickworks. Several well documented, and presumably very large, iron furnaces had disappeared. Adits or mines into the hillside almost never survived. There was little documentation for the building of most houses, and no record of who designed or built many of the industrial buildings. The iron industry has always dominated the accounts of the Ironbridge Gorge, but on the ground there is far more evidence for the manufacture of ceramics. Indeed, an archaeologist who had not read the historical accounts of the Gorge might reasonably have assumed the area to have been a major centre for the ceramic and limestone production.

Physical evidence is notable by its absence from the work of many economic histories of the industrial period. Even industrial archaeologists are defensive about the role of physical evidence. As Buchanan notes:

Practitioners of [industrial archaeology] have made little impact on social and economic history, although they have won some marginal recognition, mainly for illustrative purposes (Buchanan, 2000:33).

Writing of another archaeological publication, an Ironbridge contemporary noted that:

It was a continually a disappointment that those involved in archaeology did not understand basic industrial processes. I am not sure who gave archaeologists this God-given task to look over industrial landscapes... the saddest implication... is to note how little real archaeology has had any effect on the interpretation of the momentous events which took place in the Ironbridge Gorge (Smith, 2000:147-8).

Yet it depends on how that history is defined. Social historians such as Maxine Berg, writing about the “other industrial revolution” that included domestic industry and artisan workshops much more than the factory system are often closer to archaeology (Berg, 1985:11). Her focus was women, children, domestic industry and micro- rather than

macro-economics, whereas Pat Hudson reacted to a generation of historians who had seen the industrial revolution as no more than another economic cycle, by arguing that it did represent discontinuity and innovation, but that the pattern was based on interplay between economic and social factors (Hudson, 1992:238). These are the sorts of issues that appear in the archaeological record.

To be fair, few of the individuals that figure in written histories of the Gorge appear in the archaeological record. There was little to illuminate the lives of Richard Reynolds, the Darby's, or the Quaker women of the Gorge, apart from fragmentary elements of the houses where they had lived. The movement of capital, in the form of investments, payments, account books forms a large part of the historical record, but nothing appears in the archaeological record. Nor can one see the connections between people and places. It was only through maps and documents that the pattern of land ownership could be seen. Yet it was possible to see the decisions of individuals, where to locate a furnace, whether to retain an older system, where to enable tenants to settle. The market for labour does not appear in the field, but the houses of workers do, as does the cycle of investment, alteration and dilapidation.

The Nuffield survey did show that there was a role for archaeological evidence in writing history, provided that two principles are accepted. The first was that the questions physical evidence could answer were different to those one might ask of documentary sources, and secondly, that as historians are taught to be critical of documentary sources, so archaeologists need to be critical of material evidence. The archaeological disciplines of time and space, of context, stratigraphy and taphonomy, provide the critical tools. A good archaeologist no more accepts evidence for process in an industrial complex at face value, than an historian takes a document without considering first how and why it came to be written.

FROM SURVEY TO HERITAGE MANAGEMENT

Conservation Issues in the Gorge

At the time that the survey was being written up, a proposal emerged to build a new bridge across the river. The concrete Free Bridge at Jackfield had become dilapidated, and there was a proposal to replace it with a new bridge which became the subject of a public planning inquiry. Suddenly the Nuffield survey data which had been collected

largely as an academic exercise came under intense scrutiny as part of the planning process. At stake was the question of whether it was preferable to demolish a listed concrete bridge and replace it with a new one, or whether it was better to preserve the concrete bridge and build a new bridge between that and the Iron Bridge.

In the end, the decision was to preserve the wider character of the Gorge and not the individual structure, although it was not the impact of the proposal on archaeology that determined the outcome of the inquiry. The critical issue was that the construction of a new bridge within sight of the Iron Bridge would have disrupted the view of the bridge (Figure 5) that had been made famous, indeed had probably created the idea of Ironbridge (Smith, 1979). Using the paintings, engravings and later photographs and advertisements, it became clear that the significance of the bridge and its landscape went beyond its academic value as a source of evidence. It had an iconic and symbolic value. It demonstrated that the public value of the landscape at least, lay as much in its social and symbolic significance as in its value as a source of evidence for archaeology.

At the same time, an application was made to demolish two listed buildings to the north of the Gorge. The buildings were part of an

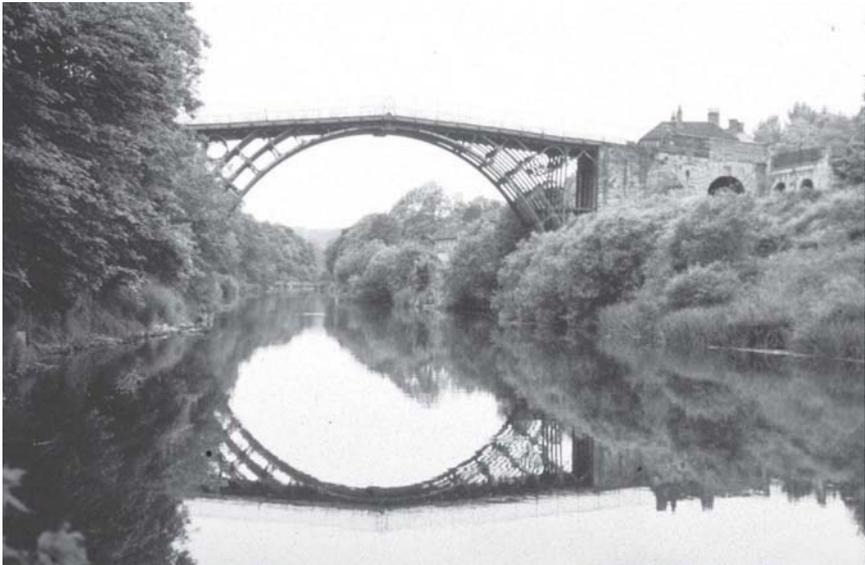


Figure 5. View through the Iron Bridge looking east. In 1988 it was proposed to build a new bridge at Ladywood, which would have been very visible from this viewpoint.



Figure 6. Demolition of the south building at Newdale, Shropshire. This was one of a pair of early iron-supported buildings.

industrial township called Newdale, created by the Coalbrookdale company in 1759, which included at least two ironworking sheds, furnaces, back-to-back cottages and a school. The buildings were investigated in detail only after the decision to demolish was taken, and turned out to be some of the earliest known iron-supported buildings, and included a rare survival of a Coalbrookdale rail built into a window surround (Horton et al., 1992).

In the case of the Free Bridge, a radical decision to demolish was taken only after a thorough debate about the value of the bridge and the impact of the new proposals. In the case of Newdale, proper understanding came too late (Figure 6). Understanding the resource played a critical role in both cases.

Informed Conservation

After the survey finished, I became more directly involved in conservation, advising on planning applications, and later dealing with listed buildings and scheduled monuments. It became clear that good information was absolutely essential to decisions about whether or not

to alter sites. The better a building or site was understood, the easier it was to advise on what change was appropriate. Yet in practice, most decisions were made on the basis of little or no useful information. Applicants submitted drawings of buildings that lacked the most basic details, archaeologists provided records of test-pits that lacked any context or interpretation. Although government planning guidance had introduced a requirement for archaeological evaluation prior to major developments affecting archaeological sites (PPG16, 1990), that principle was not extended in practice to buildings or landscapes, especially industrial ones.

Behind this was a deep-seated ambivalence about the role of archaeological evidence in the conservation of buildings (Morris, 1994:13–21; Pearson, 2001:4; Clark, 2001c:41). Although the Council for British Archaeology had campaigned long and hard for a greater recognition of the role of archaeological evidence in buildings conservation, there were relatively few specific evaluations of buildings prior to making decisions about their alteration (Oxford Brookes, 1999) in comparison to the



Figure 7. Recording industrial sites such as this sugar mill in St Lucia show how important it is to integrate evidence for buildings, landscapes and machinery in order to understand and conserve them.

number of archaeological investigations undertaken as part of the planning process (Darvill and Russell, 2001).

Frustration with this situation and the lessons of Ironbridge together inspired *Informed Conservation* (Clark, 2001a). Written with colleagues in English Heritage's Historical Analysis and Research Team, it began as a guide to the types of research that could assist the planning process, but it became more a guide to using that information to manage change. In a sense, it was the final publication of the Nuffield survey whose original aim had been to create a methodology that could be applied elsewhere. Dealing with an industrial landscape had forced us to go beyond traditional archaeological methods. At the same time, we had had to confront the value of the physical evidence which is, in a sense, the basis of all conservation.

Conservation Management Planning

Informed Conservation touched on a related initiative, conservation management planning. In 1993, the creation of a new fund for heritage provided an opportunity for new thinking in heritage management. The Heritage Lottery Fund was established to distribute money from the new National Lottery to heritage projects across the United Kingdom. The priorities set out in its first strategic plan were heritage conservation, national and local heritage, and heritage education and access. Since 1995 the fund has given nearly £3bn to a range of heritage projects across the country.

The HLF defined heritage broadly as, "buildings, objects and the environment, whether man-made or natural which have been important in the formation of the character and identity of the United Kingdom" (Heritage Lottery Fund, 1999:3). In relation to other funding available for heritage it also had a lot of money to distribute. In order to help make decisions, the fund asks some applicants to produce conservation or management plans.

Conservation planning was not new. The tradition of management planning for heritage sites probably originated in the park wide planning of the US National Parks system (Sellars, 1997:21) and has been used for many years by site managers across the world (Figure 7), for all types of heritage sites (e.g., Feilden and Jokilehto, 1993; Teutonico and Palumbo, 2000). Different countries have different approaches. In Australia, the Burra Charter (Australia ICOMOS, 1999) sets out a process for planning for heritage sites, known as the Burra Charter Process, which was incorporated into guidance on conservation planning (Kerr, 2000). That guidance set out a very simple approach to managing a

site which was based on understanding the place and then using that understanding to develop policies for conserving or managing it.

Kerr himself was, in a way, an industrial archaeologist. A student of Nikolaus Pevsner at Birkbeck in the 1960s, he studied conservation at York, and returned to Australia where he wrote about penal design, and undertook a series of important studies of historical sites including naval dockyards, prisons, and historic houses. Over time, these evolved from historical/architectural studies into documents that also included recommendations for the conservation of the sites. Kerr had made a strong connection between understanding and conservation.

The Burra charter process was also based around the idea of significance, that in order to conserve a place it was first important to understand why it mattered. Kerr explored the idea of significance for buildings. He elaborated on the broad categories in the Burra charter, identifying formal or aesthetic qualities, associational links for which there is no surviving physical evidence, and finally, ability to demonstrate. The latter is in effect the evidential value of a site, the extent to which it can be used in narratives about philosophies or customs, designs functions, techniques, processes and styles; uses and associations with events or persons (Kerr, 2000:12).

Here then was an approach that connected the archaeological understanding of places with their value, and through that their management. It embodied the ideas I had struggled with in the Nuffield survey and put to the test during the public inquiry. It explicitly linked research and action. It also dealt with the multiple values for places, and the lessons I at least had learnt during the public inquiry, that evidential values were not enough; understanding places also involved recognising those wider social, aesthetic and symbolic values.

In 1997, we adapted Kerr's approach for the UK context and produced guidance on conservation plans (Heritage Lottery Fund, 1997). Nuffield had shown me that it was possible to integrate the study of landscapes, buildings and archaeological remains, and so the guidance was designed to be equally applicable to buildings, landscapes, and archaeology. The simple principles of understanding the place, assessing its value, and using that information to defined agreed strategies for caring for it seemed to apply to almost any kind of heritage.

The guidance was launched in 1999 at a conference which brought together architects, naturalists, museum professionals, architectural historians, surveyors, countryside professionals, engineers and

managers as well as representatives of the church and a range of other professions to debate the use of conservation management planning (Clark, 1999). Since then, conservation management plans have been produced for a huge variety of sites including ships (Figure 8), bridges,

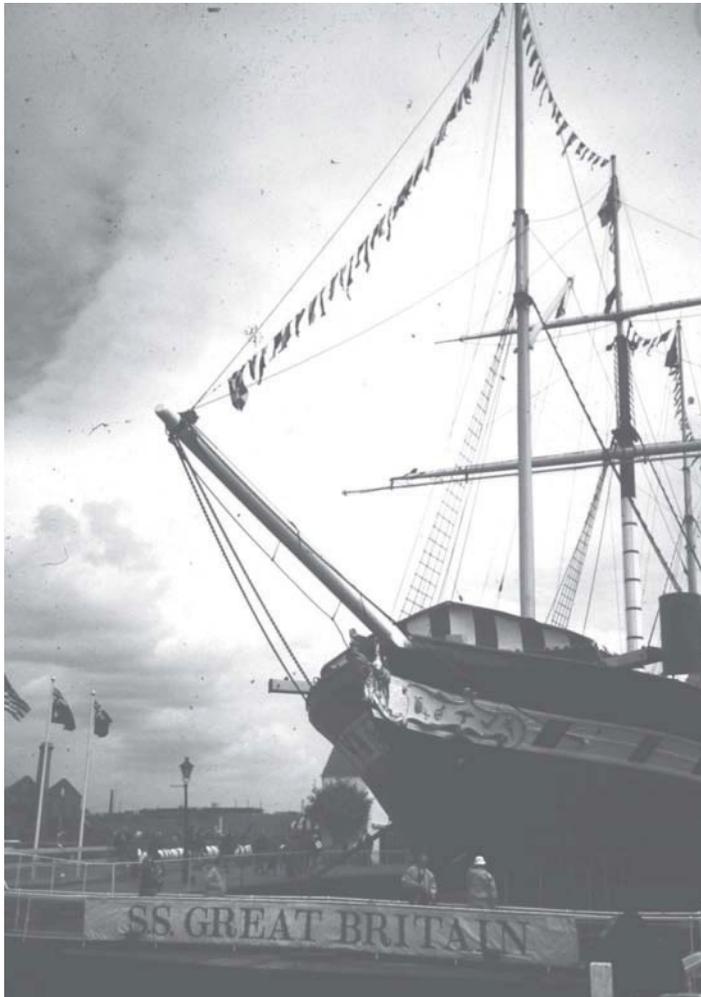


Figure 8. *SS Great Britain*, housed in Bristol docks, built by Isambard Kingdom Brunel was the first screw-propelled iron ship in the world, and is one of the major vessels in the UK with conservation management plans.



Figure 9. Conservation management planning has been applied to designed landscapes such as Stowe in Buckinghamshire.

designed landscapes (Figure 9), country houses, canals, major museums (Figure 10), tiny landscape features and industrial sites. In each case, they have been a way of ensuring that those sites have been properly understood in time and in space before big decisions were made about them.



Figure 10. The Ashmolean Museum in Oxford is has a conservation management plan. Nearly two-thirds of museums in the UK are housed in historic buildings or are responsible for monuments or sites, so it is important to take an integrated view of different types of heritage.

CONCLUSIONS

This chapter began with some basic questions about where industrial archaeology is going as an academic subject, and in particular, how we can draw upon other fields of inquiry. Of course we must go beyond

the description of technology to look at social and economic issues, but I would contend that the strength of industrial archaeology lies no more in borrowing from sociology, anthropology or environmental sciences, than it did 15 years ago in attempting to do economic history poorly. There are distinctive questions about the past to be asked of material evidence, and unlike other fields of archaeology, the industrial period forces us to define those very clearly if we are not to remain for ever material for dust jackets.

The Nuffield survey showed me the importance of looking at the historic environment rather than just individual sites; it also showed that the value of the historic environment lay, in part at least, in its potential role as a source of historical evidence which could challenge traditional assumptions about the process and nature of industrialisation, of work, of innovation and continuity. Yet it also taught me that if material evidence is important, it is also worth keeping. As the loss of Newdale showed, such evidence is extraordinarily vulnerable, especially when we do not properly understand the place and why it is important (Figure 11). It is thus a short step from industrial archaeology to what we conserve and why we conserve it.



Figure 11. Land reclamation in progress. Industrial sites may seem robust but modern technology can make short work of even the most substantial remains, especially when there is pressure to re-use brownfield land.

Cossons reminds us that some 70% of the built environment today dates from the period of the industrial revolution, which places a special responsibility on industrial archaeologists in terms of conservation (Cossons, 1987:12). The archaeology of that period is thus a powerful tool, which has the potential to become the basis of much of our thinking on sustaining the historic environment as a whole. It is impossible to make informed decisions about any landscape or urban area in Britain today, without understanding its industrial archaeology.

But with that role comes a responsibility. Heritage conservation is as much social action as it is an environmental concern (Clark, 2001b:87). The evidence of archaeologists is used to inform decisions about what to keep and what not to keep. That in turn shapes places, which in themselves influence people's lives. In this context, archaeology becomes not just an academic pursuit, but a social and environmental one, which will involve engaging with communities. Industrial archaeology can either remain a narrow subset of archaeology or museum curation, or it can engage with wider debates about the environment, about places and people. That is the real challenge ahead.

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Publishing and Priority in Industrial Archaeology

David Gwyn

Understanding, in some degree, the impact of industrialisation upon the world in which we live is one of the greatest challenges that studying the past can offer. It is central to the academic disciplines of ecology, economics, of social, intellectual and political history, of geography, even perhaps of international relations, literature, art history. Outside the academic sphere, it remains crucial to understanding the modern world, and is the concern of all who think about the form of human society we have evolved and hope to sustain.

Archaeology, as the study of the past through its material evidence, should have much to contribute to these disciplines. Yet very few archaeologists who consider themselves to specialise either in the Modern period or in industry would claim that their insights are highly regarded either in academe or in other fora. The following paper is addressed primarily to the English-speaking world of industrial archaeology, by an archaeological consultant and part-time university teacher who has had the opportunity to publish in the UK, in the Republic of Ireland and in the USA, and who now finds himself editor of one of the major industrial archaeology journals.

Establishing priorities for publication of studies of industrial archaeology raises several questions which relate to each other in overlapping ways; what types of organisation and individual are engaged in industrial archaeology, and what might they have to publish? What types of publication are available to them? What types of study are being carried out, and (one hopes) are being presented for publication? Is it the case that particular groups publish particular types of study, and furthermore, do they tend to do so in particular journals or other specific ways? These also raise other questions, such as the general

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intellectual direction of industrial archaeology, and the ways in which it is practised within different national groups. Re-assessments such as these are not, of course, unique to industrial archaeologists; railway historians and engineering historians have asked similar questions of themselves in recent years.

These questions are complex, so for convenience's sake let us begin by confining our attention to the United Kingdom; not out of any sense of residual pre-eminence, rather as a case-study significantly different from other English-speaking cultures. Not only was it in the UK that industrial archaeology first evolved, but also it has here had to struggle for recognition from a developed and long-standing tradition of pre-Modern archaeology, something that has not been the case in North America, Africa and Australasia. The UK has the advantage of a small, perhaps disregarded, but nevertheless intellectually vigorous community of industrial or historical archaeologists. This community is made up of university teachers, members of contracting organisations and, crucially, it respects and includes the voluntary sector, often individuals with a first-hand knowledge of industrial processes and sites. Buchanan, indeed, locates the origins of industrial archaeology in part to precisely this area, the meeting of the academic periphery and interested amateurs, through WEA classes and the like (Buchanan, 2000). The UK has the related, though by no means unique, advantage that universities and museums are not directly state-controlled, and archaeology is not a state monopoly.

University teachers who specialise in industrial archaeology are few in number, yet show no immediate signs of dying out as a breed completely, especially as some of the Heritage Management and Heritage Conservation courses established in recent years include an industrial archaeology component. Though the appointees from the more optimistic days of the 1960s and '70s are not being replaced as they retire, Marilyn Palmer's chair in industrial archaeology is a hopeful sign and some (very few, it has to be said) young scholars have been appointed at several universities on an "historical archaeology" ticket who clearly regard industrial sites and landscapes as part of their brief. This reflects one of the more interesting arguments that perhaps splutters rather than rages within the academic archaeological community, as to the relationship between "historical" and "industrial" archaeology (Cranstone, this volume)¹, and the attendant question of whether

¹ Cranstone, D., (in press), *After Industrial Archaeology?* In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

industrial archaeology should be regarded as a thematic or period-specific study (Palmer, 1990).

Broader theoretical questions such as these do not particularly tax archaeologists who work with contracting organisations, whose responsibility is often to produce a comprehensive multi-period report on a particular area for a client. While lack of time and limited resources press, if anything, even more heavily than on academic staff, industrial archaeology has made considerably more headway in many respects here than in higher education (Neaverson and Palmer, 2001), and often it is possible for members of a contracting unit to build up a remarkably detailed picture of the industrial archaeology of a particular region. County archaeologists and staff of the Welsh and Scottish royal commissions are in an analogous situation.

Voluntary individuals and organisations often have the great advantage that they are not working within the constraints of a contract, or of the next Research Assessment Exercise; they can often spend as much time on a particular project as they wish or as is necessary. Kate Clark singled out their role as one of the great strengths of industrial archaeology in her paper to the joint Association for Industrial Archaeology, and, Society for Post-Medieval Archaeology conference in 1998 (Clark, 2004). On the other hand, they also operate within their own constraints. Recently the Secretary of TICCIH (The International Committee for the Conservation of the Industrial Heritage) concluded that members of the British-based Association for Industrial Archaeology “are not really concerned much outside their own patch” because they were under-represented at its 12th triennial conference in Russia (Smith, 2003). Here delegates were amazed to see at Ekaterinburg and Nizhny Tagil technology which had largely disappeared from the west decades earlier, such as perhaps the last functioning Bessemer converter in the world, to say nothing of iron framed buildings far older than their equivalents in England. Sadly, the truth is that trips to the Urals are an expensive matter. For individual members of the AIA, typically male, often retired, a week spent exploring devastated post-communist industrial landscapes is generally not an option. Spouses reasonably insist that holidays, and hard-won savings, be spent in Torquay, or the Riviera, rather than in a dismal milieu chiefly associated with the murder of the Romanovs. Nor can professional archaeologists working with contracting units afford to take part. Pay levels are too low, and there is unlikely to be the opportunity to travel in work-time and at an employers’ expense. This restricts the delegate list to senior members of the museums service and to some academics.

The same is also true of conferences generally. All but the most well-heeled, or academics with access to generous conference grants (not a thing that can be taken for granted these days) will have to weigh up very carefully the reasons for attending an international meeting, and if the independent industrial archaeologist sticks to his or her own patch, explored, recorded and written up for local publication in the company of a group of friends, this should neither come as a surprise nor be adduced in itself as evidence of a parochial failure of vision.

Access to books and journals is not always easy for voluntary groups. Though many of the UK's universities operate schemes whereby members of the community may consult or borrow volumes, comparatively few of them hold relevant publications. A few examples will have to suffice. *Industrial Archaeology Review* is held by eleven UK universities and by Trinity College, Dublin,² *Technology and Culture* by eight UK universities,³ *IA, the Journal of the Society for Industrial Archaeology* by only one, Imperial College, London.⁴

Though there are problems facing each grouping, there is at least the consolation that industrial archaeology (however defined) is practiced by a reasonably diverse set of people. Equally, there is in the UK a variety of publications and publication-types open to those who wish to publish their research. Several regionally-based societies produce newsletters, a few publish journals, and a number of the county historical and archaeological journals publish industrial archaeology material. Society journals reflect the priorities of their members, and circumstances have made the county journals to some extent the preserve of the amateur or of the contracting unit, since the Research Assessment Exercise have effectively warned universities off anything that might be tainted by parochialism. This is a pity, in that it has cut off one of the channels of communication between the different members of the community, and deprived the editors of county journals of some excellent university-sponsored research. Of course, it is wrong to suggest that the type of studies at which amateurs often excel, detailed research into a specific site, is only written by amateurs, still more wrong to suggest

²These are Birmingham, Imperial College, London, Leeds, the LSE, Newcastle, Nottingham, Oxford, Cambridge, Glasgow, Sheffield and the University of London Library. The British Library also has copies.

³Aberdeen, Bristol, Cambridge, Glasgow, Liverpool, Newcastle, Birmingham and University College, London. Again, the British Library has copies.

⁴This and the preceding two references from <www.copac.ac.uk/copac/wzgw> accessed 31 January 2004.

that amateur archaeologists are incapable of seeing the broader picture. Nor is it the case that industrial archaeology has moved beyond such studies and now has no need for them. Very far from it; the often bewildering variety of industrial archaeology site-types, the strong regional variations within particular industries, make it vital that such focussed studies as these see the light of day, and there is much to be said for publishing them in a regional context as part of a regional story.

Then there are the specialist journals, primarily *Industrial Archaeology Review* in the UK. The *Review*, the house organ of the Association for Industrial Archaeology, and successor to the *Journal of Industrial Archaeology*, established in 1964, is published twice a year. Each issue typically includes four articles of between 5,000 and 8,000 words on a variety of topics, though its policy is not to accept single-site surveys which are not contextualised within a broader picture. As such its nearest parallel in international terms is *IA: The Journal of the Society for Industrial Archaeology*, published from Michigan Technical University and edited by Professor Pat Martin. *IA* typically includes between three and seven articles in each issue, the bulk of which come from the pens of university academics (including doctoral students), and the bulk of the remainder from individuals whose professions might best be described as curatorial. Neither *Industrial Archaeology Review* nor *IA* restricts itself to its own country. When the first edition of *Industrial Archaeology Review* was published in the autumn of 1976, the editorial board included Marie Nisser from Sweden, and Robert Vogel from the USA. It now includes, at least in theory, nine from England, three from Wales, one from Scotland, two from the USA, and one each from France, Spain, Portugal, Germany, Poland and Australia. Though the board of *IA* is made up of USA residents, it frequently publishes on European themes. In addition, *Post-Medieval Archaeology* in the UK and *Historical Archaeology* in the USA frequently publish articles on production or distribution sites from an industrial context, or on workers' settlements.

Book-length studies of industrial archaeology have been published in the UK from the 1960s onwards. The first regional study was Green's *The Industrial Archaeology of County Down* (1963). Others followed, the David and Charles series, and the Batsford guides, the Longman series edited by L.T.C. Rolt and other thematic or regional studies, though a glance at Angus Buchanan's chart (2000:34–5) shows very clearly how little appeared after 1980. Valuable though the publications Professor Buchanan lists undoubtedly were and are, few have stood the test of time. McCutcheon's excellent *The Industrial Archaeology of Northern*

Ireland (1980) has done so, and Barrie Trinder's remarkable *The Industrial Revolution in Shropshire* (2000), initially published in 1973, proved so durable in conception and scope as to lead to revised incarnations in 1981 and 2000 (see Wakelin, 2003). Yet overall, what publications there have been since 1980 have followed a very different approach to those of the first generation, even where they build on their insights.

In fact, a sea-change in attitudes to the industrial past took place in the UK the 1980s, and was reflected in a change of emphasis in publication. The coal-miners' strike of 1983–4 and the near-destruction of the coal industry over the following years, were the most visible, and the most traumatic, of the changes wrought by a government determined, as it saw the situation, to reverse Britain's decline and to move beyond the post-war consensus. This involved a decisive break away from heavy industry towards a service economy, and, paradoxically, a readiness to claim the fast-disappearing industrial past for the Conservative Party (Joseph, 1986). As Adrian Jarvis pointed out, anything written post-1983 using the words "Victorian values" is not about Samuel Smiles, but about Margaret Thatcher (1991:166). Nostalgia reflected the huge rate of de-industrialisation. In 1986 the Ironbridge Conservation Area was declared a World Heritage Site, followed by Blaenavon, in 2000.

One consequence of these traumatic social changes was that by forcing the pace of industrial and urban change, it brought industrial archaeology to the forefront of the planning process. The adoption of Planning Policy Guidance notes 15 and 16 expanded the opportunities for developer-funded recording, whilst English Heritage's Monument Protection Programme (MPP) was initiated in 1991, and in Wales the Scheduling Enhancement Survey began in the mid-1990s. Scotland had been quicker off the mark, with the work of John Hume and the Scottish Industrial Archaeology Survey at the University of Strathclyde, which had already carried out extensive thematic surveys before the SIAS was formally transferred to the Scottish Royal Commission in 1985. All of these involved a staged process which sought to identify, describe and catalogue each individual industry and the monument types associated with it. This underlies not only much of the work on the archaeology of the recent past carried out by English Heritage, Cadw and Historic Scotland, but also the efforts of voluntary groups, often special-interest based and often working on a regional industry. An example of how this approach can work well, drawn from the author's own experience, is the slate industry of North Wales. One group, whose members are drawn mainly from England, latterly based at the Snowdonia National Park Study Centre, under the supervision of professional archaeologists, has been carrying out week-long site-surveys on selected quarries

every summer since 1970. In recent years it has developed strong personal links with a locally-based group which produced the remarkable *Hafodlas Slate Quarry* (Jones, 1998). Cadw took an interest in these various projects, and commissioned a series of reports from the Gwynedd Archaeological Trust as part of their Scheduling Enhancement Programme, and the Welsh Royal Commission maintained a watching brief on developments as well as providing the venue for the regular meetings of the Welsh Industrial Archaeology Panel. The relatively informal way in which these organisations were able to co-operate proved highly successful, and did much to advance understanding of an important regional industry, as well as informing the broader landscape studies promoted by Cadw and the Countryside Council for Wales, although the University of Wales was conspicuous by its absence. Other examples could be offered, such as work on textile mills in the North-west of England, where academics have been more involved (Williams and Farnie, 1992). Common to these projects, however, is the process of identifying, describing and cataloguing the various sites associated with the particular industry and the various monument types associated with it.

This approach continues to inform baseline research and the scheduling process, and though it has contributed greatly to knowledge of the resource overall, with one or two admirable exceptions, most of the work has remained as grey literature, and has not progressed the theoretical basis of industrial archaeology beyond the inventory approach of the David and Charles regional series, with their photographs of forlorn monuments.

More wide-ranging but essentially similar in conception is the international thematic study, as sponsored by TICCIH in order to provide a series of industry-by-industry lists—for instance, textiles, collieries, railways—for use by ICOMOS in providing the World Heritage Committee of UNESCO with guidance as to which should be considered as being of international significance and thus merit World Heritage status. Despite their importance for the broader picture, and their possible methodological implications, these have so far tended to remain as grey literature.

Another approach which has become evident is to study the linear monument. With the profound changes in transport technology both reflecting and making possible the development of primary and processing sites, the study of canals, roads and railways is essential to industrial archaeology. Monument types associated with linear features have often been considered thematically (for a North American example of this approach, see Mayer, 2000) or as single-site studies, the best of which are suitably contextualised and informed (see for instance,

Greene 1995). Another approach has been to consider the archaeology of the linear feature in its entirety. In this respect, Wales has been served particularly well. Stephen Hughes' pioneering study of the Montgomeryshire Canal (1989) was followed by the same author's study of an early railway system (1990). Since then, a study of the Welsh section of Telford's London to Holyhead road, (Quartermaine, Trinder and Turner, 2003) has not only identified the extent and variety of structures associated with the road, but also developed the methodology for future study of such features. This approach has obvious implications for areas of study not generally considered part of archaeology, such as the study of urban morphology, and the development of the "metropolitan corridor."

The linear approach has much in common with what is perhaps the most interesting approach to the archaeology of the recent past which has emerged since the 1980s, is the comprehensive study of an industrial landscape or townscape area. Remarkably, this is a comparatively recent development, and yet it is here that a theoretical basis has been evolved to a greater extent than elsewhere. Judith Alfrey and Kate Clark's pioneering study of the Ironbridge Gorge built on the continuing work of Barrie Trinder but, significantly, broke new ground in setting out a methodology for the analysis of landscape evidence through space, time and typology, beginning with the role of Wenlock Priory (dissolved in 1540) rather than using the Gorge as a backdrop for 18th century technological achievement (Alfrey and Clark, 1993:2). Though Rynne's study of Cork (1999) and Hughes' study of Swansea (2000) are less explicitly theoretical, both follow on from Alfrey and Clark in a comprehensive and analytical view of the historic environment which includes every aspect of the industrial past. Hughes, indeed, moves breathlessly from pumping engines and tramplates to housing to social infrastructure, yet builds up a comprehensive picture of the long-term social and technical archaeology of the one of the earliest major industrial settlements in Britain, in its way every bit as significant in its way as Ironbridge (Hughes, 2000).

The longer story also emerges strongly in another, and particularly interesting, series of publications, those which have emerged from the University of Manchester Archaeological Unit, particularly the *History and Archaeology of Tameside* series (Nevell and Walker, 1998; 1999). These have made use of an innovative methodology which considers the period of emergence of new site-types within the landscape and the pattern of their introduction, and relates them to a distinct contemporary local social class; lord, freeholder or tenant, arguing that in each case the new site-types relate to the sphere of influence of each of these

social groupings (Nevell, this volume)⁵. The “Manchester methodology” has enabled the Unit to suggest a narrative of industrialisation in which the tenants emerge as the driving force, forcing into decline the descendants of the class of Medieval freeholders. It has the merit that it can analyse sites at a micro-level as well as landscapes at a macro-level. It has also created a forum in which professional and voluntary bodies and individuals can contribute to projects, as well as for that matter of amateurs only very recently introduced to archaeology, and has informed and promoted the consolidation and interpretation of a number of important features.

Each of these approaches has much to offer, and future publication must ensure that the results of each are represented. In particular, though international studies tend to exclude certain groups, they are vital if this area of archaeology is to be taken seriously. Yet with the inventory approach, there is a danger that description will crowd out analysis, and that a theoretical basis for industrial archaeology will remain elusive. Specifically theoretical studies of the archaeology of industrialisation are not always popular with the majority of active practitioners, and they can certainly sometimes be extremely turgid in published form. Yet the sheer complexity and omnipresence of the post-Medieval past is such that it can only be understood if appropriate analytical models are there to enable us to do so. Neaverson and Palmer’s *Industrial Archaeology: Principles and Practice* (1998:3–15) and Newman’s *The Historical Archaeology of Britain* (2001) discuss this issue. Shane Gould argued cogently (Gould, 2001:67): in his review of Sir Neil Cossons’ *Perspectives on Industrial Archaeology* (2000) that the absence of theoretical models:

... is compounded by the failure to establish a credible academic research base within university departments of archaeology and consequently the subject has not developed an evolving body of theoretical enquiry. The strict adherence to the functional interpretation of “industrial remains” means that large elements of the social landscape are ignored, but equally frustrating is the denial that physical evidence may also contain dynamic information on past cultural interaction. The absence of an evolving intellectual tradition is arguably the Achilles heel of industrial archaeology and unless this weakness is addressed its academic future remains uncertain (Gould, 2001:67).

⁵ Nevell, M., (in press), *The Social Archaeology of Industrialisation*. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

Though debates as to what constitutes industrial archaeology have raged since the discipline first emerged in the 1950s (McCutcheon, 1980:372), there is perhaps at last a sense that an intellectual tradition is indeed evolving. It is probably not too much to say that the “Manchester methodology” does provide a basis by which the other approaches to the material evidence for the industrial past can also be analysed. It offers a context by which particular classes of industrial sites and buildings can be understood within their typology and within a broader context, and does not perpetuate the distinction between archaeologies of production and consumption. The emphasis on the long story opens a way out of the problems posed by both the time-specific and the thematic view of industrial archaeology, whilst the concept of lordship as an analytical tool restores human agency to the archaeological resource, and makes possible a coherent social archaeology.

This does not mean that the specialist journals should radically change direction, or that studies only merit publication if they eschew the “technocentric” and embrace “social archaeology.” The mere fact that pleas are being made for “social archaeology” of the industrial and modern period is worrying enough, as there is no archaeology, properly understood, that is not social. Both “social” and “techno-centric” are words that require some caution. There is nothing inherently objectionable, from anyone’s point of view, about studies of machines. There have been, for example, several excellent archaeological surveys of individual railway locomotives over the last few years (e.g. Bailey and Glithero, 2000). To point this out invites anguished reactions from colleagues who sense industrial archaeology returning to a primitive hell at the end of a station platform populated by notebook-toting schoolboys in a techno-focused trance, endlessly identifying and never analysing. More reasonably, the value of these studies derives from the way in which machines are treated as fully cultural artefacts (see Fitzgerald, 1990), essentially as social archaeology just as much as, for instance, Mary Beaudry and Stephen Mrozowski’s analysis of clay pipe fragments and buttons of imitation jet from Lowell, Massachusetts (Beaudry and Mrozowski, 2001) or Susan Lawrence’s analysis of the archaeology of the consumer revolution in colonial-era Australia (Lawrence, this volume)⁶.

Comparison with this particular study leads us into the question of what the various parts of the English-speaking world can learn from each other in terms of historic archaeology and industrial archaeology,

⁶ Lawrence, S., (in press), *Colonisation in the Industrial Age*. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

and to what extent writing and publishing the “grand narratives” of industrialisation might become possible. The emphasis on detailed artefactual evidence and the readiness to engage in theorising which is a feature of much of the American scholarship which finds an outlet in *Historical Archaeology* (see also Beaudry, 1988; Yentsch and Beaudry, 1992) has lessons for practitioners in the United Kingdom. In particular, the very diverse experience of the United States as they underwent industrialisation, such as the persistence of bond labour alongside free labour well into the industrial period, and the sheer variety of ethnic identity in both settlement and workplace, has focused many issues that are at present only beginning to surface in industrial archaeology in the UK. Gender studies, for instance, have only begun to make an impact on industrial archaeology in Britain (Palmer, this volume)⁷, where the emphasis has nearly always been hitherto on the male worker. The *Australasian Historical Journal* publishes a wide variety of articles on subjects mainly from the Pacific rim. As well as the rich pickings in the field of theory to be had here also, several of these have specifically considered the theoretical questions raised by the archaeology of cultures that remained explicitly colonial for longer than did North America, and these in particular deserve the attention of archaeological practitioners within what was historically the originating culture. United Kingdom industrial archaeologists may recognise that England, Wales, Scotland and the northern part of Ireland at least produced on an industrial scale for an imperial economy in the 19th century and later, but tend to regard the materials exported as of no interest once the cargo left the harbour, unless to marine archaeologists should the vessel have foundered. Colin Rynne discusses the economic relation between the centre and an active periphery and the archaeological significance of this relationship in the present volume⁸.

For all the slowness of industrial archaeology in the United Kingdom to consider its own intellectual basis, the UK remains one of the countries in the world where it has a strong foothold, where the role of machinery is taken seriously and understood, and where the primary focus is on archaeological enquiry, however understood, rather than on conservation and regeneration. Post-medieval archaeology of any

⁷ Palmer, M., (in press), *Industrial Archaeology: Constructing a Framework of Inference*. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

⁸ Rynne, C., (in press), *Technological Innovation in the Early-19th Century Irish Cotton Industry*. In *Industrial Archaeology: Future Directions*, edited by E. C. Casella and J. Symonds. Kluwer Academic/Plenum Publishers, New York.

description has made comparatively little impact in continental Europe outside Scandinavia. If, for instance, the “Manchester methodology” does prove applicable outside the areas for which it was designed, then indeed a robust theoretical model will have been evolved that can also look at areas where industrialisation failed, or only partially developed, or took radically different forms. Melded with innovative approaches to the modern past developed in the USA and in Australasia, there is no reason why it should not make a powerful case for industrial archaeology at academic level not only in the UK but elsewhere in the world.

We cannot really complain that the theoretical debate within industrial and modern archaeology goes unnoticed, and the possible contribution of our branch of archaeology to broader questions of the past and present is ignored, if we either fail to publish at all or speak only to ourselves. In the first place, study does not deserve the name unless the salient points that emerge are written up and published for an appropriate audience, whether in the form of an article or a book. A number of well-placed theoretical pieces or case-studies arguing the case for industrial archaeology in, for instance, *Antiquity* or *The Antiquaries Journal* would strengthen the cause, as would submission of pieces to *Technology and Culture* and the *Journal of Social Archaeology*, or to *Landscapes*.

This sounds like a plea for industrial archaeology to join the academic mainstream; always a suitably rousing and purposive conclusion. The situation is a little more complicated. Its present constituencies, in particular the strength of the voluntary input, mean that it will remain a partly autonomous discipline in some respects for the immediately foreseeable future. Voluntary groups will, thankfully, continue to function for the immediately foreseeable future. However, industrial archaeology does need to address the broader archaeological community and to argue its case there persuasively. To suggest that the focus must move to the universities will not necessarily be popular, but it is both inevitable and necessary that this should be. There is no easy fix, and no obvious answer. In any case, too prescriptive a policy as to what should be published and where will stifle the discipline at a time when it needs to grow.

What is clear is that if industrial archaeology succeeds in developing its theoretical basis, it will enrich other areas of academic study. The archaeology of industrialisation offers a unique and privileged insight into modern human society, with its relentless and competing searches for raw materials, and its ever more intensive methods of processing them, a society which, moreover, in the 19th century adapted the production line to the purposes of imperial hegemony and in the 20th century

to mass murder. Industrialisation is the most fundamental change in human society since the inception of agriculture, and underlies the confusing clash of ideologies and faiths in our restless world.

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Gas and Grain

The Conservation of Networked Industrial Landscapes

David Worth

INTRODUCTION

The largely uncontested and unnoticed demolition of the gas works in the Cape Town suburb of Woodstock, in 1996, provoked little concern among neighbours, the academic community, or Cape Town's city planners and heritage officials. Across the city, in Table Bay Harbour, the grain elevator built in the 1920s to facilitate South African maize exports, was closed in 2001. Its location within an area of the harbour being re-developed for a mixture of retail, commercial and residential uses, has made it vulnerable to demolition, and its future is far from secure.

Using as case studies Cape Town's 19th century gas supply network, and the country's 20th century nationwide system of grain elevators, this chapter argues that networked industrial landscapes, originally built to facilitate economic, political and social development in the contexts of their time, can be conserved and re-used to further developmental objectives in the future.

The infrastructures of gas supply and grain distribution, both of which were designed for the distribution of commodities, have here been termed "networked industrial landscapes." That these infrastructures were materially networked is evidenced by the physical structures that linked their various nodes. In the case of the gas works, the backbone of the network was the system of gas supply pipes that linked Cape Town's two gas works to each other, to their domestic and industrial customers, and to the public street lamps of the 19th century city. In the case of the grain elevator system, the physical network was provided

by a railway and harbour system linking country and port elevators to each other, to grain growers, and by extension, to the world.

The definition of these systems as cultural landscapes is predicated on their roles as a material manifestation of human activity. Clearly, in a functional sense, these are physically constructed landscapes, and it is necessary to engage with the material evidence in order to consider conservation options. Importantly, however, they are also landscapes in the sense that they are socially and ideologically constructed, and as such are rich in meaning and symbolism.

The use of guiding principles derived from the value-led conservation work of Kerr (2000) and Clark (2001) embeds our understanding of networked industrial landscapes in the material evidence, and in the values that are presently, or have in the past been attached to it. However, there needs to be an acknowledgement that future generations may attach different values to the same materiality, and that this will not be possible if we arrogantly decide that only present values need to be conserved.

In Africa, management of cultural heritage has tended to focus on great architectural structures, such as the pyramids, Ghana's forts, and Great Zimbabwe. Ndoro suggests that "the interests of local communities are often ignored at the expense of international guidelines and frames of operation," and that adherence to these guidelines often ignores traditional African ways which see landscape as a shared resource (2001:20).

Serageldin, outlining the challenges facing nations undergoing "difficult political transition," which surely includes South Africa, has argued that cultural heritage is impacted by "the dynamics of development and transformation. . . and by perceptual and practical links between people and their. . . cultural heritage." Thus ideas about conservation of cultural heritage that may have been introduced from countries "enjoying long periods of stability and growth" are often entirely at odds with developmental objectives (Serageldin, 2000:51). As will be seen, this exactly describes the situation of the grain elevator at Table Bay harbour, Cape Town.

As the 20th century drew to a close, South Africa was optimistically re-born and re-branded as the "New South Africa," and the "Rainbow Nation." However, its new democratic government faced unprecedented challenges in addressing and redressing centuries of inequality and repression, of homelessness, hunger and HIV/AIDS. Politicians, environmentalists and economists alike acknowledged that adherence to the principles of sustainable development was essential if these challenges were to be met.

Though much needed economic, political and social development is often seen to threaten both the historic and natural environments, the need for such development is paramount if South Africa's population is to take full advantage of its hard won political freedoms. Thus there is clearly an imperative for mechanisms which reconcile development needs with conservation needs. In order for such mechanisms to be designed, as Trinder and others have written, it is first necessary to achieve an understanding of the nature of the historic environment, and to assess the cultural and other values that may attach to it.

There is a symbiotic relationship between effective conservation policies and the growth of understanding. Monuments will only be conserved and interpreted if they are understood, and the justification for conserving structures must be based on arguments derived from knowledge and not on mindless assertions of questionable superlatives. (Trinder, 2000:53)

THE NETWORKED INDUSTRIAL LANDSCAPE OF GAS SUPPLY

The first case study examines the documentary and material evidence of the Cape of Good Hope Gas Light and Coke Company. Later known as Cape Gas, the last remaining works was closed, and quickly demolished, in 1996.

Gas supply in Cape Town was characterised by being a privately funded enterprise, initiated in the 19th century, and operated at a local level. Cape Town's two gas works formed nodal points of a network distributing gas for public, domestic and industrial use through a network of buried supply pipes. The networked landscape, though largely underground and invisible to the public gaze, has similarities with supply systems for water and for hydraulic power.

When the Cape of Good Hope Gas Light Company laid the foundation stone for its new works in 1845, chairman Baron von Ludwig, claimed that the company was "not guided by mere sordid views of pecuniary gain, but that . . . they aim at something higher . . . the general improvement in our religious, moral and social relations." This theme was to be repeated over the remaining years of the 19th century, as opposing notions of Light and Darkness, popular with Christian reformers, were played out against each other (South African Commercial Advertiser. 8th Oct. 1845). Thus the social and ideological development agenda was laid down from the start.

The Cape Town Municipality quickly entered into a contract with the company for the supply of street lighting, but this was to prove

increasingly contentious over the next decades. Street lighting was unprofitable for the gas company, yet it faced ongoing demands from the Municipal Commissioners for a widening of supply and reduced prices.

By 1866 the “Gas Question” had a strong presence in the local press and in the political consciousness. As the Gas Company regularly declared profits while simultaneously claiming that street lighting was supplied at a loss, critics concluded that private consumers were being overcharged to subsidize not only the public street lighting, but also the profits of the company (*Cape Standard*, 27th Jan. 1866). The issue was therefore seen to be about more than whether Cape Town had street lighting or not. It was also about broader issues relating to monopolistic practices, the relationship between private capital and the public interest, and the future development of Cape Town. In June 1866, with negotiations having broken down, the company was reported to have removed “their lanterns from the Public Lamps” and subsequently stopped lighting Cape Town’s streets.

More than two years later the *Cape Standard* described how a by-election had been won by a representative of Darkness who vanquished the representative of Light. The key question in the election had been “gas or no gas,” and only in 1871, after a five year break, was supply eventually restored (11th Apr. 1871).

The “Light and Darkness” divide was to be paralleled in local politics a decade later by the “Clean and Dirty” debate. As the city experienced an economic boom due to the discovery of diamonds in the northern Cape, its mercantile elite enjoyed new prosperity, and had both the means and motivation to invest in infrastructure and industry (Bickford-Smith, 1995). Reformers, intent on sanitary and infrastructural reforms, and known in the local press as the “Clean Party,” eventually carried the day. Their opponents, labeled variously as “reactionary,” and as the “Dirty Party,” represented the established landlord and property owning classes, and were opposed to reforms which would necessarily lead to the imposition of higher municipal rates (Worden, et al 1998).

The nature of the relationship between the gas company and the Council, and the protracted wrangling over the terms and conditions of their contract, was fundamental to Cape Town role’s in the development of a networked industrial landscape and required the Council to regularly re-negotiate its contract. It seemed that the monopoly was about to be ended in 1888, when a second gas company began construction on a site in the suburb of Woodstock. The two gas companies quickly negotiated a merger, however, forming the Cape Town and District Gas Light and Coke Company, later to become Cape Gas.

Production was shut down at the original Long Street site in 1907, and from then on the site was for a long time used as showrooms and offices before finally being demolished. A 1970s office tower block with an underground parking garage now stands on the site, and the archaeological potential is minimal.

The second gas works, at Woodstock, was repeatedly upgraded and extended during a century of operation. However, the high railage cost on coal, and the maintenance of aging plant and buildings, eventually forced the company to close, giving notice of a single month to its remaining customers.

The retort house, built in three phases between 1907 and 1980, contained a total of 46 Glover-West vertical retorts set in seven beds. The site also comprised “wet” and “dry” purification systems; exhausters and blowers for drawing off gas from the retorts and passing it through the rest of the site; tar stills; and a water-gas plant. Two triple-lift gas-holders were constructed on the Gadd system, and thus fitted with self guiding rails fixed spirally to each “lift,” instead of an external guide frame. As the holders emptied, and the descending “lifts” telescoped into each other, there was very little visible above ground, in contrast to the landmark structures familiar in Britain and elsewhere, where the external frames remain as features on the landscape even after the holders themselves have been emptied and removed.

The Woodstock gas works was a prime example of a dirty, smelly, unsightly, and uneconomic industry, albeit one that had, as a representative component of Cape Town’s gas supply network, played an important role in the development of the city. It would not have been considered rare in the middle of the 20th century, with both design and plant having been imported from Britain, where many similar works existed until the early 1970s. The rarity of the site lay in it being one of the last working survivors of a site-type that could once be found in many industrialised countries across the world (Figure 1).

With the site cleared of buildings and other structures, and even the soil itself latterly being removed, little remains to be seen of Cape Town’s gas supply, other than a handful of inspection plates set into pavements and roads. Like storm-water drain covers and sewer man-holes, which might appear insignificant today, they add texture to our sense of the networked industrial landscape.

The network of gas supply pipes, buried beneath Cape Town’s streets, is an invisible, rather than visible reminder of the city’s history of gas usage. The laying of gas distribution and supply pipes from the 1840s onward, along with other public utilities such as water supply



Figure 1. The gas works at Woodstock, shortly before demolition. Photo by D. Worth, 1996.

and sewerage, served to bind separately managed areas and individual households into a cohesive community, linked by common services.

The symbolic nature of the network, and its impact on the cultural and social, as well as industrial and commercial, landscapes of the day is best represented by the company's stated intentions on opening the works, and by the bitter divisions within the town during the period between 1866 and 1871.

Proposals to mitigate total loss of the Cape Gas site were dismissed for a variety of practical and economic reasons including the poor structural condition of the retort house, and the site's identification as the "single largest potential pollution source in the area" (Gibb Africa, 1996:48). A further constraint, and perhaps one of the most important, was that the process itself could not have been conserved, even if the principle structures were. Without the process, which had the additional disadvantage of being invisible, the distinctive gas works smell, and the airborne dust and soot that accompanied it, would also disappear.

Finding an economic new use for the Woodstock gas works would clearly have been impossible, and there was no support, financial or otherwise, for the creation of a site museum. Sadly, not a single item in the way of machinery or other artefacts was saved for museum collections.

Most significant of all, perhaps, was the prevailing attitude towards industrial heritage among heritage professionals in Cape Town in the mid-1990s. Put crudely, the Woodstock gas works simply did not fit in with then current notions of “heritage,” and thus the site was not properly considered, and quickly lost.

The total destruction of the Cape Gas site means that for the networked landscape of Cape Town’s gas supply, a unique opportunity to create a site museum, perhaps incorporating a museum of Cape Town’s industrial history, has been lost for ever, and with it the potential to provide a motor for urban regeneration, economic transformation, social upliftment and historical awareness.

The network could yet become the foundation of an interpretive scheme in the city, with appropriate story-boards and other material being displayed on relevant buildings and pavements, inviting community participation in mapping its own history. Displaying historic maps of the network, as a proxy for the networked landscape itself, could become a means of initiating dialogue with those whose oral histories around the manufacture and consumption of gas might yet be recorded. Associated with the archiving of the documentary records, and a detailed record of the archaeology of the networked landscape, such a scheme could provide a valuable means of embedding an understanding of Cape Town’s historic environment within the experience of Cape Town today.

THE NETWORKED INDUSTRIAL LANDSCAPE OF GRAIN ELEVATORS

Whereas the networked landscape of gas supply was concerned with a privately owned infrastructure, originating in the 19th century, and operating at a local scale, the networked landscape of the grain elevators was a state funded, 20th century infrastructure, operated at a national level. It comprised port elevators at Cape Town and Durban, and 34 smaller country elevators in the grain producing areas inland. Of these, 33 were in the maize growing areas of what were then known as the Orange Free State and the Transvaal, while the last was at Moorreesburg in the wheat producing area north of Cape Town.

The entire system was built by the South African Railways and Harbours Administration in the early 1920s, and was overlaid onto, and integrated into, the railway network on which its day to day operation, its long term management, and indeed its very existence depended.

The government's declared motivation for the grain elevator scheme was the development of the agricultural sector, and in particular to increase maize exports and reduce the country's dependence on gold sales. However, this needs to be considered within the context of increasing state involvement in the industrial sector during the 1920s, and the creation and management of state sponsored electricity and iron and steel industries as a means of stimulating the manufacturing economy, and thus creating employment opportunities for "poor whites" (Christie, 1984; Clark, 1994).

The grain elevators fulfilled two principle functions: enabling grain, formerly man-handled in bags, to be mechanically handled in bulk; and providing safe storage, secure against damp, fire and pests.

Country elevators servicing local grain farmers fell into two broad types, with smaller elevators having a single working house and larger elevators a double working house. Further categorisation was possible based on the number and size of the storage bins on each site, and thus of the storage capacity. However, apart from that broad typology, the elevators were all built to the same specifications, by the same builder, for the same purpose; fitted out by the same engineers, with the same machinery; owned and financed by the same authority; and staffed from the same labour pool (Figure 2).



Figure 2. The derelict country grain elevator at Leuwoorns. Photo by D. Worth, 2001.

Country elevators were relatively small, and comprised a taking-in shed, one or two working houses, scales, dryers, cleaners, elevators, storage bins and loading out bins. Each working house contained two bucket elevators: the “short leg” serving a cleaning machine, and the “long leg” transferring grain to the storage bins. Loading out bins were located over the railway siding for bulk delivery into railway wagons, though grain could also be bagged for dispatch. Being in remote rural areas, most had no electricity supply, and used Ruston and Hornsby heavy oil engines to drive conveyors and elevators through a system of rope and chain drives. Some of the country elevators have been heavily modified, and adapted as part of more modern, and considerably larger, grain handling facilities, but while others have fallen into dereliction, only the Mooresburg elevator has failed to survive.

The port elevators at Cape Town and Durban functioned in a broadly similar manner to the country elevators, but differed in scale and detail. Where the country elevators were designed to receive by road, and dispatch by rail, the port elevators received by rail and dispatched by sea. Individual wagons were detached from the train, and lifted by a hydraulic tippler in order for grain to pour into receiving hoppers below the track. Once received, weighed, and if necessary cleaned, grain was directed either into bins within the working house, or onto horizontal belts serving a storage annexe.

Shipping was done by drawing grain from the bottom of the storage bins, conveying it to the shipping elevators, weighing it, and then directing it onto shipping belts leading to the loading gantry. In Cape Town, the gantry serviced four movable ship loaders located on the nearby Collier Jetty, while Durban’s loading arrangements allowed grain to be spouted directly into the ship.

The elevators continued to be managed by South African Railways and Harbours from their inception until 1963. At that time the country elevators, with the exception of Moorreesburg, were transferred first to the Mealie Industry Control Board, and subsequently to the local farmers’ co-operatives. Of these, 19 remained in use in 2001.

In 1987, Cape Town’s grain elevator was leased to the Western Province Farmers Co-op (WPK), who operated it as a wholesale distribution and storage facility for a variety of grain products. The lease was terminated in 2001, and there being no alternative facilities to which the WPK operation could be transferred, approximately two dozen jobs were lost when the facility closed.

The most significant difference between the two port elevators today is that Durban remains in use, located in the industrial part of Durban harbour. Cape Town, however, has been closed, stands empty,

and awaits a future dependant on whether it is perceived as an ugly eyesore, or an exciting development opportunity. The area on which it stands can no longer be seriously considered as part of the working harbour as, despite the presence of nearby fishing companies, the working harbour has largely been supplanted by destination tourism and retail and commercial development.

It is clear that notions of value and significance cannot be taken for granted, that they may shift and change through time, and that different people and interests will have different values. While the landmark value of the Cape Town grain elevator is acknowledged by the owners and developers of the site, many visitors to the Waterfront will undoubtedly never even have noticed this "landmark," and know or care nothing about its past or continued existence. Yet it can be argued that the Cape Town site is at once unique in the Western Cape, and simultaneously has considerable significance as part of the larger networked industrial landscape.

There are many examples overseas of re-used industrial buildings being given mixed uses, where a key element is the inclusion of social and cultural activities such as music, dance, art galleries and museums, supported by income generating activities such as restaurants, shops, offices and residential apartments (Stratton, 2000a:24). Internationally, perhaps the best known recent example of the adaptive re-use of an industrial building is Tate Modern, in London's former Bankside Power Station. However, there is a danger that the success of this project will be seen to validate an approach which, according to Ryan and Moore (2000), expressly ignores the archaeology of the site. There have been very few successful schemes to adapt and re-use silo structures. Though an ambitious scheme to convert the Canada Malting Silo Complex on Toronto's waterfront into "The World's First Music City" has been promoted by Metronome Canada (2000), its opponents continue to fight against "turning the austere concrete silos into a tarted up whore" (Urbanism, 2003).

The location of the Cape Town elevator at the Victoria and Alfred Waterfront, in what has become South Africa's most popular tourist attraction, with 22 million visitors a year (Sunday Times, 17th Aug. 2003), meant that it was almost inevitably swept up in a much larger process. With office, retail and residential space at a premium, the economics of the site were significantly different to those affecting Cape Gas; there was no contamination issue to be addressed; and though the silos certainly present a design challenge, the working house at least is a more conventional box-like structure than the gas works. It can also be argued that, because of its location, the elevator had a higher

profile and thus engendered a greater sensitivity among conservation professionals than the grubby gas works had done.

The development of the Victoria and Alfred Waterfront, into one of South Africa's premier international tourist destinations, has hugely increased the value of land in the harbour area, and means that instead of simply refurbishing derelict buildings to create new uses, the land hungry development has now begun to evacuate serviceable industrial buildings in order to demolish them and replace them with new office and retail space.

Cities such as Baltimore, San Francisco, and Sydney have developed similarly successful residential, office and residential complexes as "festival market places" based on the Rouse model (Urry, 1990), all of which conform to a broadly similar post-modern aesthetic. The Waterfront also conforms to Hannigan's notion of a "fantasy city" which is "isolated physically, economically and culturally from the surrounding neighbourhood" (1998:4).

The Waterfront dismisses criticism that it is "primarily a heritage honey pot for tourists rather than an initiative in conservation and interpretation" (Stratton, 2000b:117), pointing proudly to the awards it has won for architecture and design. Furthermore, it has adopted an Urban Conservation Policy which recognises the importance of the Waterfront's historic structures and uses as conservation guidelines the Burra Charter. In furtherance of that policy, a conservation plan for the Cape Town grain elevator was commissioned by the Waterfront in 2000. Critically, however, the Waterfront were not prepared to establish a legitimately constituted stakeholder group at that time, and the process has now stalled. The Conservation Plan is incomplete; it has no legal status; it does not, in its current form, conform to the guidelines set out in the Burra Charter; and it would not satisfy the requirements of the National Heritage Resources Act for heritage impact assessments because of the lack of an adequate consultative process.

A unique dynamic and set of tensions has now been set up at the Waterfront, and it is at the grain elevator that this becomes a moment of truth for the developer. During earlier adaptation and re-use of 19th century warehouses, offices, and even the Breakwater Prison, it was possible to reconcile a gentrified design aesthetic with broad conservation principles.

Clearly, the grain elevator clearly does not easily lend itself to the design guidelines they have committed much time and financial resources to creating. Yet they have committed themselves to a process in which conservation principles carry considerable weight. Furthermore,

as the development has progressed, heritage professionals in Cape Town have developed more critical responses to the issues arising from such sites.

As with the “development” of the gas industry in Cape Town from the mid-19th century, “development” at the Waterfront primarily serves the narrow, sectional interests of an urban middle-class. It has carved for itself a piece of the global tourism and leisure entertainment market, and its earlier, much vaunted, conservation objectives, appear to have been downgraded to the role of “design informants.” It could be surmised that this is due to a lack of commitment on the part of the Waterfront, but perhaps it is also due to the lack of any significant constituency of stakeholder support for the heritage values of the site.

Within the confines of the Waterfront development, discussions around economic re-use of the grain elevator fall naturally to conventional ideas such as apartments and offices, with only the “building envelope” of the working house retained, all traces of its former use having been removed, and the building rendered meaningless and sterile. Robbed of context, it is difficult to see what conservation ends would be served.

Conserving the wider networked landscape of grain elevators is a very different challenge if one accepts that there is considerable significance in the almost complete survival of the entire system. The original population of sites is known and mapped, and with a single exception, has not yet suffered from random demolitions. Individually, the elevators are vulnerable to a gradual attrition, and individually, as the sites themselves become redundant, there will be economic pressure for these sites to be at best, neglected, and at worst, demolished.

At the country elevators, as at Cape Town, the economics of use must be balanced with the economics of disuse. Use, or re-use, means responding to considerations such the economics of the market place, labour costs, repairs and maintenance, and economies of scale. The size of modern elevator complexes, compared with the historic sites, suggests that the latter is not an insignificant concern, and certainly a higher proportion of the units with a double working house has survived than that of the smaller, single working house units.

The economics of disuse requires an assessment of what each structure would cost to demolish, the value of removable buildings like the corrugated iron sheds, and whether there is any demand for the land to be reused for anything else. Furthermore, the impact of derelict

buildings on neighbouring communities, and property values, cannot be overlooked. Yet those same buildings, cared for, integrated back into their host towns, and with a new purpose, could well have beneficial impacts for those same communities.

CONSERVING NETWORKED INDUSTRIAL LANDSCAPES

The widely-held myth that racially discriminatory practices were initiated in South Africa by the newly elected National Party government of 1948, has long since been dispelled, and the infamous history of South Africa's apartheid years, and the subsequent transformation to democratic structures in the past decade, is outside the scope of this chapter. However, it is important to acknowledge the legacy of that history as it is exhibited in poverty, in unemployment, in poor public health, in a lack of education, and in a lack of housing.

Since South Africa's relatively peaceful transition to democratic governance, in 1994, it has seen two successive African National Congress (ANC) led governments in power at the national level, and ANC led governments controlling seven, and more recently eight, of the nine provinces. Critical priorities for these governments have been, and continue to be, poverty alleviation and job creation, while housing, primary health care (particularly in respect of HIV/AIDS) and education are also ranked highly.

Following the 1992 Earth Summit, in Rio de Janeiro, which produced *Agenda 21: a Global Plan for Sustainable Development*, the 2002 World Summit for Sustainable Development (WSSD) was held in Johannesburg, South Africa. The importance of Agenda 21 is its function as an over-arching policy framework within which development, and thus also conservation, can be considered.

In South Africa, conservation of both the natural and historic environments is not, and perhaps cannot be expected to be, a priority for its own sake, and to speak only of "cultural significance" begs the immediate questions: "whose culture?" and "of significance to whom?" Indeed, why should the majority of South Africans care about a heritage which can be seen as symbolic of an economic power that contributed so much to their social and economic disempowerment over the centuries? If we are unable to suggest practical, rather than purely academic, answers to such questions, then conservation will continue to be seen in opposition

to development, rather than as a potential facilitator or partner in the development process.

In a developing nation such as South Africa, hungry for democratic governance at all levels of society, and among all stakeholder groups, consideration of other appropriate values is not simply to be recommended, but has to be at the core of any policy that seeks to conserve the industrial heritage.

Economic values are often represented at their most fundamental by the adaptation and re-use of specific buildings. However, whilst there is a need for a greater awareness of the value of industrial sites as catalysts for regeneration, there is a need for caution with regard to allowing regeneration itself to become a motor for the loss of historic fabric. This, it is argued, is the case with the grain elevator at Cape Town's Victoria and Alfred Waterfront.

The educational value of the industrial heritage goes way beyond the simple demonstration of how things work. Internationally, industrial heritage has been recognised as having the potential to reveal the histories of previously "invisible" workers, including women, indigenous peoples and slave communities.

In a newly emergent democratic society, such as South Africa's, consultation is fundamental to much of what needs to be done, and especially to the contentious, value-laden debates around heritage. Public participation is also central to a range of guiding documents, from *Agenda 21* to the *Burra Charter*, and South Africa's National Heritage Resources Act also emphasises the importance of ensuring that public participation is actively sought.

The difference between the ways in which Cape Town's primary sites relating to the networked landscapes of gas and grain were considered is in part a function of the changing political and social landscape of South Africa during the past decade, and the way in which change has been played out in the conservation debate. However, it is also a function of the widely differing economic drivers prevailing in each case.

In 1996, consideration by the legislative authorities of the gas works was largely influenced by simplistic considerations about its aesthetics, and was at best superficial. The gas works closed due to the unsustainable economics of its operation, and there was no financial pressure to develop the land. Demolition was prompted rather by a view that no economic value for the site could be realised while the gas works remained standing.

Only four years later, the grain elevator was regarded no longer a working part of Cape Town docks, but rather an unwelcome obstruction

in the development path of the Waterfront. Here, the imperative for closure was the potential economic returns to be gained from redevelopment, rather than from anything inherent in the operation itself. As long as land at the harbour was not in demand, rents were low and industrial enterprises sustainable. However, with the successful re-branding of the old docks into a glitzy international style “Waterfront,” and “bulk rights” allowing development of seven and eight storey commercial buildings, potential rents were far greater than anything that could be achieved hitherto. Nonetheless, the implementation since 1999 of the South African Heritage Resources Act (No.25), and an increased awareness among Cape Town’s conservation professionals of the value of industrial heritage, mean that the future of the grain elevator has thus far been treated with much greater sensitivity than was the gas works.

Both the networked landscapes of gas and grain were built for the purposes of “development.” The gas works began with grand claims for social and moral improvements, while jealously guarding its monopoly, and its profits. The grain elevators also had an explicit role to play in development, with the creation of employment opportunities for “poor whites” an important aspect of this particular strategy. It is clear, however, that in both cases what the promoters of the schemes would then have declared was developmental (though in language more befitting their times), was in fact part of a wider system aimed at entrenching political power at the expense of the underclass.

It is equally clear that ideas about what constitutes development have changed significantly in the century and half since the inception of the gas supply network. In principle, though not always in practice, development in South Africa today means the putting aside of narrow, sectional, profit-driven interests, and replacing them with broad, inclusive, socially-driven agendas. The global contexts for development have also changed, and indeed the very word development has begun to lose currency in favour of the even broader concept of “social transformation.”

Globally, as well as locally, notions of development have changed particularly in the past two decades. The World Summit on Sustainable Development (WSSD), the World Economic Forum (WEF), and the World Social Forum (WSF) all place development high on their agendas, though from differing perspectives.

South Africa’s strategic plan for agriculture presents a strategy for sustainable rural development in which the establishment of service centres would provide an emphasis on “income generation and livelihood activities by women, youth and disabled to meet needs

of poor families and local market demand” (Department of Agriculture, 2001:20). Another “job creation and poverty relief initiative targeted primarily at rural people” creates “community production centres” for small-scale craft industries such as milling, leather working, sewing and weaving, arts and crafts, and baking and confectionery (Department of Works, 2002:7).

The South African Regional Poverty Network, an initiative of the Department of Arts, Culture, Science and Technology, “is a real and virtual platform for stimulating information exchange and debate between policy-makers, civil society, and the research community.” In this model, scientists work with communities in projects such as the “Recipes for Success Project,” which uses indigenous foods; the “Kgabane Jewellery Project,” “The Papermaking Poverty Relief Programme” which comprises 21 papermaking units in seven provinces, and primarily targets unemployed rural women, and “The Beekeeping Poverty Relief Programme” whereby 6,500 historically disadvantaged families are equipped with beekeeping skills. As with the other projects mentioned here, there is a focus on women, the elderly and the disabled (Department of Arts, Culture, Science and Technology, 2002).

Thus there is an emphasis on creating equity and combating poverty by the creation of sustainable livelihoods. This is provided for in many ways, of which the most relevant here are perhaps the promotion of sustainable agriculture and rural development; improving farm production and farming systems through diversification of farm and non-farm employment and infrastructure development; land conservation and rehabilitation; environmentally sound management of hazardous waste and strengthening of the role of farmers. Furthermore, Agenda 21 asserts that the roles of major groups such as women, youth and indigenous communities should be strengthened by ensuring that development plans work towards improved living standards, education and jobs. The promotion of education programmes, public awareness and training around sustainable development is also called for, as is the strengthening of partnerships with non-governmental organisations.

This chapter concludes by offering a vision for the conservation of the network of country grain elevators. In this vision, the elevators are not conserved simply for historicist reasons, or because they are “pretty” buildings, but because conserving them serves national and local interests as expressed in Agenda 21. In this vision, the network of country elevators itself becomes a conceptual model for Agenda 21 management, and the Waterfront is challenged to resolve its ambivalence to the Cape Town elevator.

In the short term, however, it is imperative that the South African Heritage Resources Agency take a broad view of the system as a whole, and consider the attributes of the networked landscape rather than simply its individual sites. The risk at present is that requests to demolish isolated sites would be handled first by local authorities, and then Provincial Heritage Resource Agencies, who would perhaps not see the broader significance of the network. This is, after all, a new approach for South Africa. It is not being suggested that ultimately every site would necessarily be retained, only that decisions on individual sites should be informed by reference to the whole.

The network of country elevators represents an almost entire known population of a particular site type, a rare attribute in itself. Although ownership is now dispersed, there is nonetheless a continuity and synergy among the various owners. Some of the country elevators are derelict and some have attributes that remain largely as built, while others have been incorporated into large modern grain handling complexes. The conservation of the active sites cannot be considered as a priority, other than to see that any unique aspects of their operation are not lost. The derelict sites however offer exciting opportunities to look not only at simplistic conservation arguments, that may ultimately be unsupportable, but to consider how the principals and values articulated in Agenda 21 might be used to support arguments for the conservation and adaptive re-use of these sites, with each servicing a different need.

Thus the establishment of a training centre for small farmers, a legal advice centre for farm labourers, a labour exchange and a marketing centre could serve to promote sustainable agriculture and rural development, and the improvement of farm production and farming systems. Environmentally sound management of hazardous waste could be promoted by the establishment of a recycling centre.

Agenda 21 objectives relating to strengthening the role of women, youth, indigenous peoples and communities, in partnerships with NGOs, would be served by the establishment of craft training and retail centres along the lines of the "community production centres" already being established by the Department of Works on other sites.

The designation of one site as a museum for the maize industry would constitute an opportunity to bring together at one location significant artefacts from the other derelict elevators, and provide an opportunity for conservation and interpretation within the broader context.

At each site, where the value of the land is likely to be minimal, and the cost of demolishing the elevator relatively high, only the working house, the taking-in shed, and the bagging-out store, if it survives,

would be re-used. Because of the lack of economic pressure on the land, the silos could be left unused.

That there will be a different aesthetic dynamics at play in the rural communities, to that espoused by the Waterfront, is also clear. This difference creates opportunities for more imaginative responses to design issues arising out of any initiative to re-use old building stock.

Funding requirements for such a scheme would be limited to making the structures safe and accessible, removing grain handling equipment, and providing basic amenities. In most instances, where the sites are in the ownership of farmers' co-operatives, the question of site acquisition may not necessarily be an issue, and opportunities could be created to encourage dialogue between the large scale commercial farmers who have historically had access to the facilities offered by the co-operatives, and historically disadvantaged small scale farmers working at a subsistence level.

Finally, returning to the current question of how to deal with Cape Town's grain elevator, it is concluded that this is a pivotal point in the development of the Waterfront, and indeed in South Africa's approach to industrial heritage. The Victoria and Alfred Waterfront Company's apparent ambivalence is entirely understandable as they try to resolve an apparently irreconcilable dichotomy. The model outlined here for the country elevators would not be possible within the confines of a development such as the Waterfront, but development of the Cape Town elevator as a cultural and educational centre would not only lend itself to an imaginative programme of activities grounded in Agenda 21, but would also serve to re-establish the historic links between the port city and the agricultural interior.

The Cape Town elevator was established to service the developmental needs of the rural areas, and could do so again, while the Agenda 21 requirement to take into account local social and political circumstances would serve to mitigate against what is seen as the globalizing effect of the Waterfront.

By focusing on the developmental needs of the country, through the lens of Agenda 21, and by emphasising synergies, rather than oppositions, the conservation of networked industrial landscapes originally created with developmental objectives could indeed contribute to economic upliftment and sustainable development in the future.

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Exploring Mrs. Gaskell's Legacy

Competing Constructions of the Industrial Historic Environment in England's Northwest

Malcolm A. Cooper

INTRODUCTION

On a rainy morning in 2000 I was asked to do a radio interview for the BBC in Manchester. The subject was a storyline that had been running on *Coronation Street*, a popular soap set in the Victorian terraced streets of Salford in the northwest of England. One of the main soap characters, Councillor Audrey Roberts, had tripped and fallen on the cobbled street and had decided that the cobbles (strictly speaking, granite setts) should be tarmaced over. Another resident, Ken Barlow, however, starts a campaign to preserve the cobbles, asking the balding and somewhat ineffectual 'Ralph' from *Northern Heritage* (a thinly disguised reference to English Heritage, I fear!) to give them statutory protection. To cut a long-story short, the "preservation order" did not arrive in time. However, the ever-resourceful Ken saves the day by producing a forgery which stops the bulldozers until the real order arrives.

This storyline was entertaining, but it contained a number of inaccuracies. Under the current English legislative provision, there is no "preservation order" that could be used in these circumstances, unless the cobbles were scheduled as an ancient monument, which is unlikely. Whilst it is possible to list flat structures, and theoretically therefore one could seek to list a cobbled street, this is a rarely used facility under the current legislation. We can also be clear that no Government

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heritage agency would employ somebody as ineffectual as Ralph. However, this is not the point of my story. The radio interview covered a range of issues such as local distinctiveness, the legal basis for protecting the historic environment, and the roles of various agencies. So far so good. However, the concluding remarks went along the lines of "Well thank you, Mr Cooper, for joining us this morning in Manchester. I am certain that our listeners will agree that it really is important to protect our historic streets, *in towns such as Chester and Lancaster.*" There I was, sitting in Manchester, a city nominated by the UK Government to UNESCO as a tentative World Heritage Site on the basis of its claim to be the world's first industrial city. However, for the radio interviewer, heritage was something that was elsewhere and clearly did not relate to Manchester at all.

In this paper I want to explore public perception of the industrial historic environment and whilst the *Coronation Street* story may appear trivial, it does seem representative of a widely held view about heritage and, in particular, industrial heritage. This poses a very significant challenge to those seeking to manage this as part of the wider historic environment, or to take advantage of its potential to contribute to social and economic regeneration, rather than solely as a resource for education and tourism.

There is an increasing recognition of the importance of the UK's industrial historic environment. This is reflected in statutory protection through listing and the scheduling of buildings and other remains. Indeed, when the UK Government produced its second list of tentative world heritage sites in 1999 (DCMS, 1999), of the 25 sites identified, 10 sites were industrial in nature. These ranged from the Blaenavon Industrial Landscape in Wales, and the Forth Bridge in Scotland, to the remains of the Cornish Mining Industry in the south west of England. This significant increase in the number of industrial sites over the first UK list, which included Ironbridge alone, reflected the recognition that the UK's unique contribution to World Heritage is its role as the birthplace of the "Industrial Revolution." Of the industrial sites on the 1999 tentative list, Blaenavon, Derwent Valley, Saltaire, and New Lanark have already secured world heritage status and progress is being made on a number of the others.

Two industrial sites in the northwest region of England were included in the 1999 tentative list. Manchester/Salford was included as representing the world's first industrial city (indeed a convincing case can be made for Manchester being the world's first modern city). Preparation of the WHS nomination document and management plan for Manchester has commenced. The core of the proposed

site is based around the Bridgewater and Rochdale Canals and the Manchester terminus of the Liverpool/Manchester passenger railway line. Also included will be the Ancoats and Castlefield suburbs of Manchester, and the Duke of Bridgewater's mines at Worsley, to the west of the city.

The second north west site, Liverpool's Commercial Centre and Waterfront, was included as the UK's great western gateway in the 19th century, not just for its role in the import of raw materials and export of finished goods, but also for its role in the massive movement of people. The city's sophisticated dock systems, and its commercial and cultural architecture strongly reflects the city's importance in the later 18th and 19th centuries and its international links. Liverpool was the UK's sole nomination for world heritage status in 2003. The nomination document (Liverpool City Council, 2003a) and management plan (Liverpool City Council, 2003b) have been submitted with a decision by UNESCO expected in July 2004.

On the face of it, therefore, the future of the UK's and the north west's industrial heritage would seem to be secure. However, day-to-day experience would suggest that very significant challenges lie ahead. In 2002, regional planning guidance for the north west region identified that some 75,000 terraced houses should be demolished as surplus to demand. A significant proportion of the housing is 19th century but there seemed little concern during the development of the planning guidance that any of these terraced houses might be of historic merit.

English Heritage compiles both national and regional *Buildings at Risk Registers* for Grade I and II* buildings and scheduled ancient monuments. There is a significant number of industrial buildings on the north west's register, but interestingly the register does not seem to reflect the impression gained when travelling in the region of a very large number of derelict industrial buildings. The reasons for this are complex, but are likely to reflect in part the fact that many industrial buildings will be listed at Grade II, and therefore do not appear upon the register. However, it may well be that industrial buildings are more generally under-represented in terms of listing. Whilst adaptive re-use of former industrial buildings is increasingly being seen, with the work of organisations such as Urban Splash being exemplary in this field, a substantial number of proposals for the complete demolition of historic mill complexes and other industrial buildings are still being received by the English Heritage regional team. In many cases proposals for demolition are based upon a presumption that the industrial buildings are of no historic value, or that such value is simply not relevant to the future use of the site.

At a general level, outside the historic environment sector, there seem to be very real shortcomings in the wider understanding of what makes up the industrial historic environment, why it might be important, and how appropriate management regimes might be developed which would ensure its integration into future regeneration initiatives. However, we must recognise the context for this. The north west region, which saw such massive decline in the 20th century as the domestic cotton and textile industry failed, and the world's economy restructured, is actively seeking to place itself on a more secure economic footing in the 21st century. In this context, very serious questions are being asked about the value of the region's industrial history and the physical remains of this past in terms of its potential to assist in meeting current and future agendas. Worryingly, there is a belief in some quarters that the region's industrial image is detrimental to inward investment and to economic recovery. The implication of this is worthy of very careful consideration. If industrial heritage is seen as backward-looking, as a drag on regeneration and economic development, and symbolic of decline and failure, then its future will continue to be questioned. And if this viewpoint holds sway, then it seems to me that however carefully we study and better understand the surviving physical remains, we will be unable to avoid its marginalisation from both economic development and public support. It will remain vulnerable to continued attrition and loss.

So how do we begin to tackle this deeply-held conviction that industrial heritage is backward-looking, of questionable value, and therefore that its loss is not of overwhelming concern? It seems to me that there are three overarching issues. The first relates to the close association for many between the industrial revolution and social ills; the second relates to the way in which the historic environment is conceptualised and understood, particularly outside the historic environment sector; and, the third relates to the focus of current regeneration programmes. I wish to look at each of these issues in turn.

THE "INDUSTRIAL REVOLUTION" AND SOCIAL ILLS

The starting point here is the recognition that historic remains, for the purposes of this essay the buildings and practices of the later 18th and 19th century industrial north-west, are the subject of competing meanings and value systems. The "standard" process of assessing historic importance of buildings and monuments is presented as a systematic and "objective" process (see Department of the Environment, 1990; 1995). However, if one takes a social-constructionist viewpoint,

then meaning and value does not arise out of the remains themselves, but are ascribed to the remains as part of a social construction process. We need therefore to explore how the current negative meaning has been ascribed to the industrial historic environment in the wider social and other narratives, particularly those relating to progress.

If we look at Manchester, seen by many, both in the past and today, as the archetypal industrial city, the perception that the remains of our late 18th and 19th century industrial buildings and structures must be removed if we are to progress is not a recent phenomenon. The 1945 *City of Manchester Plan* (Nicholas, 1945) effectively proposed the demolition of almost all of the city centre buildings, including Manchester Town Hall (now regarded as a masterpiece of Victorian civic architecture and listed at Grade I)!

If every stage of this process of reconstruction is made to conform with the master pattern of the kind suggested in this book, the Manchester of 50 years hence will be a city transformed (Nicholas, 1945:1).

The *City of Manchester Plan* has, of course, to be understood in the wider context and philosophy of early post-War British planning (see Larkham, 2003). However, to see the desire to demolish our 18th and 19th century buildings simply as a post-War issue would be mistaken. Sir Ernest Simon, former Mayor of Manchester, and Chairman of the City's Housing Committee, took a particular interest in the issue of "slum clearance" and health in the inter-War period in Manchester. Indeed he was to become Parliamentary Secretary to the Minister of Health in 1931, and his work in Manchester was to have a far wider influence (Simon, 1945).

In the book *The Rebuilding of Manchester* (Simon and Inman, 1935), Ernest Simon reviews the development of Manchester with a particular focus on housing. He contrasts the development of "unplanned" Victorian housing with the carefully planned Wythenshawe satellite garden town to the south of the city. As is commonly the case, the discussion characterises Victorian urban housing as "slums," in the case of Manchester focusing on courts and back-to-backs (the latter referring to terraced houses which shared both their back and side walls, allowing windows and doors only to the front).

I will return to the concept of "slums" in a moment, but interestingly, Simon's opening discussion in describing the mid-19th century town, draws on the writings of both Friedrich Engels, and Elizabeth Gaskell. *The Condition of the Working Classes in England in 1844*, written by Engels when he was working in Manchester, and first published in German in 1845, became hugely influential as a study of the urban poor and the ills of industrialisation (see Engels, 1999). Gaskell's

Mary Barton was published in 1848, and whilst a work of fiction, draws on her own personal experience of living and working in Manchester, as does her 1855 *North and South* (see Gaskell, 1995; 1996). The wider public appreciation of Manchester was frequently based on the writings of Engels and Gaskell, supplemented by the accounts of visitors to the town, such as that by Leon Faucher (Faucher, 1844) and public health surveys, such as James Kay's *The Moral and Physical Condition of the Working Classes Employed in the Cotton Manufacture in Manchester* (Kay, 1832).

These publications were regularly cited and used both to provide a context for the clearances which took place towards the end of the 19th century in Manchester, and to justify further "improvements" in the 20th century. By the later 19th and early 20th century, the concept of the "slum" had become fixed in the public mind and synonymous with Victorian housing and high levels of social deprivation. However, as Alan Mayne (1993) states in his enlightening study of improvements in the provincial cities of San Francisco, Birmingham and Sydney:

Slums are myths. They are constructions of the imagination. . . . I do not mean that slums were not real. They were, after all, a universal feature of big cities. Their reality, however, lay in the construction of common-sense convictions of everyday living. . . . The term *slum*, encoded with the meanings of a dominant bourgeois culture, in fact obscured and distorted the varied spatial forms and social conditions to which it was applied. (Mayne, 1993:1–2).

He returns to this theme with Tim Murray in 2001:

Historians have perpetuated the slum myth. Mesmerised by the dramatic intensity of the caricatures that remain embedded in the documentary record they . . . have confused and thereby inadequately conflated the imagined reality of slums with the actualities of working-class neighbourhoods that were labelled in this way. Historians tend to regard material evidence from such neighbourhoods as providing, at best, illustrations of what they have already framed as the major themes of historical inquiry. (Mayne and Murray, 2001:1).

Mayne notes that the concept of "slum" once created functions in a bipolar and reductive manner, a self-evident truth, with its close associations with negative entities such as disease, distress, disorder and disaffection. There has been a tendency to take observers' accounts at face value. However, before either the sources or the concepts can be used with confidence, there is a need to understand the context within which they took place and how concepts such as "slums" were constructed and used by reformers and entertainers in order to mobilise common-sense opinion, through novels, reports or the press.

Mayne's work is a fascinating study of the way that discourse and rhetoric functioned in relation to the Victorian city and contains much of relevance to our discussion (see also Mayne and Murray 2001, *passim*). Manchester attracted considerable attention and debate, both nationally and internationally, because of its technological and social changes against a background of exceptional 19th century growth. Writings by Carlyle and Disraeli which explored, indeed one could argue that they created, the image of the modern city, clearly influenced the work of Dickens, whose sister lived in Manchester. Gaskell wrote for Dickens' *Household Words*, and Dickens met Gaskell on a number of occasions in Manchester. It is clear that they shared a common view about the evils associated with rapid industrialisation, and that this view influenced their respective works. This rhetoric was given additional power by the Romantic Movement, with the enduring negative images of "dark satanic mills" and mass-production being contrasted with village communities and rural idylls.

However, if one looks at Gaskell in the context of other female authors in Manchester, such as Geraldine Jewsbury, and Mrs Linnaeus Banks, one gets a rather different view of the context within which she was writing. As Thomas has argued (1985; 1999) these novels show a very distinctive structure and form which has been termed the *Manchester Bildungsroman*. Structural elements include the contrast between the working-classes and the middle-classes, degraded living conditions for the working-classes, and a journey of enlightenment by the main character as they seek to move from poverty to social and/or commercial success. These novels describe a rite of passage, if not social progress then self-knowledge and religious discovery and their underlying purpose is not one of empirical description, but of idealism and puritan spiritual biography. Clearly the use of naturalistic details drawn from the region was important and some of the publishing houses went on to produce local histories and topographies. However, what we are seeing here, Thomas suggests, is the construction of a "history" for the region as part of the wider idealised historical process.

In a similar vein, Eddie Cass (1995) has also looked at the context within which 19th century Manchester fiction was developed as part of the wider *Condition of England* novels of the 1840s. Both Gaskell and Engels are subjected to critical scrutiny, placed within the context of other Manchester and Lancashire novels, and other sources, such as the *Cotton Factory Times*, are drawn on to explore the wider reaction to their works. Whilst space prevents us from exploring this work in detail, once again it is clear that both the context of these works, and their purpose, is not straightforward, and to treat them uncritically, as

many commentators do, reinforces one particular perspective without a full recognition of its origins.

One cannot deny or ignore the extraordinary social ills that arose during the period of rapid and unplanned industrialisation in England. However, there has been an ever-present tendency to play down or ignore many of the positive developments which took place over the same period, and to ignore the social ills that were prevalent both before and afterwards. The 19th century was a period of great technical and scientific innovation and progress, of increasing wealth, of medical advances, for education and the development of a wide range of social and cultural institutions.

However, the general view for many seems to remain that 19th century industrialisation was generally a bad thing, and that this is symbolised most readily in the mills and terraced houses, particularly those in the north of England. If this is accepted, then I believe that a strong case can be made for suggesting that these negative connotations associated with the “Industrial Revolution” are not a recent phenomenon, but that their origins lie in the mid-19th century as part of a rather different project. However, once created, these beliefs have been drawn upon time and time again in the later-19th and early-20th century to support urban improvement and social engineering campaigns, and they continue to have continuing currency in the discourse relating to current regeneration philosophies.

An example here may be helpful. In 2003, English Heritage was one of a number of bodies which, together with the local community, objected to proposals by Pendle Borough Council for the wholesale demolition of historic terraced housing in the Whitefield area of Nelson, in Lancashire. Detailed historical investigation and survey suggested that Nelson was the only example of a “new town” in the Lancashire cotton industry, changing from a greenfield site in 1860 to a town with a population of 30,000 three decades later. Within the Whitefield ward the terraced housing survived relatively intact together with schools, places of worship, the flanking mills and weaving sheds, all bounded on one side by the Leeds-Liverpool canal.

The Council argued that the houses were not fit for human habitation, and were simply typical examples of an outdated and unwanted housing form that was common across the North and Midlands, and that the local housing market had, in any case, collapsed. The objectors to the proposed demolition argued that the combination of historic importance, good survival, and an active local community meant that wholesale clearance was not appropriate (see Cooper and Wray, 2001; Owen-John, 2003).

After two long and hard-fought public inquiries, in September 2003 the Secretary of State declined to confirm the compulsory purchase order, agreeing that the removal of terraced housing in Whitefield “would have a harmful impact on the totality of the historic townscape character of Nelson.” Whitefield appears safe, at least for the moment. More generally, this seems to reflect an increasing awareness in Government that Victorian mills and terraces can, in certain circumstances, form important elements of regeneration schemes. However, there is low demand for housing in the North and Midlands and we are likely to see a very significant reduction in the number of terraced houses under a 15 year Government-funded “pathfinder” programme.

Unlike the Whitefield case, English Heritage is working closely with the nine pathfinder partnerships, using rapid characterisation and extensive urban survey methodologies, to identify historic importance and issues of local distinctiveness. It is hoped that this will allow the historic environment to become an integral element of the “pathfinder” approach. However, throughout the inquiry, we regularly heard the familiar rhetoric “but they are just slums,” even though these terraces had little in common with the overcrowded and unsanitary courts which were the focus of concern in the mid-19th century. Indeed some of the arguments being mobilised in support of demolition bore an eerie similarity to those being used to justify clearance in late 19th century Birmingham.

In essence, I believe a strong case can be made that discourses which were created in the mid-19th century have been uncritically carried forward into the early-21st century, with no recognition of their origins or context, and no robust testing of their relevance today. These views about “slums” are deep-seated, and will continue to pose very real barriers to effective integration of the historic environment into regeneration schemes unless they are fully recognised, understood and actively tackled.

CONCEPTUALISING THE HISTORIC ENVIRONMENT

If the first issue relates to a prevalent discourse linking the industrial period in England to social ills, then the second relates to how the historic environment is more generally conceived by those outside of the sector. The problem here is that the way in which we value and characterise the historic environment has shown substantial and accelerating change, particularly in the post-War period, but that public understanding of this and media portrayal is lagging.

Over the past 120 years we have moved from a position where a small number of prehistoric monuments were protected for their intrinsic historic merit, to a position where whole complexes of buildings, monuments and spaces have gained statutory designation and protection. These monuments, buildings, and landscapes are valued not only for their perceived historic importance, but also for the contribution that they make to character, local distinctiveness, and sense of place. They also actively contribute to the quality of life of contemporary communities in their capacity to serve as educational resources, tourism assets, and catalysts for social and economic regeneration (see English Heritage, 2000; DCMS, 2001).

The 1882 *Ancient Monuments Protection Act* included no provision for historic buildings or medieval monuments, and by 1900 only 43 prehistoric monuments had been brought under its protection. Over the course of the 20th century there was a gradual increase in both the nature and number of historic entities that were afforded statutory protection. By 1913, for example, medieval remains were included upon the Schedule of Ancient Monuments. The idea of protecting buildings in use was explored as early as 1932, in the *Town and Country Planning Act*. However, it was not until the 1944 and 1947 *Town and Country Planning Acts* that the idea of listing buildings became a realistic possibility. This, of course, related to the loss of many buildings during the Second World War, and it was intended to tie the process of drawing up lists very closely to post-War planning and reconstruction. However, the idea of protecting groups of buildings and spaces was not introduced until the *Civic Amenities Act* of 1967. More recently, we have added a register of historic battlefields, and a register of historic parks and gardens.

In the north west region alone in 2003, there were 1,283.5 Scheduled Ancient Monuments; 23,616 Listed Buildings; 807 Conservation Areas; 129 Historic Parks and Gardens; and three Historic Battlefields (English Heritage, 2003). Most recently we have begun to develop a “characterisation” methodology which looks at and seeks to value how this increasingly complex range of elements of the historic environment, including some elements without any statutory protection, come together to influence the character of a defined geographical area (e.g., Fairclough and Rippon, 2002).

To make matters more complicated, within this framework of increasing complexity, our interest has also expanded to look at more recent buildings and monuments. It is worth remembering that the Georgian Group was only set up in 1937, the Victorian Society in 1958, and the Thirties Society in 1979. In the last full report of the Historic Buildings Council for England in 1982–83, prior to handing over its responsibilities to English Heritage in 1984, specific attention was

drawn to grant-aid for *Victorian* Liverpool being as important as grants for Georgian Bath! The fact it was necessary to state this explicitly emphasises how recently the historic merit of Victorian and later buildings and structures have been recognised and accepted.

Perhaps there is inevitably a time-lag. The protection of architecture from the 1920s and 1930s is now less controversial than it was. In 1999 English Heritage opened Eltham Palace in South East London, following a major conservation programme. The site has been hugely popular with visitors from the first day and while the medieval palace remains are very important, it is the extraordinary art deco building and interiors created by Stephen and Virginia Courtauld which form the central attraction (English Heritage, 1999). For many, however, despite detailed studies on 20th century architecture (e.g., Stratton and Trinder, 2000) the public outcry when a 1960s brutalist railway signal box at Birmingham New Street station was listed, and the recent Government Select Committee questioning of English Heritage's desire to preserve the gas-holders on the approach to Kings Cross/St Pancras railway station in London, both reflect a wider unease (and in some cases downright disbelief) over the definition of historic merit.

My point here is that we have had over 100 years of increasing complexity and subtlety in conceptualising and valuing the historic environment, whilst seeking in parallel to better define its wider importance to our society. However, there remains a widespread public perception of heritage as individual monuments, probably timber-framed buildings sitting in the countryside, which must not be altered, whose future use is as a museum, and whose public value is solely related to education and tourism.

If we put together a prevalent discourse about the ills of our industrial past with a poorly explained and understood conception of what makes up our historic environment, we have two powerful issues both of which are not helpful for management of our industrial heritage. Ironically, they come together most powerfully in our post-industrial urban areas which have seen most significant decline in the 20th century (particularly in the north of England) and which are the focus of our most recent regeneration initiatives. It is to this that I now want to turn.

THE FOCUS OF REGENERATION PROGRAMMES

There is no doubt that the biggest challenge for 21st century regeneration relates to those towns, cities and areas which saw dramatic growth in the later 18th and 19th centuries as part of the industrial revolution. By far the majority of these areas saw equally dramatic decline

in the 20th century in the face of mounting competition, as the world's economy restructured itself, and there is an undeniably close relationship between these areas and indices of social deprivation. The north west shows particular challenges in this area whether the major conurbations such as Liverpool and Manchester, the Lancashire cotton towns, or the towns on the western coast.

In an article in the *Transactions of the Lancashire and Cheshire Antiquarian Society* for 1960, Green noted the lack of study of technology and of industrial heritage. He went on to say:

There is also a deep-seated resentment against the supposed effects of industrialisation which has discouraged objective study. Combined with a hostility to Victorian architecture and decoration, this has meant that local history studies in urban and industrial areas have seriously lagged behind those in country districts. (Green, 1960:144).

In the near-half century since this was written, very significant progress has been made in our study of the historic industrial environment, particularly that of the late 18th century through to the 20th century. However, if we look in more detail at the current focus of urban regeneration programmes in England we see what I believe is the effect of the two issues discussed above. One of the most influential reports on urban regeneration was produced by the Urban Task Force in 1999 under the chairmanship of Lord Rogers (Rogers, 1999). In the opening chapter the problem of the post-industrial age is introduced thus:

... more recent urban history has been dominated by a severance in the relationship between people and place. In England, we have paid a particularly heavy price for our leading role in the industrial revolution. The industrial age was a period of phenomenal urban growth which made a lasting and indelible mark on the British attitude towards the role and function of the city... The industrial city, with its pollution, its slums and its short term vision, destroyed our confidence in the ability of the city to provide a framework for human civic life. (Rogers, 1999:26).

It is here, however, that the two issues identified earlier in this paper come together in a particularly powerful and negative manner. The quote given above from *Towards an Urban Renaissance* uses the concept of "slums" to stand for all of the social ills associated with the 19th century industrial town. By inference the same difficulty applies to the mills, warehouses, and many other buildings and structures which give our towns and cities, particularly in the North and Midlands, their character and distinctiveness. It does seem fairly extraordinary that the many and varied achievements of our urban areas and populations over the last 200 years can be written off in such a spectacular fashion.

There is also, sadly, little emphasis placed on the historic environment as an effective contributor to urban regeneration. Indeed, this

possibility is only drawn attention to on page 251 of a 328 page report, in a section of just over two sides of text. A similar impression can be gained by reading the British Urban Regeneration Association's *Urban Regeneration Handbook* (Roberts and Sykes, 2000). Again, one struggles to find any reference to the historic environment with the exception of a rather puzzling diagram on page 20, which appears to show heritage as an *output* of the regeneration process!

If it is difficult to avoid the conclusion that there is little real recognition of the role that the industrial historic environment might play in urban regeneration, then we must also recognise that we still have a significant distance to travel to develop a higher level of public understanding and support. It is very hard to overstate the negative impact of a derelict and unmanaged industrial building on an urban area and its population. It holds down economic value, it reduces confidence, it can attract anti-social behaviour, it gives a message of failure and a lack of care and responsibility. And hand-in-hand with this goes a more general negative public perception and a sympathy for demolition. Somewhat ironically though, should such a building be brought back into use, it is frequently no longer recognised as "rescued heritage" and public perception may still remain unsympathetic to other derelict industrial buildings. More generally, this debate takes place against a background of a prevalent perception that industrial heritage is backward looking, whilst regeneration is forward looking. Therefore, the two can never be resolved effectively. Whilst science and industrial museums continue to attract support, the wider industrial heritage is unlikely to match the current public perception of valued heritage without a sustained campaign of access and education. This will also need to challenge the prevalent view that the industrial period is one perhaps best forgotten or removed from view (other than in the safety of a museum).

A STRATEGY FOR THE FUTURE

I have argued that there is currently:

- a strong link in public perception between the industrial period and social ills.
- a public conception of the historic environment which is out of step with current practice.
- a focus for urban regeneration in former industrial urban areas that sees heritage as backward-looking and a constraint to regeneration.

I am conscious that this view might be seen by some as rather too negative! It is important therefore that before concluding I spend a moment exploring some initiatives that are already underway.

Whereas Green in 1960 was bemoaning the lack of study of the industrial historic environment, we must recognise that such studies alone are not enough to ensure either its survival, or its effective contribution to regeneration. To tackle this issue English Heritage has recently undertaken a series of exemplary thematic studies across England with an industrial focus. These are not simply academic studies designed to improve our understanding of specific elements of the industrial historic environment however. They have been specifically designed to assist in the process of developing informed regeneration and management approaches to particular buildings or urban quarters.

In Birmingham, the Jewellery Quarter has been the subject of intensive specialist study and analysis in partnership with Birmingham City Council to help them plan the Quarter's future (e.g., Cattell and Hawkins, 2000; Cattell et al., 2002). In Sheffield, the metal trades have also been subjected to a similar study, again in partnership with the local authority, Sheffield City Council (Wray et al, 2001). Manchester's textile warehouses were studied in 2001 (Taylor et al., 2002) and Liverpool is currently the subject of a wide-ranging initiative which will lead to a series of thematic publications on the city's architecture (Cooper, 2001). These studies have been carefully designed to help encourage the integration of historic industrial remains into future regeneration proposals being developed by local authorities and others.

We have noted the widespread negative influence of buildings at risk, and English Heritage has again sought to tackle this through the production of *Buildings at Risk* (BAR) registers, through prioritisation of grant-aid towards BARs, and through the funding of BAR officer posts in Manchester, Liverpool, and elsewhere, and grant-aid to building preservation trusts to help build capacity and experience in this area.

However, the difficulty still remains in that:

- our post-industrial urban areas contain a wide range and number of derelict historic industrial buildings,
- the current UK Government priority on urban regeneration is attracting significant levels of funding and activity in these areas,
- the lack of understanding of the positive role that can be played by the industrial historic environment leaves a likelihood that significant historic buildings will be lost, and,

- the accelerated level of activity is overwhelming the capacity of the historic environment sector to react in a positive and strategic manner.

We have already noted above Liverpool's recent bid for world heritage status. The city's historic environment is of extraordinary importance, but is under significant pressure as the city seeks to regenerate itself. It was therefore selected by English Heritage as the subject of an integrated historic environment project which has set out an ambitious programme to integrate regeneration and conservation in a strategic manner (e.g., Cooper 2001).

The *Historic Environment of Liverpool Project* (HELP) builds on the experience of English Heritage's work in other urban areas such as Birmingham and Sheffield. It is being run in partnership with Liverpool City Council, with the support of a number of other organisations including the city centre development company, Liverpool Vision, the North West Development Agency, National Museums Liverpool, and the Liverpool Culture Company. The Heritage Lottery Fund has also been active in supporting the project's wider goals. The project has created a series of separate but associated modules which are designed to meet three overarching strategic targets:

- to better understand the city's historic environment,
- to better manage the city's historic environment,
- to promote physical and intellectual access to the city's historic environment.

Space precludes a detailed description of the project, but modules include:

- a wide ranging survey of the city's buildings and archaeology,
- the development of an extensive urban archaeological database for Merseyside,
- the development of integrated management strategies for the city's buildings,
- the development and implementation of a *Buildings at Risk* strategy for the city,
- the development of the bid for world heritage status and the implementation of a management plan for the world heritage site,
- a review of the current statutory and non-statutory protection for the city's historic environment,
- a MORI poll of public attitudes towards the city's historic environment,

- a series of popular publications about the city's historic environment,
- lectures and trails about the city's historic environment,
- a range of activities encouraging local communities to define what they value of their own historic environment and to engage in its management and promotion.

At the time of writing, the city's bid for world heritage status is being assessed. However, in 2003, Liverpool was chosen as the European Capital of Culture for 2008. There can be no doubt that the historic environment was an important element of the bid, and the announcement has been closely followed by a rapid increase in property values and investment, seemingly a clear indication of the link between culture and regeneration.

The overarching purpose of the Historic Environment of Liverpool Project was to seek to "move upstream" in the planning and regeneration process. At the moment there is a significant possibility that heritage agencies become involved with change in the historic environment only once proposals have been detailed and planning and listed building applications have been made. For many larger schemes and wider regeneration initiatives this is far too late in the day and this has two adverse effects. First, as schemes are likely to be fully developed and funding packages in place, intervention at this late stage is unlikely to be welcomed as helpful. Secondly, it is likely that the opportunity to integrate the historic environment as a positive element of the scheme will have been lost. The result is not only that the historic environment suffers, but that the heritage sector is shown in a poor light. It is clear that the current expertise both in local authorities and in heritage agencies such as English Heritage, whilst able to cope with day-to-day change in our historic towns and cities, will be hard pressed to cope with major regeneration initiatives covering large areas, involving significant levels of funding, and often moving to very fast timescales. In what is becoming a far more common scenario, the ability to even attend key meetings during the development stages may be exceptionally difficult to achieve, let alone influence the process in a positive manner. As heritage issues are forced "downstream" in the change management process, so the perception of heritage as a negative issue becomes reinforced, leading to less rather than more involvement. Our work in Liverpool suggests that a rather different approach and resourcing for the historic environment is needed in our major urban areas if we are to be successful. The advantage is that where the historic environment has been effectively harnessed and integrated at an early stage, the results can be both financially successful and, above all, deliver characterful regeneration.

Great progress is being made in Liverpool in seeing the industrial historic environment as forward looking and as a significant contributor to regeneration. Both Liverpool's Chief Executive and the Leader of the Council have publicly stated that they believe that the city's historic environment is, and will continue to be, a crucial element for the city's regeneration. Recently also the North West Development Agency stated that they believe that world heritage status for Liverpool will be of great benefit for the north west region as a whole.

I am optimistic that progress is being made and is accelerating. However, there is still some way to go though in translating success in Liverpool and elsewhere into more widely accepted wisdom and we need a sustained campaign to change public opinion in our favour. Some developers continue see the historic environment as a constraint even in Liverpool and it still remains all too easy to gain public sympathy by talking of the "dark satanic mills" and "cloaks of conservation descending over our towns and cities" (e.g., the debate in the *Architects Journal* in January 2004). However, there is no doubt in my mind that we are seeing an increasing confidence that industrial heritage and urban regeneration can work together.

So, to conclude, I believe that the biggest challenges we face in England at present relate to urban regeneration in our Victorian industrial towns, particularly those in the Midlands and the North. We are making progress in understanding our industrial historic environment although there is much to be done. However, if we are to stem the loss, we will have to engage much more in tackling the negative discourse relating to our industrial past. In parallel we must be far more active in explaining why buildings and structures which would not seem to have general aesthetic appeal are seen as of historic importance and can make an active contribution to successful regeneration. As mentioned earlier in this paper, the organisation *Urban Splash* have made great strides in regenerating industrial buildings including mills and warehouses and their Chairman, Tom Bloxham, is quite clear that there is an increasingly discerning and growing market for living and working in adaptively re-used industrial buildings. We need to do more to encourage such views to be widely held.

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**ARCHAEOLOGIES
OF THE FACTORY
AND MINE**

III

The Social Archaeology of Industrialisation

The Example of Manchester During The 17th and 18th Centuries

Michael Nevell

The Industrial Revolution represents one of the great changes in human society, and can be ranked in importance alongside the development of language, the establishment of farming, and the growth of urban societies. There is a large and growing body of literature about this Revolution, and the transition to an Industrial Society, written from the historians' and economists' view point, but little from an archaeological perspective (Clark, 1999:281–2). For the archaeologist the study of the Manchester region, with its early and rapid shift from rural backwater to industrial centre, offers models of archaeological transition and social stress that may be applicable to other regions undergoing similar processes (Nevell and Walker, 1999:11–2).

The contributions to the debate made by industrial archaeologists in Britain have tended to lean towards studies of the mechanics, or physical character, of individual industries or structures, with a consequent lack of synthesis. This trend amongst British archaeologists is understandable given the volume of the available archaeological database and historical record and the depth of the theories of economic historians. Yet, as the Association for Industrial Archaeology and English Heritage have both observed, this trend may have meant that the contribution of archaeologists to the debate on the validity and origins of the Industrial Revolution as a concept has not been as great as it could have been (English Heritage, 1997:45; Palmer, 1991).

The work presented in this paper is part of a long-term research program by the University of Manchester Archaeological Unit into the

industrial transition, attempting to present an archaeological understanding of the Industrial Revolution between the years 1600 and 1900 (Nevell, 2003a). We have adopted a landscape approach to the subject that charts and groups sites by type, whilst using geographical, historical and socio-economic sources only to illustrate archaeological perceptions. The methodology we have developed is described elsewhere in detail (Nevell and Walker, 1999;2003) and is outlined in brief below.

It is important to realize that this approach was distinctive in the way it combined three methodologies; firstly, in its emphasis on material remains; secondly in its landscape analysis through identifying the new monument types introduced during the period under study and then relating them to the monument type categories as listed in the RCHME's *Thesaurus of Archaeological Monument Types* (RCHME, 1996); and thirdly, in the use of geographical, historical, and socio-economic evidence to relate these new monument types to the contemporary social structure. This stress upon material remains, monument types, and landscape study is essential if archaeology is to make a contribution in its own right to the origins of industrialisation, since the discipline remains the study of material culture in all its forms whatever the period under study. A holistic approach meant treating the period in the same way as we might treat the remains of the Neolithic period, by giving in the initial phases of the study equal weight and importance to all elements of the physical remains.

MANCHESTER AND THE INDUSTRIAL TRANSITION

The paucity of the archaeological contribution to the study of Manchester's industrialisation is demonstrated by the scarcity of entries in a recently published historical bibliography on the city's textile development (Wyke and Rudyard, 1997). There is not even a separate section on the archaeology of the textile industry in the region as a whole, yet the bibliography runs to 2,957 books, pamphlets, theses, and articles printed between the late-18th century and 1997, of which 61 deal solely with the textile industry in Manchester. However, in the period 1991 to 2000 there were 560 books and articles published on North West archaeological topics of which 99 (17.7%) dealt with Post-Medieval and Industrial Archaeology topics, yet only three dealt directly with Manchester's industrial archaeology (Nevell, 2000:33–41).

What contribution can or should archaeology make to the issue of Manchester's industrialisation, a subject studied for much of the 19th and 20th centuries and which has produced such a vast literature? For

the economic and social historian archaeology might seem to be only about structures and objects, (such as cotton mills, warehouses, and pottery) yet as both Barrie Trinder (Trinder, 2002:75) and Keith Matthews have reiterated (Matthews, 2003) it is as much, if not more, about people than either of these two disciplines. It brings the student of the past into intimate contact with our ancestors through their physical remains and in the case of historical and industrial archaeology the cross-discipline study of documents and maps provides, at least in the case of Manchester, a way of testing through finely-grained studies the assumptions and hypotheses put forward during the 20th century as to the reasons behind the development of the world's first industrial city.

The purpose of this short paper, therefore, is to draw researchers' attention to the distinctive contribution that archaeology is starting to make to the investigation of the origins and development of the city. The current study focuses upon the 17th and 18th centuries, a period in Manchester's development far less studied and understood than the 19th century, but which, it will be argued, is crucial to an understanding of the development of the world's first industrial city.

THE MANCHESTER METHODOLOGY IN TAMESIDE

Both contemporary and modern commentators have to grapple with the issue of Manchester's rapid economic, physical and population expansion during the period 1600 to 1900. One way of archaeologically charting this growth is to look at the number and rate of introduction of new monument types, as defined by the English Heritage/RCHME thesaurus of archaeological monument types. This approach has been set out in full by Michael Nevell and John Walker elsewhere (Nevell and Walker, 2003), but in brief it allows short bursts of economic and social expansion to be identified through the archaeological record, whilst long term trends can also be recovered using this analysis. It is the archaeological equivalent of charting population trends, with similar benefits, through the identification of empirical data, and similar problems, not least the fact that this method is only descriptive and not explanative. In an attempt to compensate for some of these drawbacks the Manchester Methodology attempts to link new archaeological monument types to a particular social group through a detailed study of a particular landscape during a specific period. This methodological approach was originally developed in the late 1990s as part of the Tameside Archaeological Survey to aid the archaeological study of the medieval to industrial transition of two Pennine lordships,

the manors of Ashton and Longdendale, which lay within the modern borough of Tameside. Tameside itself is one of the ten districts of Greater Manchester and it rapidly became apparent that this approach could be extended to other areas of the county and possibly beyond. The way the methodology emerged was as a three-step process and what follows summarizes the pioneering work in Tameside on the two lordships.

Stage 1: Making Sense of the Archaeological Database

Landscape fieldwork and documentary research confirmed that the archaeology of the study area, that is the Ashton and Longdendale lordships from the period 1348 to 1642, was distinct, being dominated by the remains of isolated farms and the homes of the owners of manors. As part of the landscape study the survey examined the earliest surviving pre-industrial map from the study area, the late 16th century Staley estate survey, noting how the sites recorded corresponded with the known archaeological evidence for this area in the 16th and early 17th centuries. The map showed a pre-industrial landscape consisting of a major hall and isolated farms, lying amongst enclosed fields, some of which contained ridge and furrow. Beyond the limits of the fields lay the open moors or commons containing the remains of Buckton Castle, a cairn, a turf pit and a slate quarry. Allowing access between the two zones was a series of lanes and moor gates. Staley Hall, the manorial centre, appeared as a large multi-gabled, multi-storied structure, apparently capable of housing many people, joined on one side by a field surrounded by a vertical plank fence typical of a park pale. Other structures were all simple tenant houses with different arrangements of windows and chimneys, each surrounded by fields.

The archaeology of the period from 1642 to 1900 within the Ashton and Longdendale lordships was as distinct as that for the three centuries before 1642. It was dominated by two new archaeological site types; the textile site, of which 274 were established in Tameside between 1763 and 1907, and the terraced house of which thousands of examples still survive from the period 1790 to 1870. These patterns were tested and confirmed by a considerable number of individual building surveys allied to a number of archaeological excavations on sites such as Ashton Old Hall, the Black Bull Inn, Dukinfield Hall, Denton Hall, Haughton Green Farmhouse and colliery, Mottram village, the Park Bridge Ironworks and the field boundaries and tracks of Werneth Low.

The first problem was to characterise or group this new information and new sites for the period 1600–1900. In order to categorize

much of this archaeological material and to provide a common frame of reference we used the archaeological site descriptions and monument category classifications contained within English Heritage's and the Royal Commission's *Thesaurus of Archaeological Monument Types* (RCHME, 1996).

Using the Thesaurus UMAU identified over 100 new types of archaeological site established in the Ashton and Longdendale lordships between 1600 and 1900 (Nevell and Walker, 1999). These new sites fall, according to the schema within the Thesaurus, into 15 of the 18 monument categories; agricultural and subsistence monuments; civil monuments; commemorative monuments; commercial sites; defensive sites; domestic sites; education sites; monuments associated with gardens, parks and open spaces; those connected with health and welfare; industrial monuments; institutional monuments; recreational sites; religious, ritual and funerary sites; transport sites; and those monuments associated with water supply and drainage.

These new sites range from ice houses, such as the fine 18th century example in the grounds of Broadbottom Hall; hatting plank shops, such as that on Joel Lane in Gee Cross built in the late-18th century; pumping engine houses, such as at Fairbottom Bobs near Park Bridge, probably from the 1760s; to transport networks such as the Manchester to Ashton Canal, built in the 1790s, or the Manchester to Sheffield railway, built in the 1840s. However, the three most common archaeological sites were; the terraced workers' house of which there were thousands, the earliest surviving buildings being a row of six cottages in Broadbottom known as Summerbottom built in 1790; the textile site, of which 274 sites are known, the earliest surviving purpose built mill being Albion Mill in Hollingworth and Dry Mill in Mottram both erected during the early 1790s; and the farmstead, of which 273 sites are known, one of the more notable being Old Post Office Farm, built in 1692 by one of the many wealthier tenant farmers in the area.

Using the Thesaurus together with the findings made during the archaeological survey it is possible to draw a graph of when different types of site were first constructed within the study area. As the great majority of these new sites survived for long periods it was found most helpful to draw a cumulative graph showing how the total range of sites expanded through time. Figure 1 shows the pattern of introduction of new types of site in the area and how the range of sites expanded. The slope of the graph is S-shaped with a long period in which new types of sites were gradually developed followed by phases of more rapid change. Such S-shaped (sigmoidal or logistic) growth curves are found in many cases of population growth and typically can be divided into four main phases:

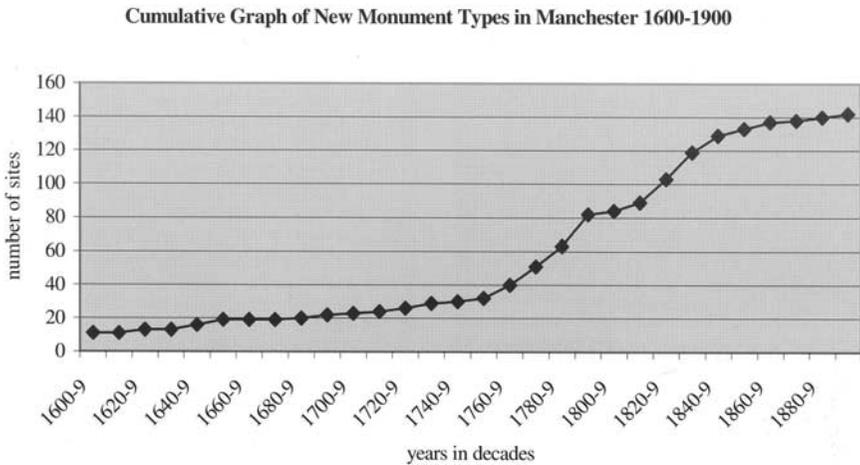


Figure 1. A graph of the new monument types introduced into the Manchester township during the period 1600–1900 as identified by the present study.

- The adaptive phase; in which change is slow.
- The expansionary phase; a period of rapid growth with positive feedback.
- The consolidatory phase; in which growth is less rapid and negative feedback becomes more common.
- Maturity; when growth slows considerably or stops.

The study of growth curves is dominated by ecological theory (Allaby, 1996; Colinvaux, 1993; Smith and Smith, 1998) and if we accepted some of these insights we might conclude that the graph of new archaeological type sites from the Tameside area is typical of a population where investment in developing new sites (population members) is high and that ultimately the total range is restricted by some form of complex constraint.

Stage 2: The Ownership of the Archaeological Site Types

Having categorized the broad changes in the local material culture within the study area the problem then was to offer some form of insight into the pattern that had emerged. The Thesaurus only divides sites into groups or individual entities on the basis of a combination of site function and recognized archaeological typologies. To understand this database we looked at different contemporary contexts, which might fit

this pattern (Nevell and Walker, 1998). Analysis of environmental and population changes in the period 1600–1900 did not throw any light on this pattern. However, we discovered that each new type of site could be related to a distinct contemporary local social class, lord, freeholder, and tenant, and that in each case these new forms related directly to the traditional sphere of influence of each social class.

One difficulty that arose from taking this social context approach was the certainty of assigning ownership of sites to the right class. In a typical local manor such as Hattersley a tenant was responsible for building their own house and in the early part of the period could use certain materials obtained from the common land. It might seem, therefore, that the house was the tenants' property but in fact if they lost their tenancy they also lost the house and it became the property of the landowner. However, there is evidence that most tenants thought of themselves as quite secure in their tenancies. In practice the relationship between tenant and land owner was deeply anchored in custom, or embedded in the contemporary social structure, so that few tenants lost control of the houses they built. Thus, sites were only allocated to a particular social grouping when the combined archaeological and historical evidence favored that category.

The pattern of site development in relation to social class was as follows:

- *The Lord's Archaeology*
There are 28 new archaeological type-sites, spread across 13 monument classes, associated with the landholders during the period under study; manorial halls and town halls being the most prominent.
- *The Freeholders' Archaeology*
There are 48 new archaeological type-sites, spread across 10 monument classes, associated with the freeholders in this period; the country house and the textile complex being the most prominent.
- *The Tenants*
There are 24 new archaeological type sites, spread across just 5 monument classes, associated with the tenants in this period; the weaver's cottage and the farmstead being the most prominent.

Stage 3: Establishing an Archaeological Narrative

Having identified the new archaeological sites introduced during the period 1600 to 1900, and then assigned the ownership of each of

these to one of three contemporary social groupings (lords, freeholders and tenants) various patterns in the data begin to emerge allowing us to create a narrative about the nature of the Industrial Revolution as it occurred in the two lordships in Tameside. In the 16th century the two lordships of Ashton and Longdendale were marginal land. The backwater nature of the area meant that there was a lack of central direct control and absent lords. The patchy quality of the landscape and the absent lords meant that there developed a short, and dispersed, social hierarchy based upon land and social rights. These social groups of the lords, freeholders and tenants each gave birth to the distinct range of sites that characterized the area, and its archaeology, in the 17th century.

This community evolved into a remarkably open society with a keen interest in new opportunities to gain additional resources. Access to these resources was strongly influenced by existing social and economic rules. The lords could generate additional income by exploiting the resources they controlled; such as stone and minerals, agricultural tenancies and (because they had some money) innovative capital projects. To the freeholders their more limited rights, coupled with a desire to maintain social status, meant that in general additional income would have to come from agriculture. For the tenants weak control meant that industry was a source of largely untaxed income and any innovations were not controlled by strong local guilds or effective national legislation. Other factors may also have made the area particularly suitable for industrial development; for example large areas of free land in the river valley bottoms, a tradition of families working as one economic unit, a cheap and effective transport system, a society used to operating on credit and trust, and a local tradition of Puritanism.

The causes that quickened the pace of change between 1750 and 1850 remain unclear, although the increase in the range and number of archaeological sites is obvious. To anyone living within the central portion of that curve, roughly 1770 to 1820, the experience would be one of rapid and revolutionary change, even though the pattern of growth, when studied as a whole, would foster the impression of cyclical development. Surprisingly, the pattern of development in archaeological sites follows that laid down by the earlier social structure of the lords, freeholder and tenant. At the forefront of the development of new industrial sites were the tenants. The archaeological sites of the tenants show not a revolution but a gradual evolution as material prosperity increased as a whole. Whilst agriculture increased in efficiency ultimately the old medieval freeholders, with their strong reliance on farming, declined. They were replaced by a new form of freeholder interested not only

in agriculture but also in industry. The lords, on the other hand, were responsible or involved with all the major new capital and strikingly innovative projects, which involved administrative, legal and social control or infrastructure. The roles of the lord were in time taken over by the new Victorian local government.

Charting Manchester's Growth Archaeologically, 1600 to 1900

The application of this methodology to the township of Manchester is still in its infancy (Nevell, 2003b). Therefore what follows is an initial attempt to study the archaeology of the township in the period 1600–1900 using the first stage of this methodology; that is through charting the introduction of new archaeological monument types. Although the studies needed to place these new monument types in their social context have not as yet been undertaken the identification of these new archaeological sites should indicate areas worthy of discussion and future research.

This initial analysis of the archaeological database of the township shows that at least 142 new archaeological monument types were introduced during the period 1600–1900 across 17 of the 18 monument categories (see Figure 1). The largest category so far identified is that for industry with 37 new sites, but a further four categories had 10 or more entries; civil monument types with 10, commercial with 15, domestic with 17 and transport with 16 new sites. Since it seems unlikely that future research will substantially alter the range and number of these figures a preliminary analysis of this evidence has been undertaken.

This archaeological data supports the economic and social historians' arguments that the classic period of expansion in Manchester was the era 1780 to 1850, with 78 new sites, or 55% of the total number of sites identified so far, falling within this 70 year period. However, it can be seen from the above graph that the archaeological database suggests that this expansion was not constant, with two distinct phases of change during this period, the decades 1780–1800 with 31 new sites and the years 1820–50 with 40 new sites. Furthermore, the graph also suggests a lengthy period of expansion before 1780, with the rate of introduction of new monument types accelerating during the mid-18th century. In the search for explanations of these two features of the archaeological record it is necessary to look at the growth of Manchester's population in this period and the role of the textile industry in the centuries before 1800.

MANCHESTER'S POPULATION, 1563–1801

In order to better understand Manchester's transformation in the 17th and 18th centuries, we need to briefly review the growth pattern of the town's population, from the earliest estimates in the mid-16th century to the first accurate census in 1801. The success of the town during the period 1563 to 1801 can be seen in the size of its population, although estimating the city's population increase during this period is problematic. The 1838 borough was much bigger than the historic township and accurate figures for the township were not taken until the census of 1801 (Hartwell, 2001). A fuller discussion on Manchester's growing population can be found elsewhere (Nevell, 2003b:30–1), but in brief the population trend between 1563 and 1801 is as follows.

The earliest reliable estimate for the population of the Manchester township comes from 1563. The number of households given in the Episcopal returns for that year suggests a population around 1,800 (Willan, 1980:38–9). By 1642 the population of the township had risen to just over 3,000 (Willan, 1983:36). The Hearth Tax Returns of 1664, taken 22 years later, list 820 households, suggesting a population of around 3,690 (Arrowsmith, 1985:100; Phillips and Smith, 1994:7). Thus, Manchester's population roughly doubled in the period 1563–1664, well above the national average increase of 68% in this period, the North Western average of 64%, and the Lancashire average of 72% (Phillips and Smith, 1994:6–7). However, it is worth noting that this growth was not consistent nor uninterrupted, for on three occasions during the period 1563 to 1664 the population was considerably reduced as a result of outbreaks of plague — specifically during the years 1565, 1605 and 1645 (Arrowsmith, 1985:100–101; Willan, 1983:29–40).

Was this growth entirely internal? Willan's 16th and early-17th century studies suggest that this was probably not the case. Whilst the evidence for migration into the town is scanty, the very fact that Manchester's population rapidly recovered from these three plague outbreaks strongly suggests that the population shortfall was made up by a significant number of migrants from the surrounding countryside. This migration is also probably reflected in the Court Leet records, which distinguish in this period between natives and foreigners (Willan, 1979:175–83; Willan, 1980:38–9, 80; Willan, 1983:39).

Whereas Manchester's population doubled in the 101 years from 1563 to 1664, its growth during the 109 years from 1664 to 1773 was even more startling, the township growing nearly seven-fold. An estimate of the population of the township can next be made in 1717 from the Bishop of Chester's returns, suggests a population of around 9,013.

In 1758 an enumeration of the population of the township showed it contained 17,101 people, suggesting a near doubling in the previous 40 years, a slightly faster rate of growth than in the period 1664–1717 (Arrowsmith, 1985:101).

The census of 1773 is usually taken as the most accurate prior to that of 1801 and showed that the township of Manchester contained 24,937 people, of whom 23,032 lived within the town itself, indicating that in the preceding 15 years Manchester's population had grown by 35% (Arrowsmith, 1985:101). Again this was a further acceleration in the rate of population growth compared to the period 1717–58. This increased rate of growth was eclipsed, however, by the rapid expansion of the final quarter of the 18th century. The 1801 census records 70,409 people within the town, a trebling of the town's size in the space of a generation, which was hitherto totally unparalleled in Manchester's history.

The tracing of the growth of Manchester's population is important in this period because it allows us to put the town in its regional and national contexts. Thus, in 1500 Manchester was one of the smaller 34 market centres in the region (Morris, 1983:21), but by 1664 it had grown to become the largest town in Lancashire and probably the fourth biggest in the region behind Chester, with a population of around 7,800, and Macclesfield and Nantwich, both of which had similar population sizes to Manchester's (Phillips and Smith, 1994:7). Whilst population size remains difficult to establish throughout the period it is clear that by 1720 the two largest urban centers in North West England were Liverpool and Manchester, both with populations around 10,000 according to Gastrell's census of that year (Phillips and Smith, 1994:67). The next largest urban centre in the region was Chester, which in 1728 is thought to have had a population of around 8,700.

Nationally, by 1801 Birmingham, Liverpool, and Manchester were the largest urban centers outside London, each with populations around 70,000, and there were only two other towns with populations in excess of 50,000 (Bristol and Leeds). The next largest eight towns had populations between 20,000 and 50,000, whilst 30 towns had populations between 10,000 and 20,000 (Prince, 1973:458–9).

TEXTILES IN MANCHESTER BEFORE 1783

During the period 1500 to 1700 Manchester was a cloth town whose economy rested primarily upon the manufacture and marketing of linen and woollen fabrics (Willan, 1980). As early as 1551 Manchester cottons,

a plain woven woollen cloth so-called because of the cottoning or raising of the nap, is mentioned in an Act defining the widths of Lancashire woollen cloth. In 1565 Manchester was chosen as one of five towns in Lancashire for the location of the Queen's aulneger, or officer appointed to examine and seal or approve manufactured cloth (Tupling, 1947; Willan, 1979:175). By the end of the 16th century the importance of the town as a centre for marketing textiles is highlighted by the naming of a separate department in London's cloth market as the Manchester Hall (Hartwell, 2001:7).

By the end of the 16th century a number of wealthy clothier families had emerged within Manchester, but by far the richest were the Mosley family. Nicholas Mosley appears to have moved to London in the 1570s, from where he and his son Rowland exported Manchester cottons. He became so successful that he was able to buy the lordship of the manor of Manchester from John Lacy in 1596 for £3,500 (Willan, 1980:9). The previous year his brother Oswald had bought Garrett Hall close to the town and lands in Manchester from Sir Thomas Gerrard, whilst in 1597 Nicholas' son Rowland paid £8,000 for the manors of Withington and Hough. His brother Anthony appears to have managed the Manchester end of the business and on his death in 1607 his estate was worth £2,000 of which £254 was in cloth in his warehouse at home with £224 worth of cloth at the fullers (Willan, 1980:56–7). Thus, the Mosleys came to dominate Manchester's textile and civil life during the 1590s.

There were also a number of wealthy traders in flax, yarn, and finished cloth, the richest being Richard Nugent whose personal estate at his death in 1609 was valued at £2,344, including £200 in canvas in London and £127 worth of yarn at home (Willan, 1980:60). Other wealthy cotton traders included Isabel and Richard Tipping, whose estate was worth around £1,500 on their deaths in the 1590s, and James Bradshaw, whose estate was worth £460 when he died in 1588 (Willan, 1980:60). The value of these estates is comparable with the value of the estates of the lesser manorial lords and wealthier freeholders in the townships around Manchester during this period.

The 17th century textile industry was altered in three key ways: by the rise of cotton weaving, the emergence of a dominant group of textile clothier families, and the development of the putting out system. Woollen cloth remained a significant feature of the Manchester textile scene throughout the 17th century. For instance, between December 1614 and September 1616 around 28,000 woollen cloths were sealed by the deputy aulnager for Manchester (Willan, 1979:175–83). Early in the 17th century the linen industry was further developed by the introduction of a mixed cloth called fustian, which had a linen warp and cotton

weft. The earliest identified reference to cotton in the Manchester area is usually cited as the will of George Arnould, a Bolton fustian weaver brought before the quarter sessions in Manchester in 1601 (Wadsworth and Mann, 1931; Winterbottom, 1998:32).

The textile merchants and workers of Manchester rapidly took to this new form of cloth, so that by 1688 Celia Fiennes, who visited the town in that year, could write that “the market is kept for their linen cloth, cotton tickings, incles [smallwares], which is the manufacture of the town.” (Bradshaw, 1987:10). When did this shift from woollen production to linen and fustians take place? A description of the town from 1650 noted that its trade consisted mainly of woollen frizes, fustians, sack-cloths, and smallwares (Aikin, 1795:154). This impression is borne out by a recent study of the marriage registers of the parish of Manchester during the 1650s by Geoffrey Timmins, suggesting that the 1640s and 1650s were a crucial period of transition in the Manchester textile industry, with the manufacturing leadership in the town passing from the woollen to the linen and fustian trade (Timmins, 1998:73–4).

Whatever the precise timing of this shift in emphasis, the town came to be dominated during this century by a few extremely wealthy linen and fustian textile manufacturers and merchants. By the 1620s three families had emerged as the main fustian dealers and by the mid-17th century were the dominant force in the Manchester textile trade (Wadsworth and Mann, 1931:29–36; Willan, 1983:37).

Of this late 16th and 17th century textile boomtown, with its four market-places, sessions house, merchants houses, warehouses, and public fountain, very little now remains. The 1650 map of Manchester (Figure 2) shows a town spread along Deansgate, Longmillgate, Market Street, and up Shudehill, and until the mid-19th century, many timber-framed buildings pre-dating the mid-17th century, and thus the product of this early woollen and linen textile boom period, could still be found along these streets. The only one of these structures now left is the Old Wellington (Figure 3), which was re-erected and re-stored on its present site next to the Cathedral, in Hanging Bridge Street, in 1999. Originally, this building stood on the southern side of the Shambles Market Place (Figure 4) and was leased to Edward Byrom in 1657. He bought the property in 1666, the family retaining the Old Wellington until the 19th century. Byrom’s will from 1669 indicates that what survives is merely a fragment of a much larger mercantile property which included two warehouses, a brewhouse and a kitchen, probably arranged around a courtyard to the rear, or immediately south, of the building, accessed via an alleyway on the western side of the Old Wellington. The current three bay, three storey, domestic building covers roughly 225 m².

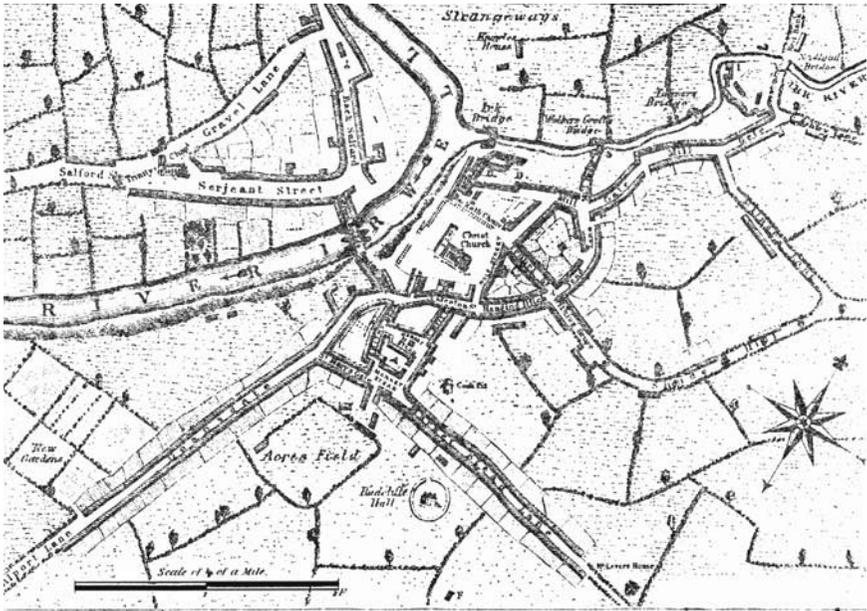


Figure 2. Manchester in 1650 from an 18th century copy of the lost original.



Figure 3. The Old Wellington (left) and Sinclair's Public House (right) in their new position next to Manchester Cathedral. The Old Wellington is the only known extant timber-framed building left from Manchester's first textile boom in the 16th and 17th centuries. It was owned by the Byrom family, wealthy textile merchants, during the 17th and 18th centuries.

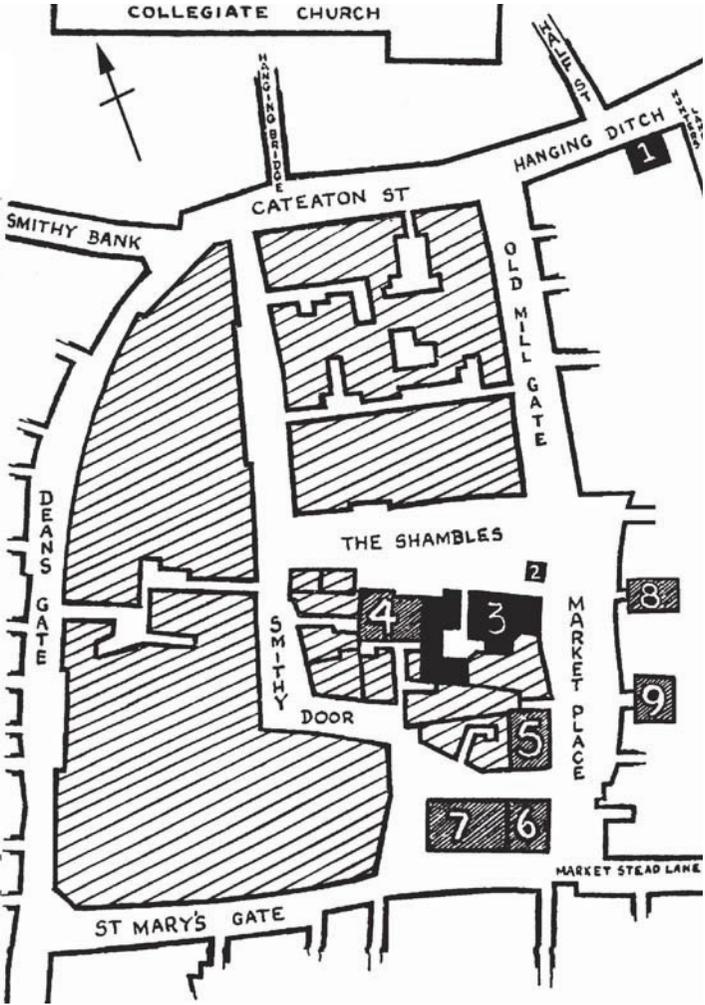


Figure 4. A reconstruction of the 17th and 18th century commercial heart of Manchester, the Shambles and Market Place areas showing the Byrom family's properties, numbers 1 and 3. Key: (1) Byrom town house; (2) Market Cross; (3) Old Wellington Inn with textile warehouses to the rear around the courtyard; (4) John Shaw's Punch House, now Sinclair's; (5) Court Leet house; (6) The Conduit House, containing Manchester's first piped water supply; (7) the 1729 exchange; (8) Bull's Head; (9) Angel Inn. Based upon Nevell, 2003a, Fig 3.8.

The lower two stories date from the mid-16th century, whilst the third storey was added in the 17th century, although stylistically no later than 1660, and probably some years before Edward Byrom leased the property in 1657. Such a courtyard arrangement, with its mixture of domestic and commercial textile buildings, appears to have been common in 17th century Manchester.

The 18th century marks the emergence of Manchester as a manufacturing and commercial town of national importance, but within the cotton trade rather than the linen branch of the textile industry, which was in sharp decline after 1700 (Chaloner, 1962:157–8). The dominant position of Manchester in the newly developing cotton manufacturing trade of the early-18th century is reflected in two ways. Firstly, in the probate evidence for the period 1700–60. Close analysis of this evidence reveals that silk and smallware manufacture and textile finishing were all largely urban based, and that Manchester dominated this urban textile trade as both a regional and local manufacturing centre. For instance, half of all the probate records for the finishing trades during this period were Manchester based. The growing importance of cotton in Manchester's textile trade is reflected in the references to fustians in the probate evidence, which rose from nothing in 1700 to 30% of all textile occupations listed in the Manchester probate records by the mid-18th century (Stobart, 1998:7). Textiles dealers, often though not exclusively referred to as *chapmen* in these records, were three times more likely to be urban-based and once more Manchester was the regional centre for such dealers (Stobart, 1998:12–13). Although the putting-out system was by no means universal in this period Manchester and its chapmen were already central. Its textile merchants “not only controlled the supply of raw materials and the marketing of the finished cloth, but also played an increasingly important part in determining the work-patterns of the individual workers” (Stobart, 1998:13). An example of this can be found in the will of Joseph Jolly, linen draper of Manchester, who died in 1753 leaving £431 17s 3d of goods in his warehouse and a further £548 9s 6d in the weighhouse. His will lists 137 individuals to whom debts were owed or credit extended including 13 yarn winders and 42 weavers (Stobart, 1998:14).

Secondly, Manchester's dominant position is reflected in the passing of the Manchester Act in 1736. This prohibited the manufacture of all-cotton cloth in Britain and was designed to protect the woollen industry against competition from the new, cheap, all-cotton materials imported from India and also from cotton cloth being made in this country, whose production centre was the Manchester area. Fustians, a linen warp and cotton weft mix the manufacture of which was dominated by the Manchester textile merchants, were permitted to be made but were

subject to a tax of 3d per yard. The Act was repealed in 1774, largely through the efforts of Richard Arkwright.

The rising prosperity of the Manchester textile merchants and the success of the putting-out system is well illustrated by the life of Joseph Byrom, owner of the Old Wellington and Boroughreeve in 1703 (Thompson, nd), who in the period 1675 to 1733 amassed an immense fortune. After an eight year apprenticeship in textiles he set himself up as a fustian and silk merchant in 1683 trading between Manchester and London. By 1702 his estate was worth £7,000 and this had risen to £12,900 by 1715. He bought the property next door to the Old Wellington from his brother in 1713 for £1,320, this now forming part of Sinclair's. In 1721 his estate was worth £14,400 and his town house situated in the Blue Boar Court, adjacent to the Market Place, the heart of the textile commercial district in 18th century Manchester. His will of 1733 shows that besides land in Manchester including the Old Wellington (Figure 3), a house in Blue Boar Court (Figure 4) and lands to the west of Aldport, he held property in Barton, Deane, Halliwell, Stockport and Urmston, as well as owning the Smithills Hall estate, which he had bought for £4,688 in 1722.

Joseph Byrom was by no means exceptional in making the leap from textile merchant to land owner within 18th century Manchester. Casson and Berry's map of Manchester published in 1741 has a number of inserts around the map which depict 18th century town houses built by wealthy Manchester textile merchant's such as Mr Marsden's house in Market Street. Few of these merchant properties survive, Cobden House, built in the 1770s on Quay Street being the best preserved example. On King Street, described in 1777 by an American visitor as the best built of all Manchester streets, only two 18th century town houses survive; Nos 35–37, a five bay brick house built in 1736 for Dr Peter Waring, and possibly used by the textile merchant and cotton manufacturer Samuel Gregg later in the 18th century, and opposite No 56, a more fragmentary early-18th century property.

The character of this thriving merchant textile town is captured in Manchester's first directory, published in 1772. Its 1,495 entries within the main directory represent a cross-section of Manchester society, although this was only 6.5% of the 23,032 people recorded as living in the town in the following year. The occupations listed within the 1772 directory can be broken down into textiles (29.3%), food retailers (15.3%), retailers (14.8%), other occupations such as hatting, forging and smithying (13.8%), home-based manufacturing workers (13.2%), those with no occupation listed (9.3%) and warehousemen (4.3%). Although textiles were not overwhelming in their dominance they did form the largest single grouping with 439 individuals describing themselves as involved

in the trade, or just under a third of all the entries. Within this grouping the largest entries were for fustian manufacturers (3.9% of the directory), check manufacturers (2.7%) and smallware manufacturers (2.4%). However, individually these figures do not reflect the dominance of the fustian sector, which accounted for 173 entries or 11.6% of the main directory.

The historical geography of this textile industry can be recovered by looking at the distribution of the various branches of the textile trade street by street. Textile manufacturers can be found all over the centre of the town, with notable concentrations along Cannon Street, the northern end of Deansgate, King Street and Market Street. The location of those involved in textile weaving and calendering, presumably in domestic workshops, shows that there were two major concentrations. The first in the Aldport area of Manchester, now the southern third of Deansgate, and the second in the streets around Turner Street in the what is now the northern quarter. Finally, textile finishers could be found around the fringes of the town in the 1770s, where there was access to plentiful supplies of clean water; principally along the Rivers Irk and Irwell, but there were also textile finishers along Shooters Brook along the eastern edge of the town (Nevell, Connelly, Hradil and Stockley, 2003). Another intriguing aspect of the 1772 directory is the high number of warehousemen with 64 entries, or 4.3% of the directory. This reflects the large number of warehouses within the late-18th century textile town; 38 are recorded in Manchester's first directory from 1772, of which 31 can be located with some certainty.

Typical of the way in which Manchester developed in the 18th century was the St Paul's district to the north-east of the medieval core and now known as the Northern Quarter. Three maps indicate how rapidly this area developed in the second half of the 18th century. The earliest, Casson and Berry's map of Manchester from 1741, shows that only the south-western quarter of the St Paul's district had been developed by this date. Tinker's map of Manchester, published in 1772, shows that housing in this area had grown to cover over a third of the district. According to Green's map of Manchester, published in 1794, nearly all of the St Paul's District had been built upon. The eastern boundary of this area, the newly built Oldham Street, faced a rectilinear grid of streets focused upon Stevenson's Square that ran to the south-east. However, behind Oldham Street, the vast majority of the St Paul's district was characterized by an irregular street pattern, with many narrow alleyways and courtyards, especially along the Tib Street and Back Turner Street corridors. The River Tib had been culverted in 1783. The exception was the corner of the district bordering the junction of Shude Hill

and Swan Street, where there remained large areas of open space and only a few isolated houses.

An analysis of the 1800 directory for Manchester indicates that the character of the St Paul's district was that of a mixed residential, commercial, and manufacturing district. Of the 114 people listed as resident in the area during 1800 the largest single grouping were textile workers and manufacturers with 23.9% of the entries, home-based manufacturing workers with 21%, followed by food retailers with 15.7%, retailers with 6.8%, those with no occupation with 6%, and warehousemen with 5%. Other occupations accounted for 21.6% of the entries.

Most of the St Paul's district was characterized by a variety of domestic dwellings, workshop dwellings, and textile mills (Little, 1996:42). The most important survival, however, was at least 50 workshop dwellings. The workshop dwelling was characterized by having three stories and a cellar, and was usually one room deep. The upper storey or attic contained a workshop lit by long multi-light windows and the cellar was usually used as a workshop as well. Such workshop dwellings were the counter-part to the rural weaver's cottage, although in fact they allowed all sorts of home-based craftsmen to ply their trades (Roberts, 1997:2).

Six examples of these late-18th century workshop dwellings have been recently studied in a block formed by Turner Street, modern Kelvin Street (formerly Milk Street), Back Turner Street and Brick Street (Figure 5). This block of land appears to have been divided into plots, which were sold off during the 1740s and 1750s by one Josiah Nicholls, a merchant, to 17 different individuals. Green's map of 1794 indicates that virtually the whole of this block had been built upon by 1794, whilst the three directories published between 1772 and 1800 indicate that these three streets contained a variety of properties. Turner Street was dominated by the houses of manufacturers who had their business elsewhere, whilst the properties on Milk Street and Back Turner Street were occupied by crafts men or tradesmen who lived and worked in the same buildings. Occupations mentioned in the trade directories from this period included timber, flour and tea dealers and sellers, as well as joinery, shoemaking and textiles.

The earliest of the six dwellings to survive is No 36 Back Turner Street, built in the period 1755–57 (Figure 5). The title deeds show that it was part of four blocks of land bought by Peter Hall, a slater, and like many of the other 17 individuals to which land was sold in this block Hall was probably a speculative builder (Nevell, 2003b:38). Its three floors and cellar cover an area of 81 m². No. 37 Turner Street was probably built in the 1760s, although by whom is unknown, and is certainly



Figure 5. Details of the late 18th century workshop dwellings in the St Peter's District. Top, the Milk (Kelvin) Street, Turner Street and back Turner Street complex. Of the six surviving 18th century workshop dwellings at the Milk Street end of the block four have been surveyed by UMAU. Middle and bottom: (left) No 37 Turner Street, (right) Nos 1 to 5 Milk (now Kelvin) Street.



Figure 6. 18th century textile sites in Manchester. Source: Green's map of Manchester and Salford published in 1794. Key: ● = textile mills; ◆ = textile finishing sites.

no later than 1772/3. The cellar retains the railed area along Turner Street, and the whole covers 198 m². Nos 1–5 Milk Street (Figure 5) were erected in the years 1772–3 and cover areas of 110 m², 129 m² and 115 m². No. 38 Back Turner Street was erected in the years 1794–1800 on part of the plot bought by Peter Hall in 1755 and covers an area of 110m². The title deeds and early rate books reveal that Nos 1–5 Milk Street were built by Richard and Mary Manchester in 1772/3, and rented out by that family until sold by them in 1790s. Directory evidence indicates that the family was textile traders in the period 1772–1800 (Nevell, 2003b:38–9). Unfortunately no tenants are known before the 1790s, although thereafter residents include fustian weavers. Nevertheless, the building of a row of three workshop dwellings such as those at Nos 1–5 Milk Street by Richard Manchester could fit into a pattern of semi-domestic textile manufacture, which typified the putting-out system controlled by the chapmen of 18th century Manchester.

THE ARRIVAL OF THE COTTON MILL, 1783–1800

The first cotton mill in Manchester was opened in 1783 on Shude Hill and was built by Richard Arkwright. However, this was 14 years after he first patented the water frame and the mill into which it could be installed. Until 1783 there was seemingly no indication that Manchester would become within 17 years the heart of the cotton spinning manufacturing trade; prior to 1783 the largest textile mill towns in North West England were Congleton, Macclesfield, and Stockport. By 1800 Manchester had eclipsed them all with the building of 42 mills in the space of 17 years (Figure 6) to add to its 18 textile finishing sites (Nevell et al., 2003).

The first of the Manchester mills, Arkwright's Mill, was insured for £5,000, and its size, at 60.9 m × 9.1 m and six stories high, was a measure of Manchester's importance as a cotton manufacturing town. In order to provide water for the centrally placed water wheel a reservoir was built on the western side of the mill and it seems highly likely that it was fed by a leat drawn from nearby ponds known as the Shude Hill Pitts on Swan Street, which in their turn were fed by directly from the River Tib. The head for the water was achieved by siting the mill on the hillside formed by the Irk valley. This was a closed system, since the water was not lost but recycled by being pumped from the lower reservoir to the west of mill back up hill to a small square header reservoir north-east of the mill using an atmospheric steam engine of the Savory type. Technically, Arkwright's Mill was the first in Manchester to use steam, although the steam engine did not power any textile machinery (Chaloner, 1955:90–1).

The first proper steam powered mill in Manchester, where the engine actually ran the cotton spinning machinery, was, however, at another Arkwright-type mill owned by Peter Drinkwater (c 1742–1801). Drinkwater was one of the Manchester fustian putting-out merchants who made the transition to cotton mill owner. During the 1770s he was a fustian manufacturer with commercial premises including a warehouse in King Street, a town house in Spring Gardens and extensive overseas interests. During the late 1780s he began investing some of the capital he had accumulated in cotton spinning mills; first in a water-powered mill in Northwich, and then in 1789 in Manchester with the construction of his four storey, brick-built, Piccadilly Mill on Auburn Street, which by the early 1790s was employing around 500 people (Chaloner, 1955:85–93; 1962:162–3). This was powered by an 8 hp Boulton and Watt rotary beam engine (the original drawings for which can still be seen in the company's archives at Birmingham), installed

and working by 1st May 1790, and immediately increasing the output of his business thirtyfold (Chaloner, 1955:87–90).

Throughout the 1790s a number of water powered mills were converted to steam and these included the Bengal Street Mill rented by McConnel and Kennedy in 1796, where they installed a 16 hp Boulton and Watt steam engine the following year. The 1790s steam powered mills in Manchester are more difficult to locate but there are a number of candidates where the documentary evidence is unrevealing but the siting suggests they may have been steam powered from their inception; these include Oak Street Mill and Whittle Street Mill in the St Paul's district and Chorlton Old Mill and Marslands Mill both just over the township boundary in Chorlton-upon-Medlock. All four were built around 1795. The only one of the 18th century steam powered cotton mills to survive, however, is Murrays' Old Mill on the Rochdale Canal in Ancoats which was erected in 1798. Like Drinkwater's Piccadilly Mill this too had a Boulton and Watt steam engine. Murrays' Old Mill came to typify the Manchester cotton mill; it was a narrow, six storey, brick built structure, located on the side of a canal and with, for the time, a large beam engine powering spinning mules.

The only contemporary late-18th century record of the distribution of cotton spinning mills is to be found in a 1788 survey of Arkwright patented water-frame mills in Great Britain. This was undertaken by Patrick Colquhoun, a Glasgow merchant, working for the Manchester cotton lobby. This records 143 Arkwright mills in Great Britain, although a re-assessment of this figure in 1982 by Chapman increased the number to 208 (Chapman, 1981:5–10). Chapman demonstrated that the largest concentration of water-powered mills of the Arkwright-type was in Lancashire, where there were 44 such structures, followed by Yorkshire with 36 mills, and Derbyshire, with 27 mills (Chapman, 1981:8). Five of these mills were located in Manchester, and this group included Arkwright's mill, by then under the control of J. & S. Simpson, and Garratt Mill, built in 1760 as a water-powered silk mill, but by 1788 converted to cotton spinning. The other three mills were probably Commercial Street Mill and New Islington Mill, whilst one, Mill Hill Mill, has as yet not been located. However, it is clear that not all mills in Manchester were listed by Colquhoun, since the map and documentary evidence shows two further water-powered mills in Manchester by 1788.

A preliminary analysis of the map, newspaper and rate book records for the period 1783–1800 by UMAU and the Manchester Region Industrial Archaeology Society has managed to locate 19 further cotton spinning mills in use during this period both within the township of Manchester and along its fringes in Chorlton-upon-Medlock. The

distribution of these mills shows a split between riverside locations and urban fringe sites (Figure 6). The water powered mills were the oldest and these could be found along the River Medlock, where there were three mills, along the River Irk with three water mills, on Shooters Brook also with three mills, and on the River Tib, where there were two water-powered cotton spinning mills. By 1800 these water powered cotton mills were out-numbered by the steam powered mills, which were mostly grouped on the eastern edge of the town between Shude Hill and Ancoats.

CONCLUSION

At the beginning of this article an attempt was made to trace the impact of the industrial revolution on Manchester by analysing the introduction of new archaeological monument types over the period 1600–1900. It was noted that viewing the archaeological database in this fashion suggested that the expansion seen during this period was not constant, with two distinct phases of change, during the decades 1780–1800, with 31 new sites, and the years 1820–50, with 37 new sites. Furthermore, the graph also suggested a lengthy period of expansion before 1780, with the rate of introduction of new monument types accelerating during the mid-18th century. In the search for explanations of these two features of the archaeological record, the long period of expansion, and the double acceleration in the rate of growth, the population of the town and the development of the textile industry have been examined. When the population data and the history of the textile industry before 1800 are combined with the trends visible in the graph of new archaeological monument types it can be seen that the last three decades of the 18th century were crucial in Manchester's development; the trebling in the population of the town coincided with the introduction of 42 new monument types, especially through the proliferation of fustian weaving in workshop dwellings, and the introduction of the cotton spinning mill. Using this evidence it is possible to put forward an archaeological model for the rise of regional manufacturing towns such as Manchester during the 18th and early 19th centuries. This builds upon the pioneering work of Barrie Trinder, who has recently outlined a detailed model for local market towns in the same period and follows his tripartite division (Trinder, 2002):

1600–1750 Proto-Industrial

- A complex central area with a long established topography accommodating craft manufacturers, merchants and their warehouses, retailers, and the houses of professionals.

- Specialist small-scale manufacturers with distinctive premises for national markets.
- Production of building materials for local requirements.
- The absence of a functioning market borough government.
- The absence of a guild system.
- The absence of resident county gentry.

1750 to 1850 Industrial Transition

- The rise of a single mechanized industry supported by domestic workshops dominating the region.
- The development of secondary support industries such as engineering.
- The incorporation of the town.
- The rise of a new governing class based upon the new manufacturing families.
- The development of a regional commercial quarter, with distinctive banking and warehousing buildings.
- The development of a regional transport hub through the introduction of turnpike roads, canals and railways.

1850–1900 Maturity

- Establishment of new consumer goods industries serving national markets.
- The growth of the township boundaries.
- Depopulation of the city centre as industrial and commercial sectors expand into residential areas.
- The growth of specialist middle class suburbs.
- Proliferation of public utilities.

One of the most important factors underlying this model is the lack of regulation in Manchester before incorporation in 1838. In the town this was expressed by weak local lordship. We have already noted how the medieval chartered borough had ceased to function by the early-16th century, leaving the governing of Manchester to the local manorial court leet. Daniel Defoe had proclaimed in 1726 that for the great towns, including Manchester, “here are few or no Families of Gentry among them; yet they are full of Wealth, and full of People, and daily increasing in both; all off which is occasion’d by the meer Strength of Trade, and the growing Manufactures establish’d in them.” He was one of the first to use the term “manufacturing town,” which was in growing currency from the 1750s onwards, and recognized that they owed their wealth and growth not to gentry or patronage, but to an expanding industrial and commercial life. The lack of resident landlords and the absence of a

functioning market borough structure, combined with the availability of capital and the historical ability of the mercantile class to adapt to changing economic circumstance, meant that Manchester was well placed to exploit the industrial advantage given by the mechanization of cotton production. The proliferation of workshop dwellings and the introduction of the cotton spinning mill reflect archaeologically this advantage. Thus, the workshop dwelling is at the heart of the town's industrialisation and rise to national prominence prior to 1783, whilst the introduction of the cotton spinning mill coincided with Manchester's emergence as the second city in Britain by 1801.

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Technological Innovation in
the Early 19th Century
Irish Cotton Industry
*Overton Cotton Mills, County Cork,
Thomas Cheek Hewes and the
Origins of the Suspension
Waterwheel*

Colin Rynne

INTRODUCTION

At independence in 1922, and despite its close integration with the economy of Britain over a 250 year period, Ireland remained one of the most thinly industrialized regions of Europe. Yet at the same time, it was the home of Britain's (and the world's) largest shipbuilding yards, its largest units of linen manufacture, brewing and distilling. That these latter were formerly United Kingdom industries, and were enumerated as such in British parliamentary returns up to 1922, would appear to be lost on English industrial archaeology. Seldom, indeed, has its remit extended across the Irish Sea. For those of us in Ireland, north and south, who have been involved in the development of the discipline this is altogether puzzling, especially if one considers that Rodney Green's (1963) and Alan McCutcheon's (1980) regional surveys within Ulster, were the first of their kind to be completed within the UK. The continuing failure to include Irish industry in the overall contextualisation of UK developments will inevitably lead to further instances where an Irish "discovery" can be accounted a British "oversight." Ireland's industries and communications created before 1922 were part and parcel

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of the wider UK economy, and until such time as the study of industrial archaeology within the UK fully recognizes that the development of Ireland's important historical industries were essentially forms of regional industrial specialization with the economy of the former UK, important omissions will continue to occur. The subsequent independence of most of the island of Ireland from the UK does not absolve British industrial archaeologists from their responsibility to include it in their wider appreciation of industrializing Britain.

The present essay is a case in point. Industrial conditions within 19th century Ireland created a climate in which Irish industrialists and manufacturers were more inclined to adopt and develop new forms of water-powered prime movers than their counterparts elsewhere in the UK. These circumstances are essential to our understanding of how, amongst other things, the first suspension wheel to be constructed in the former UK was installed in an Irish cotton mill in c. 1802. The later adoption of reaction turbines within the UK, indeed, also received its early stimulus from Irish millwrights and foundries, egged on by linen magnates anxious to reduce their cost base relative to their competitors in mainland Britain. Within this scheme of things Ireland was part of the UK economy and the developments to be analysed below were no more than a series of adaptations and adjustments necessary for Irish-based industry co-exist within that economy. The present contribution is, therefore, both a plea for the closer integration of Irish and British industrial archaeology and a case study in the dangers of what can happen if we confine our areas of study to our post-1922 borders.

INDUSTRIAL MOTIVE POWER IN 19th CENTURY IRELAND

Why was water power so important for 19th century Irish industries, and why would contemporary Irish industrialists be more inclined to use it than their English counterparts? The coal deposits exploited in Ireland up until very recent times are, in general terms, similar to those of England, Scotland and Wales. But whereas the coal measures of Britain were left relatively undisturbed by subsequent geological movements, those of Ireland were seriously eroded. Only in parts of counties Antrim, Derry and Tyrone, where the coal deposits had been protected by a subsequent lava flow, were these processes largely prevented. Indeed, such was the extent of this erosion that the surviving Irish coal measures could in no way compare in extent with those of Britain. Ireland's relatively meagre coal deposits were, in addition, further disturbed by later geological events. In the Munster coalfields,

deposits of coal that had originally formed as horizontal strata were subsequently forced upwards to create contorted vertical seams. These latter proved difficult and expensive to work and because of this they were never extensively mined. Irish coal production actually declined in 19th century, from 148,750 tons in 1854 to 92,400 tons in 1914. The Irish output was, in consequence, but a tiny fraction of that of Britain. At its apogee in 1913, the British industry produced some 287 million tons of coal and employed 1,100,000; in 1918 the Irish industry produced less than one percent of the British total and employed 893 people above and below ground (Rynne, forthcoming).

Irish coal was, it is clear, rarely used for raising steam. During the 1880s coal from the Arigna field in county Leitrim was used in the Midland and Great Western Railway's Shannon steamers, whose boilers were specially modified for this purpose, and in the locomotives of the Cavan and Leitrim Railway from the 1890s. Apart from this, only a handful of Irish stationary steam engines (and nearly all of these are thought to have been pumping and lifting engines used on the coalfields themselves) are known to have used Irish coal. This leaves us with the startling statistic that more than perhaps 99% of the steam generated in Ireland in the period c. 1740–1900 was produced with imported British coal. Of course, larger units of manufacture required steam-powered plant, but in many Irish industries this was commonly a supplement to water-powered prime movers, to be employed during the summer months when water levels ran low. The entire water supply of the city of Cork, Ireland's third largest city, for example, was pumped from the River Lee using reaction water turbines, in the period 1858–1943, supplemented during the summer months first, by a combination of Cornish and horizontal engines, and later by three triple expansion engines. The German authors of the 1924 report on the viability of the Shannon electrification scheme (completed in 1929) were, nonetheless, somewhat surprised that a country such as Ireland, with enormous potential for hydro-electricity generation, had long been reliant on imported coal to meet its basic energy requirements (O'Beirne and O'Connor, 2002:77).

Irish manufacturers were keenly aware of this dilemma and of the crippling disadvantage this placed them at with regard to other regions within the UK. The reliance on imported coal meant that nearly all of Ireland's major industries were located within the immediate hinterland of her ports. To all intents and purposes, Ireland's small coalfields remained landlocked—no Irish coalfield had a rail head up to the implementation of measures stipulated by the Defence of the Realm act of 1917—and thus for industry within the interior waterpower was to remain critical. This latter circumstance, more than any other, explains

the alacrity with which Irish-based manufacturers adopted new forms of water powered prime movers. It also, as we shall now see, has important implications for the industrial archaeology of water powered technology within the pre-1922 United Kingdom. For in evaluating the causes of technological change in 19th century Ireland we are, in essence, analyzing the means by which technology transfer occurred within the former UK, only in this instance the kingdom of Ireland is firmly within the equation.

THOMAS CHEEK HEWES IN IRELAND c.1802–10

The origin and early development of the suspension waterwheel, is traditionally attributed to the Manchester millwright, Thomas Cheek Hewes. In 1827, Benjamin Heywood of Manchester, in Hewes' own lifetime, was the first to assert "that this description of waterwheel" was "invented by Mr T.C. Hewes of this town." (Musson and Robinson, 1969: 70). We also know that he built the famous suspension water wheels at William Strutt's cotton mill at Belper, sometime before 1811. However, the only surviving account of Hewes's contribution to the early development of the suspension waterwheel, by someone who actually knew him is by his one-time draughtsman, William Fairbairn, who understood that the first wheel of this type was used in Ireland. As a former employee of Thomas C. Hewes in the years 1816–17, it seems likely that his information came directly from Hewes himself (Reynolds, 1983:295).

For the extent of Hewes's involvement in the Irish cotton industry, we have his own deposition to the *Select Committee on Artizans and Machinery*, of 1824:

In the year 1790 I set up machinery at Belfast myself; and have built two mills in Ireland; within these two years. I built a mill at Bandon, fifteen miles from Cork [sic], in 1802; I added to that about eight years afterwards, and I filled it with machinery, and within these seven or eight months, Mr Allman the proprietor of it, wrote to me to say, that this machinery was going on very well, and he wished to extend it again; and he wrote an order for a quantity of parts of machinery, and I was obliged to decline that order; for those parts that we cannot procure ourselves; rollers and spindles, and some other work.

Before his association with Hewes, George Allman (1750–1827) had already established a reputation as a cotton manufacturer at Bandon in county Cork. Allman's involvement in the local cotton industry was singled out for special praise by John Arbuthnot of the Irish Linen Board in 1783:

This gentlemen is an acknowledged good Manufacturer but he has an additional merit in being an excellent mechanic, making, with his own hands, all the curious and difficult parts of the machines whether in wood, brass or iron.

Allman's cotton mill was built was on some 46 acres of land approximately one mile south west of Bandon, at Overton, near the village of Oldchapel. Towards the end of the 18th century, Allman had told one of the Sadlier brothers, the principal cotton manufacturers in the Cork region and the second largest in Ireland by the turn of the 18th century, that the Cork industry would only survive if modern spinning mills were introduced (Dickson, 1978:104; Bielenberg, 1991:26). Indeed, Allman was acutely aware of the need to keep abreast of new technological

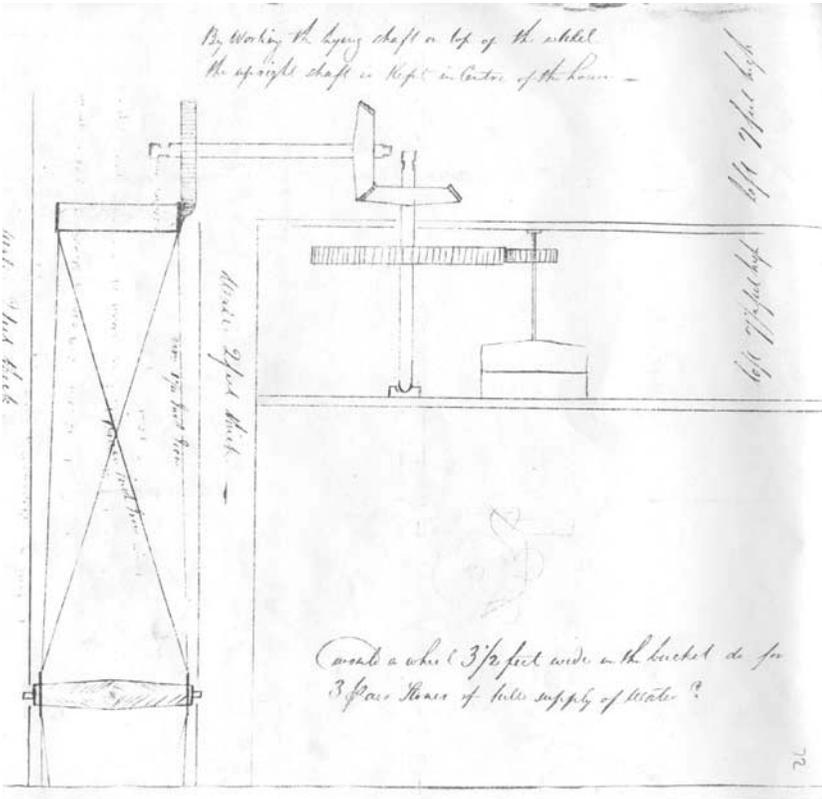


Figure 1. Extract from letter from Walker to Rennie 11 May 1811 showing sketch of suspension waterwheel, based on Walker's observation of the Overton waterwheel. National Library of Scotland Ms 19816, reproduced with permission.

developments in the cotton industry, and with this in mind he sent one of his sons (presumably the eldest, Francis) to Lancashire to learn about mule-spinning, sometime before 1804 (Bielenberg, 1992:113). It now seems likely that George Allman's association with Hewes may well have provided important contacts for the young Allman. From Hewes' account, it is clear that he completed the Overton mill in 1802, and added substantially to it in about 1810, by constructing the second five-storey wing which survives *in situ* (see below). In 1810 the Overton cotton mills were described by Horatio Townsend as being "hardly inferior to those of the best English construction, in the extent of the works and the elegance of the machinery" (Townsend, 1815:56). But the true significance of the Overton mill was to be revealed by a brewer from Fermoy, county Cork.

In 1811 Henry Walker, a wealthy brewery-owner at Fermoy began what was to become a lengthy business correspondence with the Scottish engineer John Rennie. Walker was anxious to improve his brewery's motive power, and commissioned Rennie to design and execute the necessary millwork. This was a common practice in Ireland during the late-18th and early decades of the 19th century, until such time as English millwrights and machine makers had established foundries at Ireland's principal ports. Walker, indeed explained why Irish industrialists preferred to use English technicians in a letter to Rennie in April 1814, "...having seen many mills in this neighbourhood [i.e., north county Cork] ineffective from any errors in the calculations, we do not like to depend on the engineers here. I will most cheerfully pay the [extra] expense." Nonetheless, Walker was clearly prepared to investigate other water-powered industrial sites within county Cork. One innovation, in particular, in George Allman's cotton mill, prompted him to write to Rennie in May, 1811:

At the cotton mills of Mr George Allman of Bandon we have seen a very fine wheel and wish for a similar one provided you think it is the best plan for our purpose. It is 40 feet in Diam and five feet wide—shaft & Rim Metal Arms 1¹/₄ inch hammered iron braced by Inch iron—has no pit wheel but a set of cogs on the outer rim which work into a lying shaft—the soleing buckets are timber.

Walker also enclosed a sketch of a wheel of similar design, which he proposed for his own brewery (Figure 1) which must surely be the earliest-known illustration of what has become known as the suspension waterwheel. Walker's description is partially confirmed by Townsend in the revised, 1815 version of his *Statistical Survey*:



Figure 2. The shaft of the Overton suspension waterwheel *in situ*, showing wheelpit and tail race arch.

[Allman's mill] is one hundred and thirty four feet long, thirty four feet wide and fifty feet high. There are five floors, all underlaid with sheet iron to diminish the risque of fire. It is capable of containing ten thousand spinning spindles, with all the machinery necessary for supplying them with prepared cotton, by which thirty hundred pounds of it may be spun per week . . . The motion that sets them at work, is communicated by an iron wheel, of forty feet in diameter, so equally and admirably constructed as to be set going by a moderate stream of water.

From the foregoing a number of things are clear. The Overton mill was equipped with a 40ft diameter iron suspension wheel, installed in 1802, when Hewes built the original mill. This wheel was described by Henry Walker in 1811, who was in fact providing the earliest known description of suspension waterwheel, which was further noted by Horatio Townsend in 1815. The shaft and brackets of the Overton waterwheels survive *in situ*, and from these it is clear that Hewes had already developed, by 1802, the angled sockets more commonly associated with later examples in Britain and Ireland, into which the radial spokes were received (Figure 2). In 1969 Smith had cleverly hypothesized that the Overton wheel may have been of the suspension type, but being unaware of the Walker-Rennie correspondence and labouring under the illusion that the flour mill in Bandon town (destroyed by fire in 1986) was that referred to by Hewes (and not the substantial remains which still stand to this day at Overton) he was unable to develop this idea further (Smith, 1969:55). The size of the Overton wheel is also worthy of note, at 40ft in diameter it was almost twice the size of the larger of the two suspension wheels (21ft and 15ft) that Hewes built for William Strutt's cotton mill at Belper.

Allman and Hewes' collaboration, might be written off as an interesting anomaly, were it not for the efforts of Ulster linen manufacturers to develop reaction turbines on the Fourneyron model. In the first half of the 19th century Irish scientists and industrialists showed a keen interest in the work of French hydro-engineers Benoit Fourneyron and Feu Jonval, and Irish foundries in Belfast and Cork became the first in the UK to manufacture reaction turbines based on contemporary French designs. The main impetus came from Sir Robert Kane's *The industrial resources of Ireland* (1844) in which he referred to Moritz Ruhlmann's treatise on water turbines, *Allgemeine Maschinenlehre* (1842), which Kane himself translated into English (Kane, 1846).

Kane's account of contemporary developments in turbine design was to have a lasting effect on three Ulstermen: William Kirk, who owned several flax spinning and line bleaching works, Samuel Gardner (owner of the Armagh Foundry) and a millwright called William Cullen. Kirk and Gardner appeared to have formed an association which culminated in the installation of a Fourneyron-type turbine at one of Kirk's mills in 1850. At least one of these men had actually travelled to France between 1844 and 1848 to meet with Fourneyron with a view to manufacturing his patent in Ireland. However, Fourneyron had other ideas and William Cullen in a separate venture to manufacture the design in Ireland found the Frenchman less than co-operative. Cullen resorted to industrial espionage and, after visiting a number of sites in France

where Fourneyron's turbines had been installed, he acquired enough information on them to build a working model of one on his return to Ireland. Later, in association with Robert MacAdam of the Soho Foundry in Belfast, a Fourneyron-type turbine built to Cullen's specifications was installed in Barklie's bleach mill at Mullaghmore, near Coleraine, county Derry in 1850. At least one contemporary Ulster engineer, James Thomson (1822–92), however, was not content with the mere dissemination of Fourneyron's ideas. As early as 1846 Thomson had developed what he termed a vortex turbine which, in terms of its design characteristics, effectively superseded existing turbines. Thomson's design used adjustable guide vanes, which were to become incorporated into many later turbine designs and, whereas the water passing through Fourneyron-type turbines did so outwardly, in the vortex turbine the opposite was the case, the water flowing inwards from the periphery. The first vortex turbine was built in Glasgow, and was later installed in a linen beetling mill at Dunadry, county Antrim in 1852 (Rynne, forthcoming)

Between 1850 and 1896 MacAdam's foundry in Belfast built Fourneyron-type turbines. Many of these were used in the Ulster linen industry, and the latter's influence in the south of Ireland led to their adoption in processes associated with flax-related industries in county Cork, one of the first counties outside of Ulster where such trends can be discerned in the early 1850s. In 1858 Cork Corporation Water works became the first in either Britain or Ireland to use water turbines, built by MacAdam of Belfast on the Fourneyron model, to power pumping machinery. An early example of a MacAdam turbine, dating to the mid-1850s, survives in situ at Green's flour mill, Cavan, and has recently been restored to full working order. During the 1850s Mallet's foundry in Dublin was also manufacturing and installing turbines, beginning with a flax-scutching mill on the River Inny near Ballymahon. However, whilst Fourneyron turbines accounted for the majority of those in use in Ireland before 1860, other designs had already been adopted by certain Irish foundries. Perrott's Hive Iron Foundry in Cork, for example, built and installed a Jonval-type turbine—the earliest example of its type in the UK—for a sawmill at Ballincollig Gunpowdermills in county Cork around 1855 (Rynne, 1999:157).

From the foregoing a number of clear trends and patterns emerge. The position of native Irish industry relative to that of the rest of the UK, led to the adoption and development, earlier than other regions within that polity, of new forms of water-powered prime movers. That this was essentially an intra-UK development has scarcely been considered, and while the early development of reaction turbines in

Ireland has received some attention (e.g. Gribbon, 1969; McCutcheon, 1980; Rynne, 1999; Crocker, 2000) the Irish origins of the suspension waterwheel (even though the important evidence survives in a British archive) have barely been considered at all. Ireland and Britain were closely linked politically, culturally and economically during the entire period of British industrialisation, although this is seldom acknowledged in the standard works on British industrial archaeology. The flow of technical knowledge between both islands was completely fluid during the period in question, and the type of collaborations outlined above between the Manchester millwright Thomas Cheek Hewes and the Bandon cotton manufacturer George Allman and, indeed, between Thomas Walker and John Rennie, were commonplaces. However, even though all of these men would have considered themselves to be British subjects, the “Britishness” of those resident in Ireland does not seem to have attracted the attention of an overwhelming majority of scholars who have sought to elucidate the industrial archaeology of the post-1922 United Kingdom. This is, it has to be said, a major blindspot in British industrial archaeology. It is the responsibility of industrial archaeologists on both sides of the Irish Sea not only to redefine Ireland’s role in the industrialisation of Britain, but also the nature and extent of technology transfer in each direction. We can no longer, it is clear, confine our research interests to the industrial archaeology of out post-1922 boundaries.

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Building a Working Class Archaeology

The Colorado Coal Field War Project

**Randall H. McGuire
and Paul Reckner**

INTRODUCTION

The problem with archaeology is that too often we are speaking only to ourselves or to a small audience of aficionados who share our sometimes-arcane interests. This is a problem in part because public monies, primarily in the context of heritage preservation, largely fund archaeology in modern industrial states. Many archaeologists have pointed this fact out and challenged archaeologists to reach out to a general public. Most of these calls assume that archaeologists as the experts should define what is of interest in the past and that the problem of reaching a general public is simply one of popularizing what the archaeologists know. In the Colorado Coal Field War Project we have adopted a different philosophy and taken a different approach to broadening the audience for archaeology. We see archaeology as a craft that can be put to the uses of many different communities. In this approach the questions and what is important about the past is decided through a dialogue between the archaeologist and the communities that we serve.

The Colorado Coal Field War of 1913–1914 was one of the most significant events in U.S. labor history. On the morning of April 20, 1914, Colorado National Guard troops engaged in a pitched battle with armed strikers at a tent colony of 1,200 striking families at Ludlow, Colorado. The shooting continued until late afternoon, and then the troops swept through the camp looting it and setting it aflame. When the smoke cleared, 20 of the camp's inhabitants were dead including

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two women, and 12 children. The Ludlow massacre is the most violent and the best-known incidents of the 1913–1914 Colorado Coal Field War, but its significance goes far beyond this struggle. The killing of women and children at Ludlow outraged the American public and popular opinion soon turned against violent confrontations with strikers. It marks a pivotal point in U.S. history when labor relations began to move from class warfare to corporate and government policies of negotiation, co-optation, and regulated strikes. Today the United Mine Workers of America maintain the site of the massacre as a shrine and descendants of the strikers and union members make regular pilgrimages to the site.

The Colorado Coal Field War project consists of faculty and students from the University of Denver in Colorado, and Binghamton University in New York, and has included students from several other institutions, including the University of Manchester. The Colorado Historical Society has funded our work using public monies that were generated from taxes on casino gambling (The Colorado State Historical Fund). We begin with the assumption that our work should and does serve multiple communities (Shanks and McGuire, 1996). These communities include the scholarly community of archaeologists and historians, as well as the traditional, middle-class, public audience for archaeology. But, the primary community that we wish to address is unionized labor in the United States. We are building an archaeology of the American working-class that speaks to a working-class audience about working-class history and experience. We are doing this through an ongoing dialogue with both the descendants of the participants in the Colorado Coal Field War and with unionized workers in southern Colorado.

ARCHAEOLOGY AND THE PUBLIC

The relationship of archaeology and the public is usually framed in terms of an opposition between conveying finding within the discipline and communicating with a general public. A consumerist model lies at the heart of most of our efforts to communicate with the public. In this model the archaeologist produces a product, usually a dumbed-down version of the academic edition and sells it to a “general public.” This approach assumes that archaeologists as the experts have the authority, the knowledge, the skill, and the right to determine what questions we should ask about the past and what the answer to those questions should be. The problem then becomes one of how to communicate or sell

our agenda and interpretation to the “general public.” Or put another way, how do we convince them to see the world our way?

We have taken a different approach to the problem. We also recognize that society is made up of varied social groups with distinct and often conflicting interests, and that the undifferentiated general public is a myth. Craft archaeology enters into a dialogue with specific communities in order to define what pasts to study, what questions to ask about those pasts, and what conclusions to draw from those questions. We have entered into a dialogue with the academic community of archaeology through articles like this one and through papers presented at meetings. We have also entered into a dialogue with the traditional middle-class public audience for archaeology through education and interpretive programs. However, the primary community that the Colorado Coal Field War Project seeks to serve is unionized labor in Colorado and beyond.

Archaeology as a discipline serves class interests and those interests are frequently contrary to the interest of the working-class in the United States. In the United States both scholars and the general public frequently confuse class with economic status and they define class in terms of income levels. This focus on income obscures the structural realities of class in the United States (Wurst, 1999). The class structure of the modern United States minimally includes three positions: 1) a Bourgeoisie that owns or controls the means of production, 2) a working-class that labors for wages, and 3) a middle-class of administrators, professionals and small business owners who mediate between these two classes. These classes do not form uniform masses and we can define class fractions rooted in regional, racial, and cultural differences (Patterson, 1995).

Archaeology has typically served middle-class interests. It is part of the intellectual apparatus (things such as schools, books, magazines, organizations, and arts) that produces the symbolic capital (things such as esoteric knowledge, shared experience, certification, and social skills) that individuals need to be part of the middle-classes. This apparatus, including archaeology, developed as part of the historical struggles that created the Capitalist middle-classes (Trigger, 1989; Patterson, 1995). Because it is set in the middle-class, archaeology attracts primarily a middle-class following, and often does not appeal to working-class audiences (Sennett and Cobb, 1972; Frykman, 1990, Potter, 1994:148–149, McGuire and Walker, 1999).

We feel that archaeology can be mobilized to address the interests of more than just the middle-classes. We seek to fuse our scholarly labor with working-class interests. We have entered into the developing

dialogue between organized labor and scholars in the United States. The election of John Sweeny as president of the AFL-CIO in 1995 has led to a revitalization of the organization as a broad-based social interest movement. As part of this movement a joint labor/academic teach-in was held at Columbia University on October 3–4, 1996 with over 2,500 people in attendance (Tomasky, 1997). This alliance has more recently manifested itself in broad based anti-corporate-led-globalization actions such as in Seattle in 2000 and in the recent adoption, by many labor unions, of statements opposing U.S. military action against Iraq. We are contributing to these efforts by studying a history that has meaning for working people and addressing their interests in this history. The Colorado Coal Field War of 1913–1914 is not exotic or ancient history. It is familiar, close to home, relevant, and concerns issues that still confront workers today.

THE 1913–1914 COLORADO COAL FIELD WAR

In 1913 Colorado was the eighth largest coal producing state in the United States (McGovern and Guttridge, 1972:5). Most of this production centered on the bituminous coal fields in Huerfano and Las Animas counties north of Trinidad, Colorado. These mines primarily produced coke for the steel mills at Pueblo, Colorado. The largest company mining coal in this region was the Rockefeller-controlled Colorado Fuel and Iron Company (CF&I). This company employed approximately 14,000 miners in 1913, 70% of whom were immigrants. Most of these immigrants came from Southern Europe (principally Italy and Greece) and Eastern Europe (primarily Austria-Hungary, Poland, and Russia) with some Welsh, Irish, African-Americans, Mexicans, and Japanese. Union organizers estimated that the miners spoke at least 24 different languages.

The isolated mining communities were uniformly made up of working-class families with a handful of managers and professionals. The members of the working-class did not all experience day-to-day life in the Southern Colorado mining community the same. The lives of men and women were quite different and power relations and exploitation existed within working-class households. Each ethnic group also formed its own community, both in terms of patterns of residence and through social institutions such as churches, ethnic associations, and fraternal organizations. Racial discrimination existed, with Euro-American workers discriminating against African-American and Chicano workers, and with the handful of Japanese in the camps being totally

excluded from union activities. The Anglo-Americans of local rural agricultural communities regarded the miners as inferior foreigners, and many of the mining companies' private guards were hired from the ranks of the rural working-class. The rural bourgeois by and large sided with management against the strikers with the exception of a small, primarily ethnic based, petty bourgeois of shop owners and trades people who identified with the miners who were their customers.

The conditions of the mines, and of miners' lives, were appalling (Beshoar, 1957:1–17; McGovern and Guttridge, 1972:20–54; Papanikolas, 1982:61–78). In 1912 the accident rate for Colorado mines was triple the national average (Whiteside, 1990). The mines in southern Colorado operated in flagrant violation of several state laws that regulated safety and the fair compensation of miners. The miners lived in rude, isolated coal camps owned by the companies. Companies controlled the housing, the store, the medical facilities, the town saloon, and all recreational facilities. Company guards acted as police and regulated who could enter or leave the communities. The companies also dominated most of the local political structure and instructed their employees on how to vote. Contemporary accounts described the situation as feudal (Seligman, 1914a, 1914b).

In 1913 the United Mine Workers of America (UMWA) launched a massive organizing campaign in southern Colorado and called a strike in the fall of that year (Beshoar, 1957:42; McGovern and Guttridge, 1972:17; Papanikolas, 1982:79). The strikers demanded the right to unionize, higher pay, and that existing Colorado mining laws be enforced. Simultaneously, the companies brought in the Baldwin Felt detective agency to violently suppress the organizing efforts and later the strike. On September 23, 1913, over 90% of the miners left the shafts to begin the strike. The companies forced people out of their company owned housing and several thousand people moved into tent camps set up by the UMWA. Ludlow, with approximately 150 tents and about 1,200 residents, was the largest of these camps and the UMWA's strike headquarters for Las Animas County (Figure 1). Each of these camps contained a mix of nationalities including Italians, Greeks, Eastern Europeans, Mexicans, African Americans, and Welsh.

Violence characterized the strike from the very beginning, with both sides committing assaults, shootings, and murders (Beshoar, 1957:62–76; McGovern and Guttridge, 1972:109–110; Papanikolas, 1982:76–106). In October the governor of Colorado called out the National Guard. Over the winter of 1913–1914 relations between the strikers and the guard deteriorated, especially in April when the governor removed the regular troops and the mining companies replaced them



Figure 1. The Ludlow Tent Colony Before the Massacre. (Photo courtesy of the Denver Public Library)

with their own employees under the command of Colorado National Guard officers. In Ludlow the strikers dug cellars under their tents as refuges for women and children.

On April 20, 1914 the guard attacked the tent camp at Ludlow. At about 9:00 that morning the guard commander ordered Louis Tikas, the leader of the colony, to meet him at Ludlow Station. Fearing that this might be a pretext for an attack, armed strikers took up a position in a railroad cut overlooking the station. The National Guard had positioned a machine gun on a hill one mile to the south of the tent colony. Someone fired and the guardsmen began firing the machine-gun into the tent camp. As the day progressed, up to 200 guardsmen joined the fight and a second machine-gun was added to the first. After a few hours of firing the tents were so full of holes that they looked like lace (Thomas, 1971:144). The armed strikers engaged the guard and tried to draw their fire away from the camp.

In the camp there was pandemonium. Some people sought refuge in a large walk-in well, and many people huddled in the cellars under

their tents. The camp's leaders worked all day trying to get people to a dry creek bed north of the camp. In the early afternoon a 12-year-old named William Snyder came up out of a cellar to get some food and was shot dead.

As dusk gathered a train stopped in front of the machine-guns and blocked their line of fire. With a brief respite from the machine-gun fire, the majority of the strikers who had been pinned down in the colony were able to flee along with the armed strikers struggling to hold off the National Guard. The guardsmen swept through the camp looting and burning the tents. Four women and 11 children in a cellar below tent 58 huddled in fear while the flames consumed the tent above them. The guardsmen seized Louis Tikas and two other camp leaders and summarily executed them. When morning dawned the camp was a smoking ruin and in the dark hole below tent 58 two of the women and all 11 children were dead (Figure 2).

Following the attack, strikers throughout southern Colorado took up arms and took control of the mining district. The strikers destroyed several company towns and killed company employees. Finally, after ten days of open war, President Wilson sent federal troops to Trinidad



Figure 2. The Tent Colony After the Massacre. (Photo courtesy of the Denver Public Library)

to restore order. The strike continued until December of 1914 when a bankrupt UMWA had to call it off.

The killing of women and children at Ludlow shocked the nation (Gitelman, 1988). Prominent progressives such as Upton Sinclair and John Reed used the events to demonize John D. Rockefeller Jr. The United States Commission on Industrial Relations investigated the events of the strike, and issued a 1,200-page report (U.S. Congress, Senate 1916). In response to this national attention Rockefeller hired the first corporate public relations firm and instituted a series of reforms in the mines of southern Colorado. It is not clear what practical impacts these reforms had on the lives of miners and their families but throughout the 1920s the district was embroiled in strikes. Union recognition in southern Colorado only came with the New Deal reforms of the 1930s (McGovern and Guttridge, 1972).

HOW CAN ARCHAEOLOGY ENHANCE UNDERSTANDINGS OF THE COLORADO COAL FIELD WAR?

The documentary record of primary texts, photographs, and oral histories for the Colorado Coal Field War is incredibly robust and leaves few major issues unexamined. As archaeologists, we bring to the table a craft that allows us to glimpse the material conditions of day-to-day lives in the coal camps and tent colonies of southern Colorado. These conditions shaped the lives of miners and their families and the course of the 1913–14 strike, but it is precisely these mundane aspects of life that, in the documentary record, are obscured by a focus on large-scale, high-profile political responses to the conflict.

Several major historical works on the strike have mined the rich archival record of documents and photos related to the Colorado Coal Field War (Beshoar, 1957; McGovern and Guttridge, 1972; Papanikolas, 1982). These studies have focused on the events, the strike leaders, and the organizational work of the UMWA. They have tended to emphasize the male miner and the commonalties of the work experience as the source of the social consciousness that united ethnically and racially diverse miners. The histories usually imply, and sometimes assert, that the miners shared a common lived experience at work but then returned to ethnically different home lives. In this way they accept a very traditional hypothesis of labor action that emphasizes the agency of men and downplays the role of women. This hypothesis tends to equate class

and class struggle with active men in the workplace, and ethnicity and tradition with passive women in the home.

We, and many others, are skeptical of this traditional view (Long, 1985:63–65, 1991; Beaudry and Mrozowski, 1988; McGaw, 1989; Cameron, 1993; Shackel, 1994, 1996; Mrozowski et. al., 1996). We agree that ethnic identities cross-cut class in southern Colorado and that they hindered the formation of class consciousness, but we question the equation of class = workplace = male, and ethnicity = home = female. Alternatively we would propose that class and ethnicity cross-cut both workplace and home, male and female. We would thus expect to find that working-class men in the mines and working-class women in the homes shared a common day-to-day lived experience that resulted from their class position and that ethnic differences divided them in both contexts.

We can demonstrate from existing analyses that ethnic divisions existed in the workplace. In southern Colorado the miners worked as independent contractors and formed their own work gangs. These work gangs were routinely ethnically based (Long, 1991:24–51). Historical and industrial archaeologists have also demonstrated in many other cases that 19th and early-20th century workplaces were ethnically structured (Hardesty, 1988; Bassett, 1994; Wegars, 1991). In the traditional hypothesis it is the commonality of the work experience that overcomes these ethnic divisions in the workplace and in an ethnically based home life to create a class consciousness.

The idea that there existed a commonality of lived experience in the home that also aided in the formation of a common class consciousness is harder to demonstrate from existing analyses. The histories all agree that the day-to-day lives of miners' families were hard, but they provide little more than anecdotal evidence of the reality of these conditions. The historian Priscilla Long (1985:81), in an analysis that supports our alternative hypothesis, has demonstrated that women in the Colorado coalfields shared a common experience of sexual exploitation, but she also lacks detailed data on the realities of day-to-day lived experience in the home.

Our alternative hypothesis stresses the importance of the home in the creation of class consciousness. We seek to prove that the day-to-day material conditions of home life crosscut ethnic divisions, before, during, and after the strike. If this is the case then we will argue that women and children were active agents, with male miners, in formulating a social consciousness to unify for the strike. Alternatively, if our analyses show that each ethnic group had distinctive day-to-day material conditions of home life then we will accept the traditional notion

that families followed the lead of male miners who acquired a common class identity in the shafts.

Historical archaeology offers a very productive arena for archaeologists to examine the relationship between social consciousness, lived experience, and material conditions to cultural change (Orser, 1996; Shackel, 1996). In historic periods the archaeologist can integrate documents and material culture to capture both the consciousness and material conditions that form lived experience (Beaudry, 1988; Leone and Potter, 1988; Little, 1992; Leone, 1995; DeCunzo and Herman, 1996). In the documents, people speak to us about their consciousness, their interests, and their struggles, but not all peoples speak in the documents with the same force or presence. Also, they rarely speak to us in detail about their day-to-day lives. People, however, create the archaeological record from the accumulation of the small actions that make up their lived experience. Thus the archaeological record consists primarily of the remains of people's mundane lives and all people leave traces in this material record.

Archaeological research provides one means to gain a richer, more detailed, and more systematic understanding of the everyday experience of Colorado mining families. These families unknowingly left a record of that experience in the ground. Archaeologists can recapture it in the burned remains of their tents, in the layout of camps, in the contents of their latrines, and by shifting through the garbage that they left behind. Linking this information with documentary and photographic sources gives us a useful way to reconstruct that experience. By applying these methods to company towns occupied before the strike, the strikers tent camps, and to the company camps reopened after the strike we can test our propositions.

ARCHAEOLOGICAL FIELDWORK

With the help of our fieldschool students, we have completed five years of excavations both at Ludlow and at the CF&I-owned company town of Berwind. The massacre site itself represents a near perfect archaeological context. It was occupied for a very short period and was destroyed by fire. Subsequent use of the area has had little impact on the archaeological remains. In Berwind, the streets, foundations, latrines, and trash pits remain visible on the surface.

At Ludlow we have conducted controlled surface collections in order to get a sense of the extent and general layout of the camp. The

distribution of surface material seems to correspond quite closely with the plan of the camp shown in contemporary photographs. Several features associated with the strike camp have been located and excavated, providing greater insight into the daily lives of the strikers. The majority of features are quite shallow, appearing at depths of 10 to 20 cm. We have found and excavated two complete and several partial tent platforms, as well as several shallow, unidentified pit features. We have also located a number of deep features, among them a possible privy and two structures that are almost certainly subterranean shelter/storage cellars constructed by the some of the colony's residents.

Photographs have proven a great aid in our excavations and a rich source of information. Several hundred photographs exist of the strike including dozens of the Ludlow tent colony. One photo taken from nearby a railroad water tower shows the camp a few days before the massacre. We used a technique pioneered by Gene Prince (1988) and James Deetz (1993:33) to define the position of the tents and other features in the colony. We had a transparency of the pre-massacre photo and mounted it on the ground glass of a camera similar to the one we believe was used to take the photo. The point, from which the photo was taken, a water tower on the railroad line near the colony, was relocated and the camera was elevated on a hydraulic lift. With the camera in position we were able to look through the viewfinder and see the image of the camp superimposed over the existing landscape. Using stable landscape features to guide us, we were able to locate over a quarter of the tents in the colony. These locations have been the focus of fieldwork from 2000 to 2002.

From photos we know that the tents were constructed by first digging a shallow basin, then laying wooden joists directly on the ground to support a wooden platform and frame. Once covered with canvas the strikers piled a ridge of dirt around the base of the tent. In 1998 we excavated one tent platform and we were able to define it based on soil stains and shallow trenches (probably drip lines caused by runoff from the tent's roof) and rows of nails that followed the joists (Figure 3). Large numbers of small artifacts, likely to have been lost by residents, were associated with the tent floor. These included a suspender part bearing the inscription (in Italian) of the "Society of Tyrolean Alpinists" and a collection of Catholic religious medals, suggesting that the occupants of the tent were Italian Catholics. Excavation of a second tent location revealed extensive soil oxidation resulting from the intense heat of the burning tent, and metal tent and furniture hardware that survived the conflagration.



Figure 3. Excavated Tent Platform at Ludlow Massacre Site.

Work on a deep feature on the margins of the colony (possibly a privy) has revealed evidence of early acts of memorialization at the site. Atop a series of artifact-rich deposits, a metal tripod and wire wreath frame were found. Material from the lower strata of the feature consists of several sizes of steel cans, including a multitude of “Pet” brand condensed milk cans, medicinal and sauce bottles, tobacco tins, fragments of furniture and a miner’s lamp.

We have located and tested seven deep features believed to be earthen cellars, whose existence is well documented in sources on the Ludlow colony. We chose two cellars for full excavation, and the stratigraphy and contents clearly reflect the story of the attack on the colony (Figure 4). Fire damaged family possessions sit on the floor. To reach them we dig through a level of burned wood charred canvas, and rusted grommets from the burned tents. On top of all of this is a layer of charcoal, coal clinker, rusted metal and charred possessions that the miners used to fill in the holes after the massacre. Such contexts provide us with invaluable insight into household life in the Ludlow colony—an aspect of the strike that can only be glimpsed indistinctly through period documents, but one that is crucial in order to understand strikers’ day-to-day experiences.



Figure 4. Excavating a Cellar at the Ludlow Massacre Site.

Another deep feature was excavated during the 2000 season, and turned out to be almost entirely free of artifacts. While its function remains uncertain, its form is suggestive of one of the defensive rifle pits built by the miners to protect the colony from attack.

Berwind was a CF&I town located in Berwind canyon near Ludlow, occupied before and after the strike. Many of the strikers at Ludlow originated from there. CF&I built the town in 1892 and abandoned it in 1931. In 1998 we made a detailed map of the community and we were able to define numerous discrete residential neighborhoods. Test excavations revealed stratified deposits of up to 50 cm. deep in the yards associated with houses. Here we have excavated in trash dumps, latrines, and yards. We have sorted these deposits into ones dating before, during, and after the strike. Our preliminary examination of artifacts from the tests, of photos of the community at different points in time, and of company records indicates that some of the neighborhoods date to before the strike, while others were constructed as part of the program of town improvements that followed the strike. We also contacted and started collecting oral histories from former Berwind residents.

Excavations in what appears to have been a town dump have unearthed a stunning array of objects, from household furnishings to domestic rubbish to fragments of footwear, clothing and other personal

effects. We also hope to learn more about how trash was transported to the dumpsite and how the dump itself was operated through fine-grained stratigraphic analysis. A large privy associated with a residential area occupied prior to the strike was also located and sampled. The various filling episodes and the artifacts contained within reflect the regular use and maintenance of the privy and the eventual capping of the pit, sometime during the 1910s, with debris from the destruction of the neighborhood. Combined with oral histories and census data, the material from this pre-strike section of Berwind provides a window into the material conditions of life that in part motivated the collective struggle of 1912–13.

Margaret Wood's (2002a) study of the Berwind remains shows how working-class women in the company towns were able to raise families on miner's wages that would not feed two people. In trash dating before the strike she found lots of tin cans, large cooking pots, and big serving vessels. Families took in single male miners as boarders to make the extra income and women used canned foods to make stews and soups to feed them. After the strike the companies discouraged boarders, but miners' wages remained too low to support a family. The tin cans and big pots disappear from the trash to be replaced by canning jars and lids, and the bones of rabbits, and chickens. Women and children who could no longer earn money from boarders instead produced food at home to feed the family.

The United Mine Workers maintain the site of Ludlow as a shrine to the workers who died there. There is presently a monument at the site but little or no interpretative information (Figure 5). In this context our archaeological work also becomes a powerful form of memory and action.

ARCHAEOLOGY AS MEMORY

The highly charged nature of the historical events surrounding the Coal War clashes with most accepted narratives of class relations in the U.S., and particularly the West (McGuire and Reckner, 2002). We feel that the submerged history of Ludlow represents a watershed event in American history that demands to be recouped for a broad range of constituencies. Many middle-class visitors to the memorial site are unaware of what happened there, and are made uncomfortable by the implications of the story. Others see the story of Ludlow as a matter of an unfortunate past that has now been left behind—the underlying notion being that we are all middle-class in the U.S. and thus class



Figure 5. The UMWA Memorial to the Ludlow Massacre.

conflict has been banished to history. We need not re-examine the ideological power of this line of thought. On the other hand, after hearing a proposal for archaeological field work at the Ludlow Memorial, one coal miner suggested that “all you need to know about Ludlow can be summed up in three words: they got fucked” (Duke and Saitta, 1998). The deep alienation and even hostility apparent in this statement was a wake-up call concerning the realities of working-class life and thought, and it also threw into question the wider social value of a pursuit like archaeology—an issue we will return to below.

The story of the 1913–1914 Coal Field War and the Ludlow is a history that has been hidden, lost, or at best selectively remembered outside of union circles. Within the union movement Ludlow is a shrine and a powerful symbol used to raise class consciousness and to mobilize union members. The new signs on the interstate identifying the exit to the Ludlow Massacre Memorial draws a small but steady stream of summer tourists to the site. Most of these individuals arrive expecting to find a monument to an Indian Massacre. In this context our excavations become a form of memory, recalling for these visitors what happened at Ludlow, the sacrifices of the strikers, and that the rights of working people were won through terrible struggle. Memory leads to action as working people see their contemporary struggles as a continuation of the struggle at Ludlow.

The story of Ludlow has great popular appeal. The violence of the events and the death of women and children make the history a compelling story. It is also not a tale of distant or exotic past. Descendants of the strikers still regularly visit the site and the United Mine Workers hold an annual memorial service at the monument.

Our focus on everyday life humanizes the strikers because it talks about them in terms of relations and activities that our modern audiences also experience; for example, relations between husbands and wives, parents and children, and activities such as preparing food for a family, or how to get the laundry done. The parallel between the modern realities of these experiences and the miner's lives provides our modern audience with a comparison to understand the harshness of the striker's experience.

In the United States, archaeological excavations are considered newsworthy. Our first two seasons of excavation resulted in articles in every major newspaper in the state of Colorado. Eric Zorn, a columnist with the Chicago Tribune picked up on our excavations for his Labor Day column in 1997. He titled the column "Workers Rights Were Won With Blood." Our excavations give the events of 1913–1914 a modern reality; they live again and become news again.

We have also focused on developing interpretive programs at the massacre site. The United Mine Workers have made Ludlow and the massacre a symbol of their ongoing struggle, but many of the tourists who regularly pull off the highway to visit the site need more explicit background information of the 1913–14 strike in order to understand Ludlow's significance in the present. During the summer of 1998 over 500 people visited our excavations and, through site tours provided

by our staff and students, learned the story of what happened. At the Ludlow memorial service in June of 1999 we unveiled an interpretive kiosk. The kiosk includes three panels; one on the history of the strike and massacre, a second on our archaeological research, and a third on the relationship of Ludlow to current labor struggles. Over 700 working people viewed the kiosk and our traveling exhibit of artifacts, and listened enthusiastically to a short presentation on our work. In the next two years we will be installing a more detailed interpretive trail at the site.

Working people in southern Colorado still struggle for dignity and basic rights. Many of the rights that the Ludlow strikers fought and died for such as the eight-hour day are threatened in the United States today. Also, animosity towards union families and their struggles also continues in southern Colorado.

Several hundred of the participants in the Ludlow memorial services over the past four years were striking steelworkers from Pueblo, Colorado (Figure 6). They have been on strike against CF&I to stop forced overtime and thus regain one of the basic rights that the Ludlow strikers died for, the eight-hour day. They have used the Ludlow massacre as a powerful symbol in their struggle. It is so powerful that the



Figure 6. Striking Steelworkers Entering the Ludlow Memorial Service in 2001.

parent company (Oregon Steel) changed the name of their Pueblo subsidiary from CF&I to Rocky Mountain Steel to distance themselves from the events of 1914. The company now seems determined to break the union and to deprive the steelworkers of another of the basic rights that the Ludlow strikers struggled for, the right to collective bargaining. In June of 1999 we twice addressed the Pueblo steelworkers and afterwards several individuals *insisted* that we accept small donations of money to further our research. It became immediately apparent that it was important to them that we accept this unsolicited support, and our counter arguments that the money ought to go to the local's strike relief fund were summarily dismissed.

In May of 2003 vandals attacked the Ludlow monument. Using a sledgehammer they broke off the head of the male figure and the head and arm of the female figure (Figure 7). They removed the heads from the monument grounds and they have not been recovered. Donations from union locals and private individuals pored into the UMW local 9856 in Trinidad and in November of 2003 the statues were removed to California for restoration.



Figure 7. The Vandalized Ludlow Massacre Memorial in 2003.

DESCENDANTS AND DESCENDANT COMMUNITIES

In the last decade many historical archaeologists have advocated that we should work with the descendent communities of the historical sites that we study (Spector, 1993; Blakey and LaRoche, 1997; Wilkie and Bartoy, 2000). An emphasis on individual agency in this context has led some of these researchers to confuse the descendants of historical communities with a descendent community. In the case of Ludlow we have tried to serve both groups (descendent and descendent community) but with the recognition that in this case only the descendent community is a community of struggle.

The descendants of the Ludlow colony who come to the memorial each year are principally middle-class Anglos. Few of them are still miners, or even working-class. Their parents and/or they participated in the great social mobility of the 1950s and 1960s and today they are teachers, lawyers, business people, managers, and administrators. They are now scattered across the United States. They share an identity as descendants of the massacre but they do not form a community, either in the sense that they live near each other or in forming any type of organization or club. The descendants' memorialization is familial and personal. Their concerns are to establish a connection to this familial past and/or to see to it that their family's role in this past is properly honored. We have aided descendants in locating graves so that stones could be raised to family members who died in the massacre and by correcting errors in documentation or labels on photos in historical archives.

The descendent community of the 1913–1914 Coal Strike is composed of the unionized working people of southern Colorado. They include many descendants of people who participated in the strike, but the vast majority of them have no familial connection to the events of 1913–1914. A minority of them are ethnic Whites (Italians and Eastern Europeans) but the majority are Chicanos. It is they who maintain the monument, organize the memorial, and make the events of 1913–1914 part of their active struggle.

When we planned the project in the mid-1990s an active, unionized coal mine was still operating near Trinidad. When we entered the field in 1997, we were very disappointed to hear that the mine had closed. We feared that this event would transform the project from an active engagement with a union community to a post-industrial memory project, but that is not how it has worked out. Ludlow remains a sacred place for all of the UMW and the District office in Utah took over responsibility for the memorial service and it remains a national event for the union. Since the project began both the county workers in Las Animas and the

Hospital workers at the Trinidad Hospital have unionized. Both chose the union of their fathers and uncles, the United Mine Workers. Both also identify with the events at Ludlow. Finally, the striking steelworkers from Pueblo, Colorado have made the Ludlow Massacre a powerful symbol of their struggle. We participate in this struggle by joining them at the memorial and speaking in the union halls.

We also participate by using our knowledge of the world to critique the world and to teach other communities how labor's rights were won with blood. They were not freely given but bought with the lives of working people like those who died at Ludlow.

TEACHING LABOR AND THE LABOR OF TEACHING

The powerful ideology of a classless U.S. society, and the systemic silencing of the history of class struggle in popular narratives of American history make education an extraordinarily important part of the Coal War Archaeology Project (Walker and Saitta, 2002; Wood, 2002b). In addition to the types of outreach we engage in with the local labor community and visitors to the memorial site, we also endeavor to introduce our own fieldschool students to aspects of American labor, past and present, and to help other instructors incorporate labor issues into their curricula.

Not unsurprisingly, given the class make-up of most undergraduate Anthropology programs in the U.S., many of the students who attend the Coal War Archaeology Project fieldschool come from "solidly middle-class" backgrounds with very little direct connection to working-class experiences and institutions. Most of these students live in North America, and have acquired their knowledge of labor unions from mainstream educational and media institutions. While a few have been exposed to American labor history and the idea of class structures in U.S. society, the majority have had few experiences that have caused them to become aware of class in general and, more specifically, their own class positions.

The nature of the Ludlow Massacre site brings the reality of class and class conflict in American history into sharp relief for students. As mentioned above, however, the awareness of class in the past in no way precludes the denial of class in one's own present. Interactions with the local labor community challenge this latter notion. The annual UMWA memorial service at the Ludlow Monument confronts students with the phenomena of labor unionism and working-class solidarity in a powerful way. Every summer, staff and students of the Coal War

Archaeology Project attended these gatherings along with 300 to 1,000 union people from all over the U.S. and from many different fields of work. Striking steelworkers from Pueblo, Colorado, have played a large role in recent memorial services, tying their current struggle against Oregon Steel (formerly CF&I) to that of the 1913–14 strike. At these and other events, students have the opportunity to present their work on the archaeology of Ludlow and to discuss its meaning with working people.

The Coal War Archaeology project has also developed a relationship with the Denver-area AFL-CIO Union Summer program, that brings interns (often, though not exclusively, college-aged activists) together to support workers' organizing efforts in the metropolitan area. Union Summer groups have made several visits to the Ludlow Memorial and field school students shared their emerging perspectives on labor history with people their own age who have committed to labor activism in the present. We believe that these social interactions are some of the most important experiences the field school provides.

Another component of our education program is the preparation of school programs and educational packets for the public schools of Colorado. We are currently writing a curriculum for Middle School Students on the history of labor in Colorado with the 1913–1914 strike as its central focus. During the summers of 1999 and 2000 we held a Colorado Endowment for the Humanities sponsored training institutes for teachers at Trinidad State Junior College. The purpose of these institutes was to educate the teachers on labor history and to develop classroom materials to use in the teaching of Colorado labor history. We have also prepared a "history trunk" that circulates in the Denver Colorado School District. This is a box filled with artifacts, photos, and text material that teachers can bring to their classes and use with their classes.

In the Colorado Coal War Archaeology Project we are building an archaeology that working people can relate to both emotionally and intellectually. It is one of the few archaeological projects devised in the United States that speaks to the struggles of working-class people, past and present. It speaks to their experience, in a language that they can understand, about events that interest them and that they feel directly connected to. While we feel that our work thus far has won considerable interest and approval from the people closest to the history of Ludlow, we have no illusions that we have overcome all boundaries—we believe that a degree of continued unease and distrust on their part is healthy. Equally important to our project, we also work to reach a broader audience that has never heard of the Ludlow Massacre and

has missed, or misunderstood, the history of U.S. labor conflict and the legacy it represents. In so doing, we attempt to create a space for praxis in our work—seeking to know the world, critique the world, and most importantly to take action in the world.

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Cultural Identity and the Consumption of Industry

Stephen A. Mrozowski

INTRODUCTION

A decade ago, Robert Gordan and Patrick Malone noted three major trends in North American industrial archaeology. The first of these was “how and by whom new technologies were created and how their selection, use or rejection has been influenced by cultural values.” The second trend they noted was “the impact of technologies and industries on the environment,” with the third being “exploring . . . personal experiences with mechanisms and technological devices—how these artifacts enter work, play, and art, and how they express cultural values” (Gordon and Malone, 1994:11). Gordon and Malone’s concerns for technology, artifacts, and the industrial landscape reflect long-standing interests among industrial archaeologists in North America, Britain and Europe who focus primarily on the production side of industry (Palmer and Neaverson, 2000:8–15; but see Cranstone, 2001:183). By concentrating on processes that are “governed explicitly by principles of engineering and science” industrial archaeologists have escaped many of the interpretive dilemmas that have preoccupied archaeological theorists (Gordan and Malone, 1994:15; but see Clarke, 1987; Palmer, 1988). As a result industrial archaeologists have yet to explore some of the more interpretively challenging issues such as the role of industrial products in the reification and construction of class identities (Palmer and Neaverson, 2000:4).

If industrial archaeology is to tackle these kinds of questions then the focus needs to be expanded beyond just technology. What is needed is An Archaeology of Industry that will compliment the well- developed precepts of Industrial Archaeology.

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There are many directions An Archaeology of Industry might take, some more global in scale than others. A cross-cultural comparison might provide new insights into the way economic and cultural forces combine to shape the trajectory of industrial capitalism as a social formation. Still another would be to examine the histories of individual industries through both growth and decline (e.g. Nasseney and Abel, 2000; Symonds, 2002). For the purposes of this paper I would like to explore the discursive power of material culture and the landscape in the expression of class differences in nineteenth century Lowell, Massachusetts. The research I will be discussing is drawn from what at times has seemed like an endless study of Lowell, Massachusetts, the first planned industrial city in North America. Over the past two years I have revisited much of the Lowell data as part of an effort to pull together the various threads of more than a decade's research. This included the original study that Mary Beaudry and I directed of the Boott Cotton Mills and in particular the skilled and unskilled workers who resided in company-owned tenements and boardinghouses respectively (Beaudry and Mrozowski, 1987a, b; 1989; Mrozowski, Zeising and Beaudry, 1996). This research was conducted between 1985 and 1989 and also involved excavations at the Kirk Street Agent's house, a company owned duplex that was home to the agents of both the Boott and Massachusetts Mills (Figure 1). The Boott Boardinghouses were constructed between 1835 and 1837 while the Agent's House was constructed in 1845. To this I have added data collected from excavations of a housing block for the Lawrence Manufacturing Company overseers conducted between 1995 and 1996. This block was constructed at approximately the same time as the agent's house.

A Brief History of Lowell

For those unfamiliar with Lowell's history I will supply a brief discussion of its development. First and foremost Lowell was an experiment in urban industry. It was founded by a group of men that historians have labeled The Boston Associates. The group's chief visionary was Henry Cabot Lowell who visited Britain in search of new investments during the economic troubles the Untied States was having after the establishment of the embargo of 1807 (Lipchitz, 1977:82; Dalzell, 1987:11–12). The success of British industry piqued his interest in textile production, but his enthusiasm was tempered by the strong aversion many in the United States had to large-scale industry because of its association with the ills of urban life in Britain and Europe. Part of the resistance they faced came from farmers who saw industry as a

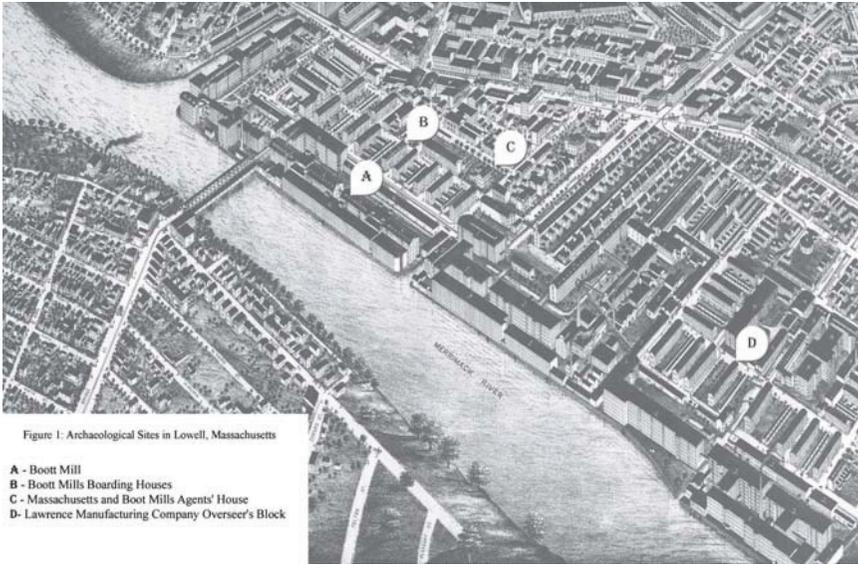


Figure 1. Archaeological Sites in Lowell, Massachusetts. Based upon an 1876 bird's-eye view of Lowell by Bailey and Hazah.

threat to their chief labor source, their sons. Lowell's founders' answer to this dilemma was to hire women instead. To insure that enough young women could be attracted to Lowell the city was envisioned as a planned community that used economies of scale to insure the physical and moral well being of its workforce. The key to this plan was a space produced so that the mills, their workers and the supervisors would all live within a few feet of one another. This was truly produced space that not only provided for the surveillance of workers both in the factory and at home, but which also reinforced the company hierarchy through the manipulation of interior and exterior space (Mrozowski, 1999).

Companies were not always successful in their attempts to control the behavior of their workers. The archaeology of the boardinghouses produced ample evidence of the various methods workers employed to circumvent company strictures. These included hidden bottle caches and a material record replete with medicine bottles that once contained alcohol laced remedies. The company could fire a worker for drinking, but not for taking medicine. The many pipe stems found in the same back lots also showed that company distaste for public smoking was also ignored (Mrozowski, Ziesing and Beaudry, 1996:66–74).

Despite periods of worker unrest, Lowell was a tremendous success. Before the American civil war, it served as a model for American

industry and in the case of Saltaire in Bradford, for British industry as well. Many of the seminal steps in the growth of American business were first taken in Lowell. The city's machine shop that produced the power looms used in the factories would later produce locomotives for the new railways that would link the industrial Northeast with the expanding West. The growth of joint stock companies, modern insurance companies, and the use of managers were all part of an important step in capitalism's development in the United States, or what business historian Alfred Chandler (1977;1990) has described as managerial capitalism. Unlike the early agents and treasurers of the Lowell mills, these managers and overseers were seldom company stockholders. They were salaried employees whose success was based on their ability to improve profits by pushing workers they supervised to be more productive. The overseer's block constructed by the Lawrence Manufacturing Company is an early example of housing built exclusively for the corporation's most prized workers.

From the outset Lowell was also a social experiment in that its operation was guided by the philosophy of corporate paternalism. The corporation was responsible for providing shelter, sustenance, moral governance, and education while in return, workers were expected to work and accept the moral responsibility they had to those who provided for them. Through their agents, the corporations sought to insure that workers living in company owned boardinghouses and tenements followed company rules. Keepers were hired to oversee the operation of individual boardinghouses and the agent's looked to them in enforcing company strictures concerning behavior like drinking for example. The dynamic this established often generated conflict creating a dialectic that contributed to the formulation of both working class and middle class cultural consciousness.

This history makes Lowell a perfect place to study the discursive process that contributed to the formation of class consciousness during the 19th century. As a planned city, Lowell was constructed as a class-based community. The various corporations actively constructed an urban landscape that gave material expression to the hierarchical quality of industry. As the 19th century progressed further strata were added to this hierarchy thereby contributing to an even more rigidly defined class structure. The growing size of Lowell's work force—20,000 in 1840 and 40,000 by 1855—placed greater demands on corporations for housing. In constructing this housing and its surrounding yards, companies sought to further differentiate among its workers by producing a space that reinforced notions of hierarchy. The resulting landscape and

its maintenance over time reveal much about corporate perceptions of its workers especially the unskilled operatives who lived in company owned boardinghouses.

In the same manner that Lowell's urban landscape provides a starting point for an investigation of class, the popular literature of the day provides further insights into the parameters of 19th century social commentary. Written primarily for the middle class, popular literature grew in popularity during the second and third quarters of the 19th century (Gilmore, 1994; Janowitz, 1994; Lang, 1994; White, 2001; Applegate, 2001). This literature helped to invigorate a discourse that revolved around the characteristics of working class and middle class culture. From religion, to respectability, eating, and sex, authors weighed in on the virtues of middle class culture often through use of metaphor in their fictional accounts. Values like orderliness, gentility and abstinence (in both eating, and sex) were important elements of a middle class culture that while subject to variability, was nevertheless part of daily existence. Members of the middle class, especially women, were supposed to demonstrate their social superiority by abstaining from all of these vices, including sex. Self-help guides designed primarily for women focused on everything from what to wear, how to raise children and comport oneself, were extremely popular among the middle class (White, 2001; Moskowitz, 2001; Volpe, 2001). The material world was often a part of this literature serving often as metaphors for class identity, especially in terms of dress and the domestic sphere.

The portraits of class differences depicted in this literature stand in some contrast to images constructed by historical archaeologists working on 19th century sites. Recent archaeological work in New York, for example, has produced evidence of a material world surprisingly different from popularly held images of 19th century life in some of the toughest parts of that city (Yamin, 2001). This gap between perception and reality is a sobering reminder that archaeology has as much to do with confronting history as it does with its rediscovery. In Lowell, this meant doing more than searching for the material correlates of assumed class differences. Instead it involved the examination of material culture, landscape and biological data, to explore the manner in which class identities were both constructed and communicated. In conducting this search for material evidence of working and middle class identities, I have come to appreciate the way these differences were sometimes expressed in a subtle manner (Mrozowski, 2000). If the focus of our analysis remains exclusively on the aggregate then evidence of individual expression can be overlooked. This is particularly true of

personal items, for example. Items such as jewelry, clothing fasteners or decorative beads for clothing, or in some instances individual patterns on ceramics, may be more evocative of identity than the assemblage as a whole. To ignore specific artifacts because of their small number is to have the individual be slave to the aggregate.

MATERIAL DIMENSIONS OF CLASS

The material culture that will be the focus of my discussion was collected from four different archaeological sites in Lowell: the rear yards of Boott boardinghouse unit 45 and Boott tenement unit 48, the rear and side yards of the Massachusetts Mills side of the Kirk Street agent's house, and the front and rear yards of four overseers' units from the Tremont Street Block of the Lawrence Manufacturing Company. With the exception of the overseers' units, all of the assemblages are thought to represent individual households. Boott unit 45 served as exclusively as a boardinghouse between 1835 and 1910 with a single keeper, Amanda Fox, serving in that capacity from 1847 until 1895. Through out her entire tenure as keeper, the boardinghouse was home to female operatives only. Boot unit 48 held a series of mechanics, other skilled workers and their families. The households of Massachusetts agents Homer Bartlett and Frank Battles appear to be the source of the majority of the material culture recovered from the rear and side yards of the Kirk Street duplex. At the Tremont Street block of the Lawrence Manufacturing Company the situation was more complex. During the first decade of its existence the block held both overseers and skilled workers. Over time the block came to be dominated by overseers and their families, but there was often movement within the block. Because of this excavations were carried out in the front and rear yards of four units that were always home to overseers. However because several of the overseers moved between different units it was decided that all four overseer assemblages would be combined to represent the block as a whole.

The agent's house and overseers' assemblages are comparable in terms of the period they represent. Both assemblages appear to represent households that lived at the respective sites between 1845 and 1880. The tenement and boardinghouse assemblages contain materials from the same periods, but the bulk of both assemblages date to the period 1860 to 1910. This is particularly true of the ceramics from the four sites. Glassware seems to be more comparable in terms of the periods of deposition they represent. The same it true of the personal items recovered from the various sites.

Ceramics

A comparison of the ceramics recovered from the boardinghouse, tenement, overseer and agent’s households points to the dominating power of industry. Despite its lack of large-scale mechanization, the growing sophistication of the ceramic industry had a homogenizing effect on consumer choices. In Lowell this shows up in the dominance of white wares which represented more than 75% of the assemblage (Table 1). This included plain white wares, edged wares, and various colors of transfer printed wares. These were followed in number by red paste earthenwares and stonewares. A small number of porcelain vessels are present in both the overseers’ and agent’s household assemblages, while they were the third largest category of ceramic at both the tenement and boardinghouse although the numbers are small. The lack of porcelain was surprising given its popularity among middle-class households in New York (see Wall, 1994, 2000; Fitts, 1999). It is possible that porcelain was better cared for in the agent’s and overseer’s households in Lowell and therefore better curated.

The red-paste earthenwares and stonewares made up the bulk of the food storage and preparation vessels that I have classified as kitchenwares (Table 3). Table and tea wares were almost exclusively white wares. Because the taking of tea or coffee could be an activity separated from a meal, their wares are categorized separately. The variety of vessel types and their functional break down are illustrated in Tables 2 and 3. Ceramics from the various assemblages were classified into table/serving wares, tea/coffee wares, and kitchen wares. These categories are largely designed to distinguish different activities within

Table 1. Ceramics by Ware Type

Ware Type	Boardinghouse		Tenement Block		Overseers’ Block		Agent’s House	
	No.	%	No.	%	No.	%	No.	%
Bennington	1	0.52	0	0	0	0	0	0
Creamware	5	2.61	1	1.16	0	0	0	0
Lustreware	0	0	0	0	1	1.37	1	0.2
Pearlware	1	0.52	2	2.32	0	0	1	0.2
Porcelain	8	4.18	11	12.79	1	1.37	0	0
Redware	12	6.28	12	13.95	10	13.7	67	14.1
Stoneware	11	5.75	3	3.48	1	1.37	14	2.9
Whiteware	149	78.01	56	65.11	59	80.8	365	76.7
Yellow ware	3	1.57	1	1.16	1	1.37	28	5.9
Total	190	100	86	100	73	100	476	100

Table 2. Summary of Ceramics by Vessel Type

WARE	Boardinghouse		Tenement Block		Overseers'		Agent's House	
	No.	%	No.	%	No.	%	No.	%
Bowl	50	30.9	18	24	11	15.5	23	7.4
Chamber pot	0	0	1	1.3	0	0	0	0
Crock/jar	6	3.7	5	6.7	0	0	15	4.8
Cup	22	13.6	13	17.3	12	16.9	46	14.8
Flower pot	5	3.1	3	4	7	9.9	41	13.2
Pan	0	0	0	0	1	1.4	0	0
Plate	30	18.5	10	13.3	20	28.2	144	46.5
Pot	1	0.6	4	5.3	2	2.8	0	0
Saucer	36	22.2	18	24	16	22.5	25	8.1
Serving dish	11	6.8	3	4	2	2.8	10	3.2
Tea pot	1	0.6	0	0	0	0	3	1
Pitcher	0	0	0	0	0	0	3	1
Total	162	100	75	100	71	100	310	100

the household. No ceramics that served exclusively for display were recovered from any of the sites.

Several scholars have argued that entertaining over tea was a common activity among middle-class women (see Clark, 1987; Fitts, 1999; Wall, 2000:1 21–122). Wall provides an outline of this kind of entertainment noting that it could be a lavish affair with servants and a wide variety of ceramic vessels. Chocolate was also a treat at evening events with tea as the first course (Wall, 2000:121). Entertainment often included formal dinners with elaborate place settings:

Each place setting might include a soup plate, a large plate for each of the main courses, and a smaller plate for desert and fruit courses. In addition each diner would be supplied with a tumbler and (if wine was served) wine-glass(es). After dinner, cups and saucers for tea or coffee might be used. (Wall, 2000 p. 121)

Table 3. Ceramic Functional Groups

	Boardinghouse		Tenement		Overseers' Block		Agent's House	
	No.	%	No.	%	No.	%	No.	%
Table/serveware	127	65.6	42	53.2	36	54.5	175	62.5
Kitchen ware	11	5.7	9	11.4	2	3	41	14.6
Tea/coffee ware	56	28.9	28	35.4	28	42.4	64	22.9
Total	194	100	79	100	66	100	280	100

Table 2 presents a breakdown of the vessel types from the various sites in Lowell. This comparison suggests that plates may be a possible measure of class identity. Boott unit 48 had the smallest percentage of the four assemblages, 13%, while close to 47% of the agent's house assemblage consisted of plates. Although a larger percentage of plates were recovered from the boardinghouse this probably reflects differences in household composition—between 20 and 30 female borders—as compared to the smaller families of skilled workers who lived in the tenement. The percentage of cups in the four assemblages is comparable while there is a larger percentage of bowls at the tenement and boardinghouses as compared with either the overseers or agent's house assemblages. This suggests that household composition was apparently not the only factor influencing foodways practices. Tea pots and pitchers were present at the agent's house, for example, however these items were not found at the other sites.

While ceramic form provides one measure of comparison decoration may prove the more sensitive barometer of meaningful class differences. A comparison of decorative motifs is illustrated in Table 4. The prevalence of transfer-printed wares at the agent's house is by far the most notable feature. By comparison the overseers' block had a percentage of transfer printed wares more consistent with that recovered from the tenement and boardinghouse. The same was true of undecorated white wares where they comprised close to 50% of the overseers' assemblage.

Table 4. Summary of Ceramics by Decoration

Decoration	Boardinghouse		Tenement		Overseers' Block		Agent's House	
	No.	%	No.	%	No.	%	No.	%
Decal	4	2.09	1	1.16	1	1.37	2	0.5
Dipped	3	1.57	0	0	0	0	0	0
Edged	11	5.75	6	6.97	4	5.48	44	12
Gilded	8	4.18	9	10.46	2	2.74	0	0
Handpainted	8	4.18	9	10.46	12	16.44	25	7
Lead glazed	10	5.23	6	6.97	0	0	0	0
Molded	29	15.18	9	10.46	4	5.48	5	1.4
Overglazed	0	0	1	1.16	0	0	2	0.5
Salt glazed	5	2.61	1	1.16	1	1.37	14	3.9
Sponge	6	3.14	3	3.48	0	0	3	0.8
Transfer print	32	16.75	12	13.95	14	19.18	215	61
Undecorated	74	38.74	28	32.55	35	47.94	45	12
Wash	1	0.52	1	1.16	0	0	0	0
Total	191	100	86	100	73	100	355	100

The comparability of the overseers, tenement and boardinghouse assemblages are even more significant given the later dates of the latter two sites.

The agent's house assemblage consisted of four basic decorative types. Transfer-printed wares were by far the most numerous followed by undecorated white wares, then edged wares (all blue edged), and finally hand-painted white wares (Table 4). Taken as a whole this assemblage differs markedly from the several middle-class assemblages that have been recovered from 19th century domestic sites excavated in New York over the past decade. Middle-class households comparable to that of the agent's house in both Manhattan and Brooklyn dressed their tables with white "Gothic" dinner wares (Wall, 1994, 2000; Fitts, 1999). This presents a sharp contrast with the agent's households in Lowell where few such pieces were recovered. In general, the agent's house assemblage is reminiscent of much earlier assemblages in New England that were dominated by blue and green edged pearlwares, early transfer-printed wares, and hand-painted pearlware tea and coffee sets (e.g. Clements, 1989, 1993; Beaudry, 1995). I believe the Lowell agent's assemblages represent a regional contrast with their New York counterparts. More concerned with fashion, New York's middle-class families sought what was new as compared to the agents for the Massachusetts Mills whose more conservative tastes may reflect their cultural ties to Boston. This would be consistent with Dalzell's (1987) description of the Boston Associates and their concern for maintaining the social position of families who made their original fortunes in the mercantile economy of the 18th and early-19th centuries.

An analogous pattern may also be visible in the overseers' and tenement assemblages. Although neither have a comparable percentage of transfer-printed wares, both had significantly more hand-painted wares than the boardinghouse possessed. These hand-painted white wares were primarily comprised of tea cups and saucers. In the boardinghouse assemblage, the majority of the tea and coffee wares were undecorated white wares. The choice of hand-painted tea wares is again reminiscent of pearlware examples decorated in a similar manner that were popular in the early part of the century (Clements, 1989, 1993; Beaudry, 1995). Their use at the tenement and overseer's block may also reflect demographic factors—the difference between families and single people. The presence of tea wares decorated in a similar fashion to those from the agent's house says more about married life than they it does about class. Clements discerned the same pattern in her examination of married and single officers' household assemblages at Fort Independence in Boston that date to 1815–20 (1989, 1993). In this case it was the presence of tea wares in the assemblages of the

married officers that stood out in contrast to the assemblages of the single officers.

The continuing popularity of transfer-printed wares at the agent's household and the choice of hand-painted tea wares at all but the boardinghouse speak to issues of both class and household composition. These choices may also reflect regional differences evident when compared with comparable households in New York, for example. Beyond these rather coarse comparisons there were also specific types of ceramics that offered further interpretive possibilities. Within the overseers' assemblage, for example, several fragments of embossed white wares were recovered. The specific examples recovered appear to be white wares rather than pearlwares. These embossed plates were very popular between 1830 and 1850 and could represent a middle-class sensibility (see Hunter and Miller, 1994:440–441). The same is true of the fragments of a small plate decorated with the "Texian Campaign" (referring to the war with Mexico over Texas) pattern (see Laidecker, 1954:34) found in the front yard shared by Units 20 and 21, units which consistently housed Lawrence Company overseers. The same Texian pattern was found at the agent's house confirming its availability and purchase by both households. Whether it speaks to a level of nationalism or taste is difficult to say yet despite their small number, these ceramic fragments may provide a subtle indication of shared cultural values.

Glassware

Like the ceramics, the glass assemblages from the four Lowell sites evince an interesting set of comparisons. The fact that all four assemblages contain ample numbers of liquor and medicine bottles is indicative of another pattern—the wide appeal of alcohol among all classes. Table 5 presents a summary of the glass vessels recovered from the four sites. The large number of liquor and medicinal bottles recovered from the boardinghouse and tenement seems to validate company concerns over drinking. Most of the bottles recovered from these sites date to the period 1880 to 1920; approximately 5% of the 165 vessels assigned dates were manufactured between 1860 and 1880 (Bond, 1989:22). With but a few exceptions, most of the bottles held either liquor or medicine.

The agent's house glass assemblage was comparable in size to those recovered from the tenement and boardinghouse. In all 46 bottles were recovered from the yard. Of these, 15 held medicines while 27 held alcohol. More than half of the medicine bottles were actually more personal in nature, including three perfume bottles. Several jars were recovered from the agent's house yard that appears to have held creams or

Table 5. Glassware from Lowell Sites

Type	Boardinghouse		Tenement		Overseer's		Agent's House	
	No.	%	No.	%	No.	%	No.	%
Medicinal								
Proprietary	49	45	29	48.3	9	81.8	12	26.1
Toiletry	5	4.5	1	1.7	0	0	3	6.5
Subtotal	54	49.5	30	50.0	9	81.8	15	32.6
Alcohol								
Liquor	36	32.7	18	30	1	9.1	13	28.3
Wine	7	6.4	2	3.3	1	9.1	14	30.4
Beer	5	4.5	4	6.6	0	0	0	
Subtotal	48	43.6	24	39.9	2	18.2	27	58.7
Non-Alcohol								
Soda	7	6.4	6	10	0	0	4	8.7
Totals	109	100	60	100	11	100	46	100

other toiletry items. The concern for personal appearance these items suggest may represent one of the best indicators of middle class sensibilities recovered during our investigations in Lowell. Alcohol-related bottles were also numerous at the agent's house representing close to 60% of the assemblage, a proportion higher than either the tenement or the boardinghouse assemblages. These bottles were equally divided between spirits and wine suggesting genteel patterns of alcohol consumption. Despite this no stemmed glassware was recovered from the agent's house; only a few tumbler fragments were found in the yard.

The bottle assemblage from the overseers' block was disappointingly small in comparison to the other three sites. In total only 11 bottles were recovered from the yards of five overseers, a fact that could reflect either differences in consumption or refuse disposal patterns. Nine of the bottles held medicines while the others appear to be a wine and a liquor bottle. It is unfortunate that the assemblage is so small, because, if representative, it would present a strong contrast to the other assemblages.

With so few bottles in the overseers' assemblage, the only valid comparison is between the agent's house assemblage and those from the tenement and boardinghouse. The presence of wine and spirit bottles may suggest more genteel tastes, however, in sheer numbers; the evidence of liquor consumption at the agent's house surpasses that of either the tenement or boardinghouse. The hundreds of liquor and medicinal

bottles recovered from the latter two sites may also represent the response of their inhabitants to efforts by the companies to police their activities. The class-based rhetoric supporting this kind of company surveillance seems somewhat hypocritical in light of the evidence of alcohol consumption at both the agent's house and overseers' block.

Taken as a whole, the results from Lowell are comparable with those from middle- and working-class households in Brooklyn that Reckner and Brighton describe (1999:78–80). They concluded that characterizations of Irish and German households as drinking more than native-born middle class households were unfounded (Reckner and Brighton, 1999:80). The Lowell material not only supports this observation they also provide further evidence of the gap between ideology and action on the part of the middle-class. Despite differences in what was being drunk, the archaeological evidence indicates comparable patterns of alcohol consumption across class lines.

Similar evidence may come from the medicine bottles recovered from the various yards in Lowell. In her analysis of the bottles from the tenement and boardinghouse Bond confirmed that many of medicines contained alcohol and narcotics (1989:138). The growing sophistication of bottle manufacturing helped to support a veritable explosion in the number of companies making medicines for mass consumption. Their popularity among every class of worker in Lowell suggests that this industry provided a helping hand to those seeking to circumvent the strictures of temperance.

One facet of glass assemblages that clearly point to class differences were the large number of glass chimney fragments recovered at both agent's house and overseer's block. In fact these small, blackened chimneys that were used in both oil and gas lighting represented the single largest category of glass recovered at both sites. No evidence of their presence was found at either the tenement or boardinghouse. This difference is particularly noteworthy when the age of the assemblages is taken into account. The material assemblages from the overseers' block and agent's house were probably deposited after 1860, those from the tenement and boardinghouse after 1880. Despite this fact, there is more evidence of advanced domestic technology in the earlier assemblages than in the later collections. This disparity in access to technology surfaced in other ways as well. Despite calls by the Lowell Board of Health in 1886 for companies to replace antiquated water and waste systems at all company housing, archaeological evidence confirmed that steps to rectify the situation at the overseer's block in the 1880's were not duplicated at the boardinghouse and tenement blocks. Instead the evidence suggests that privies and wells continued to be used at least until 1910. Apparently companies that had once prided themselves on

the care they showed for the welfare of their workforce had narrowed their allegiances to include only management personnel.

CONCLUSION

The power of industry to blur the lines between middle-class and working-class is evident in material assemblages recovered from Lowell. The predominance of white wares and medicine bottles in all assemblages testifies to the growing availability of a whole variety of consumer goods. Members of both working-class and middle-class households purchased these goods and employed them in constructing their own identities. This same pattern was evident in other classes of goods as well including smoking pipes, jewelry, clothing and shoes (Mrozowski, Zeising and Beaudry, 1996). The literature of the day that portrayed middle-class virtues like abstinence and piety, may have accurately described some members of the group, however others seemed to have shared some sensibilities with the more humble masses that made up the majority of the workforce. In fact, when compared with similar studies from New York, it is worth noting that material evidence clearly seems to indicate that working-class households from areas like Hells Kitchen, surrounded themselves with what can best be described as the trappings of middle-class life (Yamin, 2001). In Lowell the evidence of class difference is there in subtle form, but there is also evidence of shared sensibilities across class lines.

Where these comparisons breakdown, however, is when the environmental data are examined. Here the evidence from Lowell is unequivocal, as the 19th century progressed; the living conditions for workers declined while every effort was made to maintain and even improve the conditions at both the agent's house and overseer's block. On this the archaeology could not be clearer. While investments were made to improve the domestic technology and waste and water systems for manager's housing, no such efforts were made for the skilled or unskilled workers. So while evidence of class negotiation and identity formation is clearly visible in the material culture recovered from the various households, these realities belie a starker divide. The original commitment to work well-being was replaced by a new form of managerial capitalism that saw the distance between worker and owners grow immeasurably. Concern for worker well-being was replaced by new priorities including expansion into railroads, insurance companies and banks. Managers now became the eyes and ears of company owners and were provided company housing that reflected their growing importance to the enterprise as a whole.

The class differences that were built into the very fabric of Lowell became more rigidly defined as the 19th century progressed. Yard space was one of the more common methods companies used to differentiate their workers. Skilled and unskilled laborers housing had only fenced-in rear yards, while managers had small ornamental front yards and rear yards that could serve a variety of purposes. Agents were accorded even more ornamental space demonstrating its importance as an instrument of class differentiation. This was indeed produced space that like all products of industry was shaped by a machine-like instrumentality. Its purpose was conveying company driven notions of class that sought to reinforce corporate hierarchies and the power relations they engendered. Through the consumption of industry's products such as ceramics and glassware, agents, overseers and workers were able to construct their own identities that often countered the assumptions embedded in the landscapes produced by the corporations. In this sense cultural identities were constructed through the consumption of industry, but even this act was shaped in part by the instrumentality of mass production.

Cultural differences were also the subject of the literature of the day and like Lowell's landscape, it too provided explicit markers of class difference. Yet here is where the archaeological data from Lowell provide the clearest example of discordance. Despite the rhetoric of middle-class superiority in areas of abstinence and sobriety, drinking and smoking were just as common within these households as they were in those of the skilled and unskilled workers of the city. The data from the overseer's also speak to a process of negotiation that appears to have navigated that middle ground between the workers they supervised and the agent's they answered to. This then is the picture that emerges from Lowell, data that attests to the construction of class identities that were seldom faithful to the "truth" as conveyed in either the literature of the day or corporate ideology.

Looking back over the span of more than a century the transformative power of industry had shaped Lowell into an economic powerhouse only to see it come to a crashing halt when market conditions favored moving factories where cheaper labor could be found. When Lowell's factories closed in the early-20th century many who had worked in the mills mourned the loss of a way of life (Blewett, 1990). The working-class identities they had constructed were also middle-class identities reflecting the same sensibilities evident in the archaeological record of the Five Points District of New York (Yamin, 2001). The struggle to construct a middle-class identity out of a working-class consciousness remains a part of many who labor in the United States today. Their notion of what America promises is not so distant from

the struggles that confronted Lowell's workers in the 19th century. In this sense their story reminds us that the equality expressly written into the Declaration of Independence remains curiously illusive for the grandchildren and great-grandchildren of those who labored in Lowell's mills.

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The Industrial Archaeology of Entertainment

13

Martin Hall

You have only to see Las Vegas, sublime Las Vegas, rise in its entirety from the desert at nightfall bathed in phosphorescent lights, and return to the desert when the sun rises, after exhausting its intense, superficial energy all night long, still more intense in the first light of dawn, to understand the secret of the desert and the signs to be found there: a spellbinding discontinuity, an all-enveloping, intermittent radiation (Baudrillard, 1988:127).

INTRODUCTION

This chapter outlines the case for an industrial archaeology of entertainment complexes by identifying some primary characteristics. As is appropriate to the discipline, there is a material bias to this case—an eye for buildings, iconography and a sense of what might be left behind. There is an emphasis on lineage, and a nod to the comparative method by looking at destination resorts both in their heartland of North America and on the far frontier of the form, in southernmost Africa.

These complexes, building on the traditions of World Fairs, theme parks and the pioneering work of the Disney Corporation, represent the convergence of trends in the entertainment industry, global travel and digital media. Thriving in the decade between the collapse of the Soviet Union and the closure of borders after September 2001, the new entertainment complexes are huge capital investments, substantial construction sites and the source of livelihood for tens of thousands of people. They have imposed, and will leave behind them, a significant impact on the cultural landscape (Hannigan, 1998; Harvey, 2000; Ritzer, 1999; Sagalyn, 2001). They are, in many respects, the late-20th

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century's equivalent of the mills and canals of Manchester, Sydney's Circular Quay, and the wharfs and warehouses of lower Manhattan. Indeed, in many cases, entertainment complexes have re-inhabited these earlier industrial shells, giving them new economic life. And the starting point, of course, must be Las Vegas—in Baudrillard's words, "an irresistible, fundamental datum" (Baudrillard, 1988:67).

LAS VEGAS

Las Vegas's history as a type site began in 1946 with the opening of the Flamingo Hotel, widely seen as the first modern casino (Hess, 1993; 1999). Initially, the town was known for its seedy reputation and organized crime, but integration into the mainstream corporate economy began in the mid-1960s as Howard Hughes set a lead in buying up resorts as investments. At much the same time, Jay Sarno was experimenting with themed entertainment experiences, epitomized in the camp-classic style of Caesars Palace. The popularity of Caesars set the pace for what has become known, with suitable grandiosity, as the Las Vegas Renaissance. This reached a dramatic crescendo in 1993, with the televised implosion of the Dunes resort to make way for the Bellagio and its Nevada interpretation of classic Italian style:

It was advertised as the biggest non-nuclear explosion in Nevada history. On October 27, 1993, Steve Wynn, the state's official "god of hospitality," flashed his trademark smile and pushed the detonator button. As 200,000 Las Vegas cheered, the 18-story Dunes sign, once the tallest neon structure in the world, crumbled to the desert floor. The dust cloud was visible from the California border (Davis, 1995).

The Luxor opened in the same year, and in 1996 the Sands Hotel (known as the playground of the Rat Pack) was blown up to make way for the Venetian. Between 1998 and 2000 the Bellagio, Venetian, Paris Las Vegas, and Aladdin destination resorts opened their doors and contemporary Las Vegas was complete (Anderton and Chase, 1997; Firat, 2001).

Understanding how Las Vegas works as an industrial site starts with Robert Venturi, Denise Scott Brown and Steve Izenour's classic study (Venturi, Scott Brown and Izenour, 1977). In 1968 they took a group of students to Las Vegas to learn about architecture. This led to the publication of "Learning from Las Vegas," in which the Strip was interpreted as a landmark of populist kitsch. Venturi,

Scott Brown and Izenour characterized Strip architecture as a sign-covered “decorated shed,” standing in contrast with the idea of architecture as sculpture. At this time, Las Vegas’s iconography was car-oriented, and the contest was to unveil the biggest and boldest in exterior neon lighting. Caesars—and later the Bellagio, Venetian, and other resorts continued the tradition of exterior extravaganza, supplementing it with opulent, larger-than-life interiors and special effects (Figure 1). But Venturi, Scott Brown and Izenour’s basic premise still stands. Las Vegas is about movement—in the late 1960s, cruising by car along the Strip; forty years later strolling past Treasure Island and the Ballagio fountains, or through the Venetian’s elaborate interiors or past Paris Las Vegas’s staged Parisian shopfronts. The underlying structure is the same.

As an industrial site, Las Vegas is a series of massive, decorated sheds—three dimensional stage sets that provide the skeleton and infrastructure for elaborate special effects. The effect of this artifice



Figure 1. Maritime Archaeology, Las Vegas. Buccaneer Bay at the Treasure Island Resort.

is intended to be overwhelming:

... the violence of its contrasts, the absence of discrimination between positive and negative effects, the telescoping of races, technologies and models, the waltz of simulacra and images here is such that, as with dream elements, you must accept the way they follow one another, even if it seems unintelligible; you must come to see this whirl of things and events as an irresistible, fundamental datum (Baudrillard, 1988:67).

Thus prepared, one can venture onto the Strip, and observe. And while anything goes in this “waltz of simulacra,” one impression does push forward—a sort of theme of themes. This is an appeal to images of the past and an improbable claim to their authenticity. Here, the datum point must be Caesars Palace—the cornerstone of modern Las Vegas. In keeping with its name, Caesars is an ebullient assemblage of fountains, statues and other memorabilia of Ancient Rome. Here, the fantasy is quite explicit, “a camp masterpiece, a knowing parodic send-up of the impossibility of theming a modern hotel on ancient, classical lines” (Anderton and Chase, 1997:48). A costumed Caesar and Cleopatra, accompanied by two burley legionaries, wander around to cries of “Hail, Caesar,” providing photo opportunities for the resort’s guests.

The Luxor takes itself a little more more seriously. Its attractions include the Tomb and Museum of King Tutankhamun: “... painstakingly recreated by the world’s leading Egyptologists, the tomb is a historically accurate reproduction of the original burial chamber ... many of the artifacts are placed just as Howard Carter first discovered them in 1922”. The entrance to the museum features a piece of stone from the Giza pyramids, lit in classic museum style: “This stone was donated to Luxor Las Vegas by the tourism section of Egypt. It is a piece from one of the stone blocks used to build the Great Pyramid of Giza”.

The context is provided by a BBC-produced video that introduces Carter’s expedition, and the visitor then moves through cases with reproductions of objects from Tutankhamun’s tomb, again displayed in classic museum style. The main focus is a reconstruction of parts of the tomb, accompanied by an audio tour narrated by “Howard Carter,” who asks the visitor to recall his 1922 discoveries. The gallery exits into a museum shop which sells reproductions, gifts and a selection of videos and books on ancient Egypt.

This clear appropriation of the culture of the civically-responsible museum is augmented by the hotel’s architecture—a massive glass pyramid, and by the ten-story sphinx that serves as a *porte cochere*, modeled after the Sphinx at Giza, although half as big again. There are

camels in the lobby, obelisks, statues, hieroglyphs, and wall paintings. However—and this is shared with Caesars—the Luxor’s claim is to the originality of the idea of Egypt, rather than to Egypt itself. Its familiarity and attraction is its celebration of Hollywood, rather than Cairo:

Parking attendants and waitresses are of course dressed in pseudo-Egyptian costumes and the latter also wear the “Egyptian” hairdo most of us have learned to recognize from Ann Baxter, Liz Taylor and other heroines of Cecil B. de Mille’s movies. The fact that many of these workers are Asian-American, Nebraskan, or Latina is irrelevant. It is not authenticity which is put on display here but the effort invested in making the simulation of this space believable down to its smallest intertextual detail (Gottschalk, 1995).

The Luxor builds on these classic fantasies in a play to New Age fantasies with the proposition that there was a pre-Egyptian civilization buried deep beneath the sands of Las Vegas, marked by a buried, crystal pyramid—a style of presentation that the designers term “crypto-Egypto” (Malamud, 2000:37; see also Sanes, 2001).

Newer resort destinations eschew such populism for the terrain of high art, and seek to offset the accusation of pretentiousness with the sheer scale and quality of their extravaganzas. The President of Paris Las Vegas claims that “visitors will be amazed at the authenticity of the project, which will be evident throughout the facility, from the historic landmarks, to the cuisine, to the décor of the meeting place.” Le Boulevard is fashioned after the Rue de la Paix:

Le Boulevard is tres European. From the brass lamps to the cobblestone “streets” to the small, intimate boutiques, Paris is alive and well in Las Vegas. (www.vegas.com/shopping)

Here, the Ré Society sells “authentic,” limited edition prints, produced by an “on site printing atelier” with an:

... extremely rare, 100-year-old French lithography press in action, operated by craftsmen skilled in authentic, hands-on techniques nearly unheard-of today ... Every “Ré” is a genuine, hand-pulled, hand-signed and numbered fine-art lithograph, created by the same painstaking techniques and “low-tech,” hands-on artistry that launched the public’s passion for poster collecting over 100 years ago ... Like the unequalled sound of a centuries-old Stradivarius violin, the aesthetic quality produced by these historic presses is unmatched by any of today’s reproduction technology. (Paris Las Vegas Public Relations, www.parislasvegas.com).

Elsewhere in the resort are detailed replicas of Parisian landmarks including the Eiffel Tower, Arc de Triomphe, Paris Opera House, Louvre, and the Hotel de Ville (Professional Convention Management Association, 1999).

The culmination of the contemporary strip are the Bellagio and the Venetian, and here the importance of detail and authenticity are taken most seriously of all. The Bellagio is a massive, water-side complex that features the “Fountains of Bellagio”—a water ballet set to music that plays every half hour after dark. The Hotel and casino areas are approached by arcades of speciality shops—the main of which is the Via Bellagio. These feature high-class brand names. Among these is Picasso’s Terrace, with the artist’s works on the walls, and the Bellagio Gallery of Fine Art, which holds exhibitions, and the adjacent Gallery Store, designed in the style of museum shops, and providing “a destination for the cultural traveler where previously there was no market” (Macy, 2001). The Venetian is a themed casino with elaborate images and forms of Venice, including richly decorated ceilings to the forecourt and in the hotel lobby, Venetian-style arcades leading to the casino area and gondolier rides for guests. The design incorporates elements of the Doge’s Palace and St Mark’s Square. There is a Ballroom, Congress Center and meeting rooms, and an extensive shopping area (“The Grand Canal Shoppes”) that feature clothing, shoes, jewelry, art galleries, gifts and restaurants. In the words of the Resort Guide:

You are invited to relish the ageless history, inspiring architecture and ambience of Venice. You are invited to stroll through the magnificent, arched hallways and streets that have inspired artists, poets and romantics for centuries. The Venetian is perhaps the most extraordinary tribute to the beauty and romance of Venice.

The Venetian pushes the industrial archaeology of Las Vegas to its current limits by using the tradition of the decorated shed to claim both authenticity to history, and an improvement on the past. Its colonnades, arches and frescoes are painstakingly researched, larger than life and presented as they could have been imagined by an early Renaissance traveler, fantasizing about a grand plaza or palace about to be encountered. The Venetian is “old but not shabby,” and “aging without weathering:”

As a result, this Venice feels clean, comfortable and welcoming, evoking that peculiarly potent yearning for a place and time that never existed.

In the definitive, perhaps apocryphal, words of one visitor:

I’ve been to Venice, and tacky as Las Vegas is, this is a lot nicer than the real one. It smells a lot better. It’s so organic over there (Curtis, 2000).

The Venetian resort’s particular coup in this scramble to the apex of Las Vegas cultural form was its partnership with the New York Guggenheim. While subsequently not as successful as hoped, the

Guggenheim Las Vegas brought an opening collection of 44 Masterpieces to the Strip. “Masterpieces and Master Collectors: Impressionist and Early Modern Paintings from the Hermitage and Guggenheim Museums” was intended to show the “distinct but highly complementary strengths of their collections,” and focuses on the late-19th and early-20th centuries, when the collections overlap:

For the Hermitage, the classic early Modernist works by Paul Cézanne, Camille Pissarro, Paul Gauguin, Henri Matisse, and Pablo Picasso serve as a finale to their encyclopedic collection tracing Western European art back to ancient times. In contrast, the Guggenheim collection begins with these Modern masters, the early avant-garde touchstones from which later Modern and contemporary art has progressed through the present day (Guggenheim Hermitage Guide, Fall 2001).

For Thomas Krens, Director of the Guggenheim, opening in Las Vegas was to bring civilization to the frontier:

The museum has to make a very powerful statement that cuts right across the main themes of Las Vegas. If you see a city that has embraced artificiality, we will make something that is absolutely the opposite, a very aggressive, even brutal statement (Sudjic, 2000).

For its part, the Venetian anticipated that the attraction of the gallery—and the Guggenheim name—would bring 6,000 visitors a day, with daily revenues of \$90,000, and an increase of between \$5m and \$10m in gambling revenues, as visitors turned from the delights of Gauguin and Matisse to those of the slots, roulette and poker (Bussel, 2001; Strow, 2001).

Beneath all of this, though, is the decorated shed that Venturi, Scott Brown and Izenour perceptively recognized back in the 1960s. This thread of continuity was reinforced by Dutch architect Rem Koolhaas in his design for the Guggenheim gallery in the foyer of the Venetian. The interior and exterior walls of the gallery are constructed from panels of Cor-Ten steel—a rust-coloured, textured industrial metal that is intended to produce “a stark modern contrast to the ornate architecture of the Venetian” (Guggenheim Hermitage Museum, 2001). This return to Venturi, Scott Brown and Izenour’s recognition of the underlying industrial structure of the Las Vegas entertainment complex seeks to strip away the pretence of the simulacrum—the illusion that the image is reality:

“Koolhaas” art machine is meant as an alternative to Las Vegas’ own machinery of seduction. The openness of the space provides the breathing room for unconstrained thought—a place where one can discard received notions about the culture that surrounds you. Its starkness suggests an unmasking of the hard truths that lie beneath the glitz (Ouroussoff, 2000).

SOUTH AFRICA'S CASINO CULTURE

South Africa's casino culture is a direct product of the Las Vegas lineage, and the huge investment in destination resorts a hemisphere away from Nevada has been directly fuelled by North American capital and Las Vegas expertise. As good an introduction as any is the Emerald Safari Resort and Casino, built on the bleak highveld an hour or so from Johannesburg, opened by Nelson Mandela in May 2001, and majority owned by London Clubs International, which counts among its other interests the Las Vegas Aladdin, with its oriental and North African market theme (Figure 2). Here again is the historic theme, couched now in the familiar genre of African adventure. "There are legends in Africa," we are told:

... passed down through the sands of time, whispered in the village tales of tribesmen and the fevered dreams of explorers. They tell of a journey from the fairest Cape, through the vast reaches of a continent shrouded in mystery and a million myths, to the fabled lands of the Pharaohs. They tell of shimmering sands, horizons that shift and change, of impenetrable



Figure 2. Entertainment and the African exotic. Emerald Safari Resort and Casino.

forests and predators biding their time, of sandy beaches and aquamarine seas. They tell of a place where nature yields forgotten pleasures, where African rhythms flirt with the night and fortunes are on in the skip of a heartbeat. They tell of a treasure that lies waiting to be discovered on the banks of the Vaal River . . . a fabulous oasis of relaxation and pleasure less than an hour's drive from the hustle and bustle of Johannesburg. They tell of the Emerald Safari Resort and Casino, the new jewel of Africa (Emerald Safari Resort and Casino, 2001; see also Hall, 1995).

In a rather extraordinary juxtaposition of political themes, the Emerald celebrates Nelson Mandela, high colonialism: "a unique realization of the dream of colonial entrepreneur Cecil John Rhodes," and the new elite:

. . . the trick is successfully to translate African design within a contemporary context so that it becomes a way of life. Africa is stylish; Africa is class. You've just got to have the guts to go out there and prove it . . . (Interior designer Potlako Gasennelwe).

And the Emerald is an opportunity for Las Vegas to appropriate Disney Animal Kingdom, with accommodation in safari lodges and an adjacent Animal World. But the heart of the complex is, as always, the casino and shopping mall—the decorated shed that anchors themed entertainment:

In the Zanzibar Dome you can wander through the bustling Moroccan-style *souk*, a street market of narrow archways ablaze with colour, rich with spicy aromas and filled with speciality restaurants and bars. Roam along the Rocky River up the continent of Africa . . . from the Cape of Good Hope to the place of Mosi-oa-Tunya, the smoke that thunders. Then on to Bazaruto and across equatorial Africa to Marrakesh. Discover a cultural village with its indigenous craft markets. Visit the fine shops in the Cape Workshop and let the kids indulge in a variety of fun and entertainment—from the adventure playground and Solomon's mine to the 10 metre high climbing wall and adventure golf (Emerald Safari Resort and Casino, 2001).

The Emerald is one of a set of South African destination resorts, similarly inspired and financed, and enabled by the political transition in South Africa in 1994, and the subsequent dismantling of the apparatus of the apartheid state. Earlier casinos had either been in the homeland areas, perpetuating the myth of Calvinistic propriety in white South Africa, or illegal. The *National Gambling Act* of 1996 set the basis for national norms and standards for gambling, and the criteria for granting gambling licences. A maximum of 40 casinos was allowed, to be distributed across the Provinces. By 2001, an estimated \$2 billion had been invested in casino development, with forecasted returns based on the expenditure of 2% of personal income on gambling.

It was predicted that most customers would be from low income groups, living close to the new casinos. At the same time, enabling legislation was designed to promote “black empowerment” through investment opportunities (HSRC, 2000).

Two further examples of these new South African destination resorts serve to illustrate the principle characteristics of the group as a whole. The first of these is in sight of Table Mountain, at the point of origin of white South Africa in the mid 17th century. Here, the Grand West Casino and Entertainment World uses the now familiar decorated shed to offer an eclectic historical theme. The holding company, Sunwest International, has 51% of its equity in the hands of “historically disadvantaged shareholders,” and its GrandWest project was the largest-ever investment in the region’s tourist industry. The complex includes two hotels, an Olympic size ice rink, a movie complex with six cinemas, a children’s crèche and entertainment park, a Revue Bar with adult entertainment, and 24-hour restaurants and fast food outlets. The rewards were immediate, with a reported 26,000 visitors a day in the resort’s first three months of operation (McNally, 2001).

GrandWest’s theme is the colonial architecture of the Cape:

... a recreation of historic Cape Town... From the impressive old Post Office building and the Grand Hotel to the streets of District Six, GrandWest Casino and Entertainment World is both a step back in time, and a leap into the future with smart-card gaming. Our 40 room, four-star, full-service Grand Hotel is a recreation of the historic establishment which used to grace Adderly Street. Its historic façade recreates an era long since forgotten in the modern metropolis of 21st century Cape Town. The more affordable City Lodge features 120 rooms and is modeled on a Cape-Dutch homestead, complete with a traditional gable (www.suninternational.co.za).

In the words of Ray Duxbury, an architect whose team of 12 was responsible for the design of the complex:

The solution in the end leapt, almost out of its own volition, from the pages of the Cape Town architectural annals. ... Cape Town woke up late to the desirability of preserving architectural assets and as a result one famous and well-loved landmark after another was demolished, each taking with it a large piece of the Mother City’s visual history. Out of this evolved our vision of a themed casino development which would recall the vanished symbols of Cape Town’s past (McNally, 2001:60–61).

The result is a set of façades looking outwards from the perimeter of a massive, steel-frame shed, and each carefully designed full-scale from archival photographs (Figure 3): the Old Post Office (built in 1897 and



Figure 3. Reconstructed heritage. Façade at the GrandWest Casino, outside Cape Town.

demolished in 1942), the Grand Hotel (built in 1894), the Tivoli Music Hall (demolished in the 1930s), the Alhambra Theatre (demolished in 1970), and the Old Railway Station (built in 1905 and demolished in 1968).

Competing for honours in the new destination architecture is Montecasino, a massive entertainment complex in Johannesburg's suburbs (Figure 4). Montecasino is modelled directly on the Las Vegas Renaissance, and was developed in partnership with the Strip's MGM Grand. The organizing idea is a hill-top Tuscan town with its origins in the early Renaissance. This concept allows the combination of classical architectural and decorative themes and a patina of relaxed and charming decay. Eduardo Robles, President of the design firm Creative Kingdom, describes the project thus:

...designing such a fantastic destination was no simple chore. We were charged with the challenge of creating the illusion of an Italian hillside village indoors. Our client required as much authenticity as possible, so we took our team of designers and art directors on a research trip to Italy, visiting



Figure 4. Shed on the highveld. Exterior of the Montecasino resort, outside Johannesburg.

the many hillside towns of Tuscany. What has come back is the warmth and romantic comfortable hospitality of the area. You really feel as if you are in the hills of Tuscany. (Watkins, 2001)

Simon Black of Blacksmith Interiors states:

We emulated accurately how the sun bleaches buildings over the 600 years, where dirt collects, smoke, soot on chimneys, bird droppings on trusses, how awnings weather. For six months, the team mottled, added grime, knocked off edges that would be damaged, cracked things and stained them. The poor builders and cleaners were so confused they kept trying to repair and tidy up. (Watkins, 2001)

There are seven different types of Tuscan neighborhood, ranging from “elite uptown” to a less affluent fishing village. Thirty-five steel trees each have 100,000 artificial leaves, and painted ceilings create environments that range from daytime (blue sky with wispy clouds) to full night (the casino area, with a dawn sky over the casino restaurant). The complex’s web site reports that a visitor from Tuscany was moved to tears by the authenticity.

AN INDUSTRIAL ARCHAEOLOGY OF ENTERTAINMENT COMPLEXES

What are the characteristic features that will shape an industrial archaeology of entertainment complexes such as these? One such characteristic is of course their very diversity, and their propensity for change—an entertainment complex that stays the same ceases to be entertaining, and will therefore cease to exist. But behind these chimera there are common features which make the contemporary Las Vegas entertainment professional feel at home when taking the short drive from Johannesburg International Airport to Caesars Gauteng.

Firstly, the entertainment complex is a destination—the objective and end point for journeys by large numbers of people. Consequently, the entertainment complex is a node in the economic and cultural landscape, serviced by freeways, airports and public transport systems, and by a concentration of secondary service industries (Harvey, 2000). Las Vegas is the epitome of this characteristic, located spectacularly in the Mojave Desert, serviced by a highspeed freeway and one of the busiest airports in North America, and radiating its “intense, superficial energy” into the night sky (Baudrillard, 1988:127). But the same applies to urban destinations such as the gentrified and restored waterfront complexes of San Francisco, Baltimore, Sydney and Cape Town, or complexes such as New York’s revitalized 42nd Street (Hannigan, 1998; Sagalyn, 2001). In the South African case—unique because a national system of entertainment complexes has been designed synchronously, as the consequence of a single act of legislation—casino resorts have been carefully positioned in the landscape such that they are fairly distributed across the provinces (distributing employment opportunities and tax revenues) and close to, but a distance away from, major population centres. Entertainment complexes have shaped the geography of the late-20th century, and their industrial archaeology will be interpreted in a framework of transport systems, nodes of economic development and patterns of urbanization.

Further, and following from this, the entertainment complex is a major employer of both specialized professionals and large numbers of low-skilled labour. Whether the Las Vegas Venetian or the highveld’s Emerald Resort, entertainment industries require kitchen assistants, waiters, cleaners, attendants, security staff and a host of other low-wage workers. Fluctuations in demand will be met by cut-backs in employment, such as happened in Las Vegas after September 2001. Consequently, entertainment complexes will tend to have a symbiotic relationship with reservoirs of low-skilled labour—migrant workers from

Latin America in the case of Las Vegas, and South Africa's massive black townships. In this respect, the entertainment complex can be seen as an equivalent of the 19th century mill town, and its industrial archaeology will take account of the extensive labour supply and maintenance systems that are the essential infrastructure for casinos, restaurants, shops and hotels.

Because the entertainment complex requires high levels of low-skilled labour to survive, and will tend to respond to downswings in demand by laying off workers, these conurban nodes are characterized by sharp differences between the affluence of their large numbers of visiting clientele and the economic hardship of a large sector of their workforces and their dependents. This particular socioeconomic structure requires well-developed control mechanisms: security fencing, check points, secure identification systems, well-developed surveillance, policing, and enforcement. In this sense, the entertainment complex is in the lineage of the panopticon, and its design and structure will reflect a high level of concern for security systems. This is well disguised in Las Vegas, where there is a sophisticated illusion of freedom on the Strip or on the floor of the casino—although try any form of unusual behaviour among the slots, and the extent of constant surveillance will become immediately apparent. In South Africa, with high levels of urban violence, insecurity and fear, the illusion of protection is more important than the pretence of freedom, and complexes such as Montecasino and GrandWest promote themselves as protected enclaves, free of muggers and hijackers—although Montecasino featured spectacular armed robberies in the months after it opened.

The entertainment complex, then, is a factory—a set of buildings, systems and support networks dedicated to production. And the products are experiences: eating, movies, gambling, browsing displays of high-end commodities. This is Pine and Gilmore's "experience economy," in which experiences have been decoupled from services, and which are an economic output in their own right. Thus experiences are offered

... whenever a company intentionally uses services as the stage and goods as props to engage an individual. While commodities are fungible, goods tangible, and services intangible, experiences are memorable (Pine and Gilmore, 1999:11–12).

In George Ritzer's felicitous phrase, entertainment complexes are among the "cathedrals of consumption" which depend on a combination of efficiency, the slick and reliable production of the expected in the tradition of McDonalds, and enchantment through the use of spectacle (Ritzer, 1999).

The hub of such experiences—the common feature of the Luxor and Sahara, of GrandWest and Montecasino, and of Caesars Las Vegas and Caesars Gauteng—is gambling. The casino offers the experience of risk that is sanctioned and appears to be safe (Gephart, 2001). The great achievement of the Las Vegas renaissance was to take what had previously been outlawed—gambling and sexual excess—and repackage it as family entertainment. The sleight of hand in South Africa’s gambling legislation was to take the underbelly of apartheid—a moralistic white society that promoted gambling and prostitution in black homelands—and represent it as black empowerment, job creation and respectable entertainment. If there is to be a single type artefact for the entertainment complex, it must surely be the roulette wheel.

Selling memorable experiences, however, is not straightforward. Pine and Gilmore (1999) describe the principle challenge for the designers and managers of entertainment complexes as the avoidance of the “commoditization trap”—the disillusionment of customers because things seem to stay the same. In contrast, then, with mass entertainment and the earlier service economy, the experiential economy tends towards customization, creating the impression that every experience is unique, and created for the individual alone. As factories, entertainment complexes are multi-dimensional stage sets rather than production lines, seeking to evoke awe through scale, special effects and constant change. At their heart are the massive frame structures which support the lighting and projection facilities, backdrops and facades—the sheds that Venturi, Scott Brown and Izenour identified behind the glitz and neon of the Strip some 40 years ago.

Claims to rarity and authenticity are particularly useful because they offer the “Kodak Moment”—the memory of an association with a unique object or image (Urry, 2002). Hence the value of one of a kind prints sold in an accurate reconstruction of a Paris Street, a full scale replica of the Doge’s palace, the finest detail of an alluring Tuscan landscape amidst the dry winter dust of the African veld or, particularly, the originals of 44 unique paintings, insured at twice the cost of building the entire Venetian resort. This drive to create the illusion of the unique experience makes historic and exotic themes particularly useful. History has only happened once, and there is only one Eiffel Tower, St Mark’s Square, colonial Cape Town, or Ancient Rome (Hall, in press). Once a new resort on the Strip or a new entertainment complex in South Africa has appropriated a particular line in historical themed entertainment, the basic constraints of the experiential economy dictate that another outfit competing for the same customer base cannot copy it: two authentic Eiffel Towers on the Strip would be silly. Were Las Vegas to have its

Vesuvius Moment, an archaeological team would later recover a definitive assemblage of full-scale historical replicas that defy any logic of time and space, but which are all one of a kind. Such confusion—a defiance of easy, functional, explanation—would be true to the essential archaeology of the entertainment complex:

Death Valley and Las Vegas are inseparable; you have to accept everything at once, an unchanging timelessness and the wildest instantaneity. There is a mysterious affinity between the sterility of wide open spaces and that of gambling, between the sterility of speed and that of expenditure. That is the originality of the deserts of the American West; it lies in that violent, electric juxtaposition If you approach this society with the nuances or moral, aesthetic or critical judgment, you will miss its originality, which comes precisely from its defying judgment and pulling off a prodigious confusion of effects. To side-step that confusion and excess is simply to evade the challenge it throws down to you" (Baudrillard 1988:67).

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Colonisation in the Industrial Age

The Landscape of the Australian Gold Rush

Susan Lawrence

INTRODUCTION

Despite a strong tradition of research on industrial topics, industrial archaeology in Australia has remained an interest rather than a distinct discipline. This is due in part to the small size of the Australian archaeological profession. With approximately 500 practitioners across the country, few are able to develop specialisations more specific than “historical,” “maritime,” or “Aboriginal.” Of greater significance is the intimate link between industry and settlement that has characterised the British colonisation of Australia. The Australian economy has always been based on primary production, and British settlement has always been with an eye to extracting resources, whether they be cereal crops, wool, timber, fisheries, or minerals. Even the convict system was buttressed by the secondary aim of resource extraction. The location of a significant number of penal settlements was chosen because of the proximity of desirable resources: flax and timber in the case of Norfolk Island, coal at Newcastle, New South Wales, and timber at Macquarie Harbour, Tasmania are just a few examples. The story of British settlement in Australia is the story of the spread of industry.

The timing of British colonisation resulted in an almost immediately industrial society, because following the initial convict landing in 1788, colonisation largely occurred during the 19th century as the processes of industrialisation unfolded. Hunter-gatherer society was displaced by the Industrial Revolution, with no intervening period of

semi-isolated colonial agriculture. The first British settlers were reliant for many years on imported foodstuffs, including meat and grain, and their very survival was only possible because of the advances in manufacturing and transportation that were taking place in the United Kingdom. The colonists were also reliant on imported manufactured goods, from prefabricated houses to the leather for shoes, Staffordshire ceramics and the empty glass bottles into which imported alcohol was decanted. Local manufacturing was slow to emerge, tentative, and frequently short-lived. Import-replacing industries, such as James King's pottery at Irrawang, NSW, did not commence until the 1820s and 1830s (Bickford, 1971) and quickly collapsed due to the ready availability of cheap imports. Those manufacturing industries that did survive, such as footwear and bottle making, were usually closely related to primary production (surplus hides from the wool industry, in the case of footwear), or the food and beverage industry.

The close relationship between archaeologies of industry and settlement in Australia is not inappropriate, because industry is a social activity (Knapp, 1998). It is dependent on the collaborative and integrated efforts of many individuals. People come together in concentrations on the landscape because of the influence of industry, and industry has further spatial dimensions because the chain of production provides a means of linking together otherwise distant geographic locales (Alfrey and Clark, 1993; Hardesty, 1988). The communities that develop around particular industries are as much of interest as the industries themselves, because the nature of the industry intimately effects the community that develops around it. The influences include the number and characteristics of the people involved, such as the age, gender, ethnicity, and class structure of the work force and the health impacts of the industrial process; the way the industry uses space, including topography and resources such as power, water, timber, and gravity; and the interaction with the outside world in terms of the access to and extent of trade networks, and transport and communication systems. The nature of industry will influence the duration of settlement, with non-renewable extractive industries for example being finite in duration. Different industries have different environmental impacts, which will also effect the characteristics of the community, and the economic structure of the industry will have further effects, including the amount of capital required and the quantity of wealth generated. In this paper a case study from the archaeology of gold mining will be used to illustrate that, in Australia at least, the archaeology of industry cannot easily be separated from the archaeology of colonisation, settlement, and imperial expansion.

The Australian gold rush of the 1850s saw the landscape and population of the young colony of Victoria transformed by the mining industry. The discovery of gold overturned the patterns of the recently established pastoral society that preceded it, and created new patterns that have shaped Victoria into the present day. This impact can be traced at multiple levels, from the distribution of the population on the landscape and the shape of settlement itself, to the built environment of public and private space, all of which are the consequence of the mining of the mineral deposits. More subtly, the exploitation of Victorian gold was only possible because of the Industrial Revolution. The rapid movement of information and people that characterised the gold rush was facilitated by the emergence of steam transport, and steam was also crucial to the technology of gold extraction and processing. Even at a domestic level, people on the goldfields were reliant on the mass-produced consumer goods that shaped their daily lives. The Industrial Revolution was an integral part of the lives of Victorian colonists, and the archaeology of mining settlements is the archaeology of industry.

Recent research on one Victorian goldfield, Mt. Alexander, centred on the town of Castlemaine, 100km north of Melbourne, will be drawn on to illustrate relationships between settlement and the mining industry (Figure 1). Gold was discovered at Mt. Alexander early in 1852, and



Figure 1. Location of Castlemaine.

it quickly became the largest and richest surface alluvial goldfield in Australia. However, while the surface was rich, underground reserves were limited and the field did not go on to develop a stable industrial base in hard rock mining. Lack of subsequent development meant that much of the original gold rush landscape remains intact, and much of the land in the region remains in public hands in what is now the Castlemaine Diggings National Heritage Park. These factors mean that the district now provides a unique insight into original European settlement patterns. Since 1999 the Mt. Alexander goldfield has been the subject of archaeological and historical research carried out under the auspices of the Mt Alexander Cultural Heritage Project, a collaborative project between the History Department of Melbourne University, the Archaeology Program at La Trobe University, Parks Victoria, the Museum of Chinese Australian History, and the Friends of the Mount Alexander Diggings.

THE AUSTRALIAN GOLD RUSH

Gold was officially discovered in the colony of New South Wales in 1851 by a returned Californian digger, Edmund Hargraves. The excitement stimulated exploration in the other colonies as well, and a few months later gold was also discovered north of Melbourne, Victoria. The Victorian diggings proved to be even richer than those of New South Wales, and by 1852 shiploads of hopeful migrants were arriving from Britain and California. In that year alone it is estimated that more than four million ounces of gold were recovered from the Victorian diggings, and by the end of the first decade of gold mining Victoria had produced nearly 25 million ounces (Serle, 1963:390). Experienced miners and prospectors spread out from Victoria and participated in gold rushes around Australia and New Zealand, a golden dream that lasted 50 years (Blainey, 1963). In 1858 gold was discovered near Dunedin, New Zealand, in 1867 in north Queensland, and in 1892 at Kalgoorlie, Western Australia. Minor discoveries in South Australia, Tasmania, the Northern Territory, and New Zealand's North Island left no part of Britain's Antipodean colonies untouched.

The gold rush marked a watershed in Australian history because it signalled the end of the convict system, and the economic dominance of pastoralism (Blainey, 1963:59–63). It was of particular influence in Victoria, partly because of the sheer size of the rush, and partly because the discoveries happened only 16 years after the first permanent British settlement was established. Gold quickly overturned the customs of

the young and still-fragile colony, and laid the foundations for something quite different. Victoria became the financial and industrial powerhouse of the Australian colonies, a position that was unchallenged for the next century. The upheavals of the gold rush also caused political change. In 1855, following a miners' rebellion that culminated in armed revolt at the Eureka Stockade in Ballarat, the franchise was extended to all those who took out a Miner's Right, or license to mine (Blainey, 1963:56-57; Serle, 1963:98). New electoral divisions were created to encompass the goldfields, and for the first time in Australian history working men were able to make their voices heard in Parliament.

SETTLEMENT PATTERNS

The gold rush changed the physical landscape as well as the political and economic ones. It laid the foundations of the network of towns, roads, and rail connections that is still used in Victoria. The influence of gold can best be seen by comparing the character of non-Aboriginal settlement at the beginning of the rush with that of 1861, after nearly a decade of frantic industrial activity. As a starting point, the population itself was considerably larger: 77,345 in 1851 (not including Aboriginal people) compared with 540,322 a decade later (Serle, 1963:362). The gender balance was about the same in both years, with 40% of the population female, but that disguises the imbalance that prevailed at the height of the rush between 1852 and 1854 when only 34% was female. In other respects however, it was a very different population after the discovery of gold. In 1851, non-Aboriginal Victorians had been almost without exception of British extraction, with only 6.3% from places other than the British Isles or the Australian colonies. By 1861, there was a noticeable proportion of the population from continental Europe and North America (6%), but the largest non-British group was the Chinese, who made up nearly 5% of the population (Broome, 1984:98).

This larger population was distributed quite differently through the colony. In 1851, the economy was strongly, almost exclusively, pastoral, and most people lived on isolated sheep stations. There were a few clusters of population along the coast, particularly at ports such as Warrnambool, Port Fairy, and Port Albert, that serviced the inland grazing runs, and 31,000 people, or nearly half the population lived in the two major ports, Melbourne and Geelong (Serle, 1963:3; Dingle, 1984:36). Otherwise, the population was very diffuse, with only a handful of inland centres, none of which had more than a few hundred inhabitants.

These villages were at major river crossings, such as Wodonga on the Murray River, Seymour on the Goulburn, and Wangaratta on the Ovens, or established as postal depots along the few inland roads, as were Buninyong, Hamilton, and Colac (Priestley, 1984:68).

A decade later, 42% of the population lived inland on the goldfields of central Victoria, and only 23% lived in Melbourne. Of those on the goldfields, the majority lived in large towns. Three inland towns, Ballarat, Bendigo and Castlemaine, had populations of more than 10,000, and Ballarat alone had more than 20,000 inhabitants. A further six inland towns had between 2,000 and 5,000 residents (Serle, 1963:370). Whereas the earlier pastoral villages were located at cross-roads or at river crossings, the locations of these new industrial towns were determined by the underlying geology. The towns grew where mineral deposits were concentrated, and roads and water were later considerations. The largest towns quickly became manufacturing centres as well, with foundries and engineering works to serve the mines, and flour mills, brickworks and cordial factories to serve the workers.

The network of road and rail transport that developed in Victoria also indicates the central importance of the gold mining industry, as all the major transport nodes, and the earliest rail lines, were focused on the mines and the mining towns (Blainey, 1966:230–234). The only significant roads during the pastoral era of the 1830s and 1840s went north from Melbourne towards Sydney, west and north to the coastal settlements of Portland and Port Fairy, and west and south to the coast at Warrnambool (Priestley, 1984:49). A government department dedicated to roads was not formed until 1852, and then its major tasks were constructing roads to the gold districts and beyond. Ballarat and Bendigo became the nodes from which the major highways to the north and north-west of the colony originated (Priestley, 1984:51–53). The first railways in Australia were built in the 1850s with gold rush capital and linked Melbourne with Hobson's Bay (Port Melbourne) and Geelong. The first inland railways in Australia linked the coastal ports with the goldfields. In 1862 rail lines were built from Geelong to Ballarat, and between Melbourne and Castlemaine and Bendigo. The Ballarat line was extended to the gold towns of Maryborough and Avoca with other branches to the goldfields at Ararat and Stawell. The line to Bendigo eventually went north to the Murray River at Echuca, connecting Melbourne with the wool growing districts of the inland. However, it was not until the end of the 19th century that either road or rail networks were extended more generally to meet the needs of agriculture.

INDUSTRIAL LANDSCAPES

In addition to determining where settlement occurred, the mining industry also played a crucial role in the shape of settlement and the landscapes of the gold districts. Distinctive systems of land tenure and the changes wrought on the natural environment both contributed to the landscape that exists today. The form of settlement on goldfields is distinct from that elsewhere in Victoria, where surveying generally preceded settlement. While other towns are laid out on a formal, rectilinear grid, goldfields towns are linear and dispersed. Their layout was determined by the location of resources, primarily minerals, but also by the location of water and level ground, rather than the predetermined plan of a government official. At the time gold was first discovered most land in the colony was crown or public land, largely unsurveyed, and held under short-term lease by the owners of pastoral stations. Thus, when a new gold discovery was made there were few pre-existing guidelines or constraints to influence the layout of the resulting settlement.

By the time the overworked government officials were able to formally survey towns at the goldfields, land was already occupied and tracks already formed. Official (and grid-based) townsites laid out by the government surveyors had to avoid the mining activity and so were located adjacent to the diggings, leaving the initial expedient pattern essentially untouched. Today the street maps of many goldfields towns reflect this twofold process, with an orderly grid of streets housing the post office, court house, banks, and police station, and long, meandering streets through scattered miners' cottages, pubs, and shops.

The industrial landscape of the gold districts is epitomised by the Mt. Alexander goldfield (Figure 2). At the core of the field is Castlemaine, surveyed in 1852 as the official township. It is a long rectangular grid of streets on both banks of Barker's Creek with the former Government Camp in the southwest corner of the grid. The Camp was the seat of authority on the field, and it was here that the police, the Mining Warden, the courthouse, and the gaol were located. The Castlemaine Camp occupied high ground overlooking the flats of the miners' town. Practically, this position left the more auriferous ground available for mining, but strategically it was a viewpoint from which the police and the Mining Warden were able to monitor the miners' activities. It is surely no coincidence that Government Camps on other diggings were situated in similar positions, fixing power in the landscape.

The centre of the mercantile establishment was across the creek on the hill opposite the camp. Banks, shops, churches and the post office

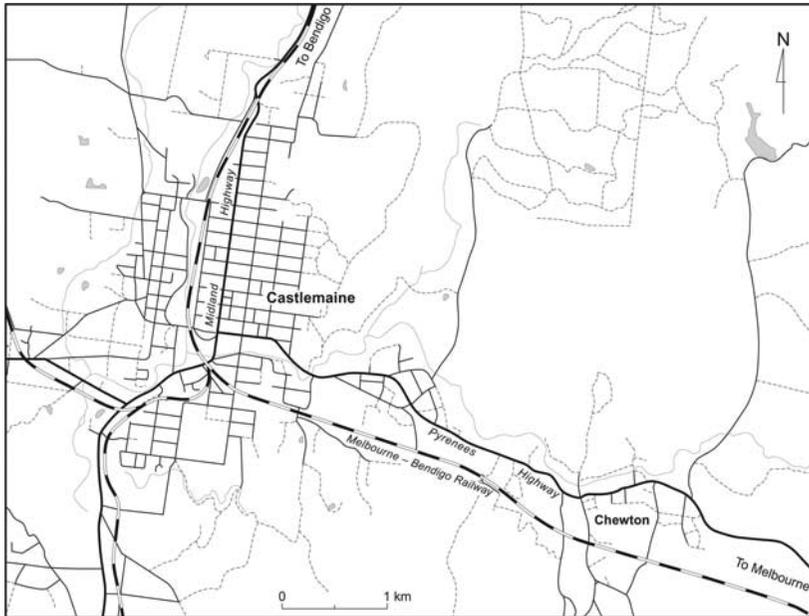


Figure 2. The grid plan of Castlemaine, the government town, and the organic plan of Chewton, showing the influence of the diggings.

were arranged on the streets surrounding the Market Square, along with, later, the art gallery and the mechanics institute (Figure 3). The Botanic Gardens, established in 1856, are along the creek in the north-western corner of the grid. Filling in the grid are the ordered streets of neat, substantial cottages and the mansions of the mine owners. Together the Camp and the town presented all the features of an ordered and civil society, only a decade after the first miners arrived.

Abutting the bureaucrats' town is Chewton, the more disorderly and anarchic town of the miners. Its shops and houses straggle for nearly five kilometres along the road running southeast from Castlemaine, following the course of Forest Creek where the gold was found. The road itself is narrow and meandering, quite unlike the broad, straight thoroughfares of Castlemaine. Here the diggings and the Miners' Rights claims took precedence over rigid surveys. Main Road, Chewton, bends around the shadows of old claims and the ghosts of old stamp batteries. Hotels, or pubs, are generously strewn along its length. Some of the cottages are substantial brick structures, but many are tiny, tumble-down weatherboard huts. They sit directly on the road, with scarcely any front garden.



Figure 3. The Castlemaine Market Building, 1862.

While the white miners had autonomy to live where they liked, the Chinese were more closely regulated, and the residential landscape of the goldfields was one of strict racial segregation. There were 5,000–6,000 Chinese miners on the Mt. Alexander field, and from 1855 they were directed to live in special camps (Bradfield, 1972:58; Serle, 1963:324). Officially this was for their own protection, as they were continuously subjected to minor assaults and major violence, but it also made them easier to tax and to monitor. The Chinese Camp at Mt. Alexander was in the nearby village of Guildford, and its rigid grid of streets set it apart from the domain of the white miners as a zone of official control and surveillance.

Lots in the surveyed towns were quickly converted to freehold and sold, providing stability for government and commercial interests. Until the late 1850s, there was little surety of tenure for the occupants of other land, particularly for residential purposes, as most land regulations dealt with mining interests and people were left to build houses where they may. The lack of secure title to land and any improvements on it was the negative side of the freedom to choose one's house-site at will. Uncertainty of ownership and the ever-present prospect of a better, newer gold discovery just over the horizon meant that building was temporary during this period and canvas tents predominated.

By the end of the 1850s a series of reforms to mining and land acts meant that people could now hold land under a variety of freehold and leasehold schemes. The most important reform, certainly in the short term, was the provision for residential areas under the Miners' Rights system (Serle, 1963:98). The Miner's Right entitled the holder to a mining claim and also to a quarter-acre block of land on which to build a house (Birrell, 1998:41). While the land remained the property of the Crown, any improvements on the residential area could be bought and sold. Substantial Miner's Right cottages of timber and brick now proliferated across the goldfields districts as people eagerly took advantage of this inexpensive and secure way of obtaining land (Figure 4).

By 1865 the Miner's Right entitlement was supplemented by annual occupation licenses, under which people could apply for blocks of up to 20 acres within 10 miles of a goldfield (Birrell, 1998:94). Here too the land remained in Crown hands so that it could be resumed if gold was discovered, but the improvements could be bought and sold, and there was sufficient land for small-scale farming. By 1868 the size of the blocks had been enlarged to 160 acres, at a distance of up to 30 miles from a goldfield. Many of those who took up the occupation licenses were mining families who were able to continue mining while working their land (Lawrence, 2000:71–102).



Figure 4. The sawtooth roofline of a typical miner's cottage.

Alongside residential areas and occupation licenses mining families had access to Crown land in other ways. Goldfields Commons were declared on many goldfields in 1860. Commons perpetuated the English tradition of shared rights of access. Their principal purpose was to provide grazing land for miners and other small holders in goldfields districts (Powell, 1970:81). This was an important feature of the land tenure system, because it enabled those with Miners' Rights to keep stock, such as goats, horses, and a dairy cow, which would otherwise have been impossible on the quarter-acre block of the residential area. At the same time, the land, as much as 50,000 acres in some cases, remained in the public domain.

The imprint of Miners' Rights, Occupation Licenses and Commonage is still visible in the bush around Castlemaine. The diggings extended out from Castlemaine and Chewton into the hills and gullies of the surrounding countryside. This was the land originally part of the Goldfields Common, and much of it is still in public hands today. An archaeological survey of residential sites outside the surveyed townships was carried out in 2000 (Figure 5). The survey covered approximately one-third of the area included in the Mt. Alexander goldfield and identified 300 sites (George, 2001:11). It documented both the spatial extent of settlement and the clustering of houses within

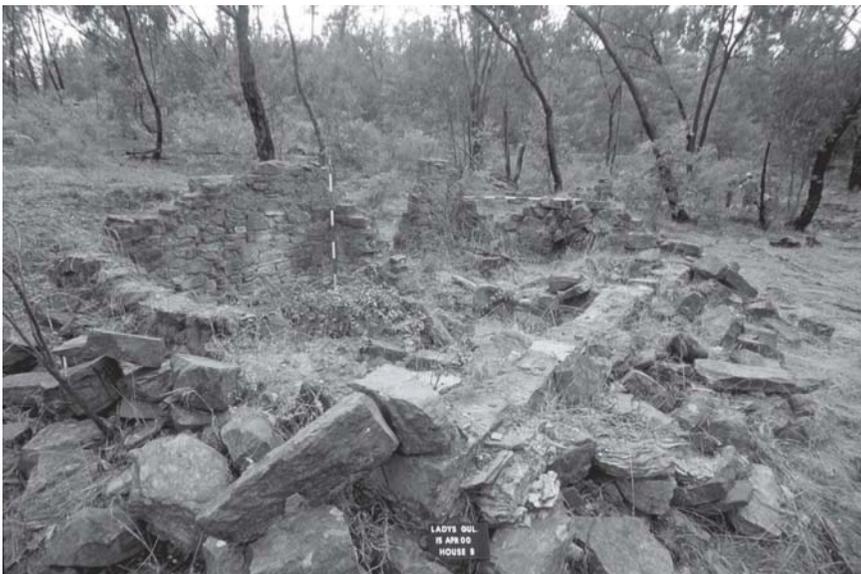


Figure 5. A ruined cottage at Lady's Gully.

particular locations. Residential sites were found throughout the area surveyed, and several factors seem to have influenced the choice of home site. One was the location of mineral deposits. Comparison of the surveyed sites with mineralogical maps indicates that most of the houses were associated with either quartz reefs or alluvial gold, or both. Proximity to work was therefore one of the prime determinants of house site. This is the case with single houses, which are usually associated with alluvial deposits and individual claims, and also with house clusters. Where underground mines or stamp batteries were situated up to a dozen households might cluster together. The mine and battery at Eureka Reef supported a hamlet of the same name, while the Nimrod Reef was worked by Welsh miners living at the nearby Welsh Village, and the Sebastopol Reef was the focal point for settlement in Lady's Gully (Harrington, 1996; Hill, 1998; Lawrence, 2000).

People also favoured certain kinds of settings. Of the sites recorded, only 5% were on the tops of ridges. More than half were located in gullies or where two gullies joined, and 15% were on open flats. It seems people preferred the shelter offered by the lowlands rather than the hilltop views that would probably be favoured today. Locations in the gullies also offered greater proximity to water, of great concern in the dry Australian climate.

Mining activity and land tenure provisions interacted to create a distinctive mosaic of settlement on the goldfields, and also led to its survival into the present day. The ruins of residential and industrial activity that are so ubiquitous throughout the Castlemaine region have survived only because of the network of Crown Reserves and State Forests that had its origin in the gold rush. By the end of the 19th century many Residential Areas and Occupation Licenses had been converted to freehold. Many others however reverted to the Crown, and have not been subject to later development. These lapsed leases have been amalgamated with the portions of Commons, Timber Reserves, and other Crown reserves that have survived. The historic significance of the Crown land of the Mt. Alexander goldfield has been acknowledged in the recently declared Castlemaine Diggings National Heritage Park. The national park is the only one in Victoria to be based on cultural heritage rather than natural values, which further emphasises the importance of the archaeological remains it holds.

The ruins in the bush point to the ephemeral and transient nature of the gold industry. The leases that were converted to freehold have been equally important in preserving the imprint of mining. Residential leases were taken up in locations that suited the miners, and their organic street plans formed the fabric of the towns as the leases were

converted to freehold. The larger occupation licenses were also gradually converted to freehold, and their small size relative to the normal blocks released for sale in agricultural areas created a distinct rural landscape in gold regions. Small farm lots remained viable as mining provided off-farm income, and could be used for orchards and vineyards as well as stock and cereal crops. Today these smaller blocks are attractive weekend hobby farms for city dwellers.

While the Crown land at Mt. Alexander is unique in being declared a national park, similar networks of bush can be found throughout the gold districts of central Victoria, and they are now treasured areas of native forest. They are part of the modern landscape of the mining industry because they have survived due to the legacy of gold rush land tenure. However, they do not reflect the landscape created by mining at its heyday, which was quite the opposite (McGowan, 2001). Mining consumed huge quantities of timber and the miners quickly felled all the trees around the diggings. By the 1870s timber for the props in the mines and for firewood (domestic and in the mainly wood-fired boilers) could scarcely be found within a 20 mile radius of mining towns (Wright, 1989:153). Goldfields at that time were bare, dusty, treeless places where the sun beat down with little to interrupt it, and the lack of shade was a characteristic feature of mining landscapes. Today's forests have regenerated from this wholesale clearance, as is born out by closer examination of the vegetation. None of the trees are old growth, and most are less than 100 years in age. Most of the trees are coppiced, with three or four stems emerging from the single original trunk cut off at ground level. The forest is younger, and also denser than the original. In the mature forest the miners found, the trees had trunks a metre in diameter and horses could easily be ridden through the open grassy spaces between trees.

Water catchments were also severely affected by mining. In Victoria's dry climate water shortages were always a problem, and networks of dams and water races were soon being constructed to meet that need. These ranged from small private networks serving a single claim to large public projects like the Coliban Water Scheme with nearly 400 miles of aqueducts serving an area of nearly 300 square miles (Wright, 1989:148). While such schemes diverted natural runoff patterns, the real problem was the mining waste, the silt, gravel, and later, poisons such as arsenic and cyanide, that was washed into the catchments. The sludge choked rivers and creeks and caused floods during heavy rains, while both sludge and poison rendered the water unusable for domestic purposes. Special drains were constructed to divert the sludge into swamps and other low-lying areas, and while this

may have alleviated the problems in the creeks, it destroyed the natural wetlands (Birrell, 1998:95–96). One solution was to have companies store the tailings on site, and by the 1880s mullock heaps the size of small hills loomed over the towns.

CIVIC ENVIRONMENT

Goldfields towns juxtaposed the controlled disorder of the diggings and the imposing solidity of the built environment. Gold generated an enormous quantity of public and private wealth, and in the 1860s and 1870s a considerable proportion of that wealth went into construction. Civic and commercial institutions that were initially housed in canvas tents or bark huts were now accommodated in more substantial premises of bricks and mortar. Not just any bricks and mortar would do however: these buildings were intended to impress, and were finished with the finest and most ornate detailing that the mid-Victorian era offered and that money could buy. Imposing classical columns, ponderous Italianate porticoes, soaring gothic arches, and delicate Victorian wrought iron adorned the new town halls, mechanics institutes, churches, banks, hotels, and post offices. The scale and detail was not just frivolous excess however. The city fathers who caused these structures to be built were intending to create a very specific impression, namely of the respectability and permanence of these new towns that they themselves had created through energy and good fortune. Their businesses, the civic institutions that they served, and their mansions were all designed to symbolically attest to the extent of the personal and collective progress achieved in only one generation.

The legacy of this ambition is the suite of cultural institutions that continue to adorn goldfields towns. Ballarat, Bendigo and Castlemaine all have an art gallery, a library, and an array of public statues and fountains that now seem incongruously out of proportion to the modern-day size and importance of the towns. They have impressive botanical gardens and imposing mechanics institutes, lesser versions of which can be found in many smaller goldfields towns. The collective effect on the visitor is to leave an impression of learning and culture, not to mention the disposable income with which to support these values (Hirst, 2001; Hunt, 2001). The cultural institutions that are so much a part of the civic landscape of the goldfields embody the liberal philosophy of the 19th century middle classes, and particularly that of the self-made mining magnates.

If the leading men of the gold districts wanted to make sure the world took note of their achievements, the working men and women were not far behind in creating material emblems of their own success. For most people success was far less grand, and spending less ostentatious, but there was nevertheless success. The clearest indication of this is in the level of home ownership achieved. Housing on the goldfields was predominantly owned by the families who occupied the buildings. As many as 89% of the houses in Ballarat West were owner-occupied in 1870, but figures of 60–70% owner occupation were typical in most goldfields towns (Dingle, 2001:25). Unlike in other fields of mining, such as the coal industry, copper, and tin mining, these were not company towns (Bell, 1998). The owners of gold mines did not build or own housing stock for their workers. The large mining companies came into existence gradually as the fields developed, so they tended not to control large areas of land beyond the mine on which housing could be built. They also had little need to attract workers, as the men they employed had already come to the district as self-employed miners.

The homes owned by miners and their families sprawled in suburbs around the urban cores and spread out into the bush. The building style of the “Miner’s cottage” is so consistent and ubiquitous that they remain the predominant housing stock in central Victoria today. They are generally timber-framed and clad in weatherboard, with steeply-pitched corrugated iron roofs. The basic unit is a rectangle with a central door on the long side flanked by two windows and a brick fireplace and chimney on one gable end. A veranda was usually added to the front, decorated with turned timber posts and wrought-iron lacework hung from the eaves. When the houses were extended, as they almost invariably were, it was by adding a second, third, or even fourth rectangle, complete with fireplace, on to the back of the first, and as each unit has its own pitched roof, the resulting profile is a row of saw-toothed gables.

The smallest cottages had only two rooms, with possibly a skillion kitchen tacked on behind and a privy out the back. Families in Castlemaine in the 1860s typically had seven or eight children, so space would have been at a premium (Grimshaw and Fahey, 1982:106). The large Miner’s Right lots helped compensate for the lack of room indoors and made it possible to extend the homes. Many families used the lots to plant a garden, growing ornamental plants as well as providing fresh vegetables and fruit for the table. They also kept animals, including chickens on the allotment and goats, dairy cattle, and sheep that they grazed on the Commons (Lawrence, 2001). The eggs, cheese, milk and butter from the animals added to the diet and for women especially, contributed extra income.

INDUSTRIAL CONSUMERS

Victorian miners spent their working lives in industry and they and their families lived in the landscape that industry created. The industrial revolution also shaped their lives as consumers. With the exception of the fresh fruit, vegetables, meat, and dairy products they produced themselves and the furniture made by bush carpenters, virtually nothing in their homes was made locally. Home furnishings, clothing, and store-bought foods were all produced at an industrial scale by large factories overseas, mainly in Britain, and brought to the goldfields by steamship and railway. Aside from the new spirit of consumerism that emerged during the Victorian era, the goldfields were a direct product of the growing availability of industrially-produced goods. Gold rushes were only economically sustainable because those participating did not have to produce their own food, clothing, and shelter. The frenzied activity of a gold rush is quintessentially modern in that respect: its participants are time-poor, but with disposable incomes to spend on services. By the middle of the 19th century gold miners could purchase what they required, even if at exorbitant prices, and spend their time at work. The extent to which consumer activity penetrated daily life is demonstrated by the goods recovered from archaeological excavations.

Artefacts excavated at Dolly's Creek near Ballarat include transfer-printed ceramics from Staffordshire, clay tobacco pipes from Scotland, gin and schnapps from Holland, ale and porter from England, French wine bottles, and American patent medicines (Lawrence, 2000:129-157). Chinese miners had their own trading networks centred on Chinese merchants in Melbourne, but these were no less international. Many of the goods and products they used every day were imported from Canton (Muir, 2003). Excavations of a Chinese settlement at Butcher's Gully recovered both European and Chinese goods. The Chinese goods included porcelain rice bowls, wine cups, and spoons, an iron wok, opium pipes and lamps, and ceramic containers for pickles, soy sauce, rice, and wine (Stanin, 2003). Chinese production methods were centuries-old and still unaffected by the industrial revolution, but the ships and trains that brought the goods to Castlemaine were industrial innovations.

Some imported products, like cloth and buttons, were presumably transformed locally into articles of dress, and foodstuffs such as jam and soft drinks were produced and purchased locally. Otherwise, the archaeological record provides little evidence of local manufacturing or production of consumer goods. By the end of the 19th century there were

some colonial industries that were able to replace imports. Melbourne had a large footwear industry and much furniture was also manufactured there, with the Chinese playing a significant part in that trade. Local potteries were able to produce bottles and utilitarian kitchenwares cheaply enough to compete with imported wares (Ford, 1995). Glass bottles were also made locally for cordials, mineral waters, beer, and chemists' preparations. However, the few archaeological samples of Australian-made goods indicate that inter-colonial trade was rare. Most local goods found at Dolly's Creek originated in Victoria, such as the bottle made for the aerated water produced by Rowlands and Lewis in Ballarat and the bottle made for the Gippsland Brewery. There was one bottle from a New South Wales company, Tooth and Co. brewers in Sydney, but nothing from any of the other colonies (Lawrence, 2000:109).

Even the houses the miners built were made of imported, industrial goods. The earliest structures on the diggings were canvas tents, which many migrants purchased overseas and brought with them, but those purchased locally were made overseas as well. Many of the more substantial buildings erected during the gold rush were prefabricated structures made entirely in Britain (Lewis, 1985). Many were timber, but some were of corrugated iron, an entirely new-fangled and industrial invention. The idea of constructing an entire building in iron was only possible because of industrial advances in iron smelting, which made the material more abundant, and because of new methods of casting beams and posts for the uprights and rolling corrugated iron for the cladding. The use of corrugated iron was not confined to prefabricated structures however. It was imported in large quantities and used for roofing, fencing, and cladding, and is characteristic not only of the goldfields but of Australian construction more generally. Window glass was all imported, as were most iron fastenings and hardware items (Bell, 1998:30). Even the timber was imported and came from the forests of the Baltic Sea and New Brunswick (Bell, 1990).

The mines themselves also consumed industrial products, both locally made and imported. Mechanisation played an important role in the development of mining. It was not until the introduction of the stamp battery in 1854 that the quartz reefs could effectively be worked, and without pumps and winding engines the miners could not have worked the rich reefs a kilometre beneath the streets of Bendigo (Davey, 1996). The stamp batteries, pumps, winding engines, and rock drills were all powered by steam engines, and were characteristic of the machine age. Foundries like Thompson Bros. in Castlemaine built

international reputations on the machines they produced for the mines (Bradfield, 1972:45).

CONCLUSION

The landscape of central Victoria has been fundamentally shaped by the mining industry, and the mining industry in Victoria is a product of the industrial age. 19th Century gold rushes were spurred by the faster communication and transport of steam and supported by the technologies and products of industrial factories. Mining in turn influenced how many migrants came and where they settled. It provided sufficient income for home ownership and produced the legal framework in which homes and land could be owned. Towns, their institutions, and their architecture were all the result of mining wealth and the ideals the miners held. Laws stimulated by the demands of mining ultimately preserved the archaeological traces of mining and miners so that they can be appreciated today.

The example of Victoria's gold rush illustrates the importance of Palmer's (Palmer, 1990:276) statement that "the industrial archaeologist must place the monuments of industry in their topographical and human environment and consider himself as the archaeologist of industrial society." In Australia the co-occurrence of British colonisation and the Industrial Revolution has meant that it is impossible to consider one without the other, to the enrichment of both.

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COMMENTARY



Concluding Comments

Revolutionizing Industrial Archaeology?



Mary C. Beaudry

INTRODUCTION

I was a mere member of the audience at the 2002 Theoretical Archaeology Group conference symposium ('An Industrial Revolution? Future Directions for Industrial Archaeology') out of which this volume grew, and I admit I was surprised when asked by editors Casella and Symonds to participate in publication of the session by offering concluding comments on the revised papers that appear in this volume. I worried a bit about whether I have what in the U.S. is colloquially known as 'street cred' when it comes to industrial archaeology and whether anyone would care what I had to say about the topic. But I rationalized that, having taught IA regularly since 1980 and over the years excavated a number of industrial sites, not just boardinghouse backlots (see, e.g., Mrozowski et al., 1996), I do have an abiding interest in this topic and in its future direction(s). So I welcome the opportunity to make comments and observations on industrial archaeology in general and its potential future trajectory as indicated by the major themes stressed in the essays in this book.

Casella sets out these themes in her introductory essay, which I paraphrase roughly here. First, What is industrial archaeology and what is its proper subject matter? Is it mainly about industrial processes and production? About landscapes? About people? Second, how do we address issues of industrialization, capitalism, and globalization through archaeological evidence of production, distribution, and consumption? Can we contribute to more nuanced understandings of how people whose lives were/are affected by industrialization and

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globalization constructed identities within the overarching structures of capitalism or other monolithic institutions such as Communism or Socialism and the ways in which they exploit, appropriate, subvert, and act upon these structures towards self-determination (Buchli, 2000:13)? Third, what are the implications for the generally recognized significance of IA as an aspect of heritage studies, heritage management, and heritage tourism? Is the role of IA merely one of recording or preserving the remains of industry in a post-industrial age? Or do we perhaps have an obligation not just to study what is vanishing but to take an active role as advocates for living industries and especially for the rights and interests of workers in a rapidly de-industrializing world?

MATTERS OF DEFINITION

Archaeologists of all stripes seem regularly to confront issues of self-definition, and nowhere are such issues so vigorously argued and variably perceived than among those whose research focuses on the archaeology of the early modern, modern, and, ultimately, post-modern world(s). Practitioners of industrial archaeology have regularly subjected themselves to self-critical examination, approaching questions of definition and identity on multiple occasions and readily offering recommendations for infusing the field with social theory and social relevance (see., e.g., Gordon and Malone, 1994; Hardesty, 2000; Hudson, 1979:1–12; Hyde, 2001; Kemp, 1996; Leary, 1979; Newell, 1978; Palmer and Neaverson, 1998). For some, historical archaeology, and likewise industrial archaeology, are ‘period’ disciplines, demarcated by temporal frameworks (see, e.g., Crossley, 1990; Deetz, 1996; Newman, 2001; Palmer, 1990). It is, however, impossible for archaeologists to agree upon whether *historical archaeology* ought to take as its subject matter all cultures with written records of any sort and hence lay claim to any and all varieties of ‘text-aided’ archaeology or, more simply, to the archaeology of more recent, post-medieval times. Similarly, it is exceedingly difficult for archaeologists to decide whether *industrial archaeology* encompasses all manner of industrial production performed at any point in time, or only the capitalized, factory-based production of the more recent past (for further statements in the continuing dialogue over definitions of the field see in this volume the chapters by Casella, Palmer, Symonds, Cranstone, and Gwyn).

I see archaeology as one large project aimed at comprehending the human past—though I acknowledge that we all need to specialize to a greater or lesser extent in the archaeology of some portion

of that human past. I therefore find myself sympathetic with David Cranstone's notion (this volume) that industrial archaeology should not be retained as a separate sub-specialty but instead be considered merely one aspect of a 'holistic archaeology of the later 2nd millennium'—in other words, historical archaeology broadly conceived, although I am not convinced we need to define a time frame for our study. I endorse the open-endedness of a holistic approach that declines to separate the sites of industry from their broader contexts; such contexts include, but are not limited to, the complex landscapes in which industries are situated (Clark, Worth, this volume); the social dynamics and multiple meanings arising from and imputed to the material conditions both at work (cf. Gross, 1981) and at home of people whose lives are affected by industry (Casella, Symonds, Palmer, this volume); the worldwide but discontinuous networks created by the emergence of global capitalism in forms such as the service-economy 'industries' of entertainment (see Hall this volume), heritage tourism, and food supply.

INDUSTRIALIZATION, CAPITALISM, AND GLOBALIZATION

An issue that many of us face is finding ways of looking at and understanding the penetration of industry into new areas, be they cities, rural countryside, or 'frontiers'—the latter being particularly characteristic of colonial projects. There are a variety of models that have been developed to help us to examine how new patterns of work both inside and outside of the home affected peoples' everyday lives and their purchase and use of goods mass-produced by industry. An approach highlighted in this volume is to consider the landscape of industry writ large (Clark, Nevell, Lawrence, Worth, this volume) in a manner that expands upon the approach to industrial sites as 'feature systems' long espoused by Hardesty (1988:9–11); yet another approach involves examination of domestic sites to elucidate how consumerism plays an active role in the construction of working class identities (Casella, Mrozowski, this volume; Shackel, 1996).

In her Alderly Sandhills project Casella considers how the results of her study of worker housing compare to studies of industrial communities in the American west and in Australia, instances of extensive forms of resource extraction that involve considerable mobility on the part of workers that is reflected in settlement patterns, architectural forms and materials, and consumption based on 'anticipated

mobility.' Casella notes that her preliminary results demonstrate that Alderly does not fit this model; instead the research reveals a quite different pattern, one that strikes me as somewhat similar to what scholars have observed in tracing the path of industrialization of rural new England in the 19th century (see, e.g., Larkin, 1989:36–61; Simmons et al., 1992; Stachiw and Small, 1988; Worrell et al., 1996; Kulikoff, 1992; Vickers, 1994:17).

Casella's Alderly Edge project represents an attempt to grasp the variable nature of the penetration of industry into new settings, and, as Symonds points out in his essay in this volume, the penetration of industrialization and consumerism in rural England was uneven and varied by region. Symonds and Casella both emphasize the point that the taking the phrase 'industrial revolution' too literally has led researchers to neglect the variability in the timing of industrialization in different parts of the United Kingdom (the same observation is just as apt for North America and elsewhere) and the degree to which innovation and change found acceptance or were resisted. What is more, the editors of and contributors to this volume agree that responses to industrial 'revolutions' by workers and other consumers of mass-produced goods were not uniform; the rise of capitalism did not produce armies of mindlessly consuming automatons (Cook et al., 1996). Wurst and McGuire (1999) argue against approaches that interpret consumption as symbolically meaningful action or as agent-based because such approaches separate the act of consumption from the related processes of production and reproduction; they emphatically reject what in Marxist social theory is seen as the illusion that individuals living under capitalism possess any genuine form of power or agency. Rather, they claim that researchers seeking to comprehend consumer choice at scales other than the aggregate overlook the underlying, universal social relations of inequality and exploitation that capitalism inevitably produces (Wurst and McGuire, 1999:198–199; *contra* Mrozowski, this volume).

Yet many scholars, including contributors to this volume, do not find it acceptable to relegate workers to an aggregate class of victims of industrialization and capitalism, nor do they agree that in conceiving of consumption to a greater or lesser extent as agent-based that we are mere dupes who are 'in fact actively reinforcing that which they wish to critique' (Wurst and McGuire 1999:198). In this context I draw the reader's attention to the essay in this volume by McGuire and Reckner, who write eloquently for the Ludlow Cooperative about the ways in which the archaeological evidence of choices made on the part of miners' families during a protracted and embattled strike bring to light a submerged history of struggle, sacrifice, and the maintenance of human

dignity. The Ludlow Massacre project is an example par excellence of class struggle that is made all the more vivid because of its focus on everyday life, on 'relations between husbands and wives, parents and children, and activities such as preparing food for a family, or how to get the laundry done.' In this instance the archaeological focus on the challenges people face in their daily struggle to survive as individuals through the strength born of identity reinforced in group solidarity is a prime example of how 'seemingly weighty, "inscribed" and totalizing world-views . . . or "spatial logics" . . . can be radically subverted—absolutely and discontinuously—by the most ephemeral manipulations of material culture' (Buchli 2000:6).

So, let us acknowledge that there is more than one way of modeling and attempting to understand the effects of industrialization and the consumer revolution; the authors in the present volume work towards comprehending variability and nuance underlying broad patterns of what has been posited as a 'world system' or monolithic suite of processes and effects set into motion by the industrial revolution. In my work I have pursued an ethnography of people and things, of people and *their* things, with the aim of understanding how people operate within the limiting structural givens of capitalism, institutional frameworks, the workplace, and, most especially, in the domestic realm to create small areas of power—'micropowers' (Buchli, 2000:6)—and self-identity within their own lives (e.g., Beaudry, 1998, n.d.a, n.d.b). My colleagues Steve Mrozowski and Lauren Cook, as part of the wider interdisciplinary research we conducted in Lowell, Massachusetts, helped me think about ways we might present the lives of working people through an approach we freely borrowed from folklorist Henry Glassie (1982), an approach that involves examining peoples' lives from the inside out, of looking at the places where people have power and where they do not (see, e.g., Beaudry et al., 1991; Beaudry and Mrozowski, 2001). Neither I nor my colleagues have claimed that capitalism is insignificant, unimportant, or epiphenomenal, despite statements to this effect by Mathews (1999:263) and Mathews et al. (2002:113). I am simply more interested in trying to puzzle out how people construct identities and develop strategies for coping with, accommodating, or perhaps even overcoming in overt or less obvious ways, the 'big given' of capitalism, than I am in capitalism and its forms.

I have always found worrisome pronouncements that historical (or industrial) archaeology needs to be a unitary field or the notion that all of us should subscribe to an overarching program of research and cleave to a single paradigm or theoretical perspective; I resist and at times resent any attempts to replace one overarching paradigm (e.g.,

processualism) with anything else that is supposed to be the one right way to do things. By seeking out the small sites of power in the everyday lives of working class and other people, we are not undermining the project pursued by those who are more interested in a sociologically broader examination of the variable expressions and effects of capitalism on the global stage. In fact, the two approaches are complementary and even necessary.

When archaeologists presume to speak for individuals and groups affected by and participating, enthusiastically or otherwise, in capitalism, it is exceptionally difficult to avoid filtering interpretations through layer upon layer of presentism, accumulated stereotypes, and uncritical assumptions. In this volume we can see that the authors have worked towards constructing contexts for interpretation that are historically and culturally situated and that attend to the contingencies of time, place, and circumstance. The approach involves close critical readings of documentary and other sources to develop frameworks for interpretation, but in many ways it is not far removed from what anthropologist George Marcus (1995:96) refers to as the 'most common mode' of ethnographic research that 'preserves the intensively-focused-upon single site of ethnographic observation,' which he notes has produced refined examinations of resistance and accommodation arising out of a concern with the dynamics of encapsulation, a focus on the relationships, language, and objects of encounter and response, and an acknowledgement that the experiences of different relative power positions leads to the development of new cultural forms.

While Marcus has reference chiefly to colonial encounters as the subject of such ethnographic observations, work by historical archaeologists on 19th-century working-class neighborhoods has similarly provided glimpses of the emergence of new cultural forms by overturning stereotypes and shedding light on how people took some measure of control over their lives despite poverty, prejudice, and seeming intolerable living situations to initiate changes that brought them out of these very conditions (cf. Symonds, this volume; Karskens, 1999; Praetzelis and Praetzelis, 2001; Yamin, 2000).

If we interpret archaeological findings without understanding the contexts in which the artifacts were used, and how they were used, we might assume that, because most of the assemblages are dominated by English transfer-printed earthenwares, we were looking at a similar phenomenon. We might assume that the presence of these wares meant the same thing in each instance, and, of course, in a way we would be right. We can read the artifacts from the outside if our interest lies in the global reach of mass-produced consumer goods and the mechanisms

of capitalism that impel people to purchase and use such goods. But if we assume that they all were used to the same ends and all had the same meanings and that the very purchase and ownership of such goods made new people out their users, we would be wrong. An inside-out perspective, one that aims to construct prosopographic narratives or what the Praetzellises (1989) have referred to as ‘archaeological biographies,’ makes us aware of subtleties, nuances, ambiguities.

When we conceive of capitalism, its effects, and its outcomes—as well as responses to capitalism—as monolithic and hence easily comprehended and interpreted through rigid theoretical and analytical schema, we overlook nuance and ambiguity. If we are truly interested in *people* and in how they lived their lives, the appropriate point of entry for our study is the careful examination of the contexts and structures within which cultural identities were forged, in recognition that identities are often far from fixed but fluid and subject to invention and reinvention.

I suggest that we need to steer clear of the assumption that there is some readily graspable universality in the experience of people in the past that gives us a license to essentialize and to objectify them or to write about any given sector of a past population as an undifferentiated group of humans who shared the same experiences and whose identities and actions were defined and controlled by the artifacts of the Industrial Revolution. I agree with Robert Paynter (cf. Beaudry 2003) that our shared task is to work at ‘writing antriumphalist histories that emphasize the role of social relations as well as individuals, the common people as well as the prominent, the struggles along class, color, and gender lines, and the emergent social and cultural diversity of a supposedly uniform nation-state’ (Paynter, 2000:23), and I think we should write such histories from a variety of scales, from local to global.

Models thus far offered for pursuing a global historical archaeology have proved unsatisfactory, however, because they tend to center around decontextualized global comparisons. For post-colonial anthropological theorists like Nicholas Thomas, however, it has become ‘increasingly clear that only localized theories and historically specific accounts can provide much insight into the varied articulations of colonizing and counter-colonial representations and practices’ (Thomas, 1994:ix). This is true as well for archaeologists attempting to examine the uneven spread and effects of processes such as industrialization and globalization.

Given my own interest in constructing small-scale narratives I confess that up until recently I had not given much thought to how we might develop ways of writing a global historical archaeology that

moves away from the 'tyranny of the always' and the free-floating abstractions that are the inevitable outcomes of decontextualized comparisons. I was encouraged to think about how we might move towards a contextualized global historical archaeology that seeks to account for the complexity and variability of the effects of industrialization after reading Theodore Bestor's 2001 article 'Supply-Side Sushi: Commodity, Market, and the Global City.' Bestor makes effective use of Marcus's second level of ethnographic research, which Marcus in 1995 saw as a still-emergent mode of ethnography. Marcus refers to this approach as 'multi-sited ethnography.' He explains that while it may begin in the world system, it evolves out of the object of study and becomes 'of the world system' in that it arises in response to empirical changes in the world and therefore to transformed locations of cultural production. Marcus sees multi-sited ethnography as a cross-disciplinary or transdisciplinary project, one that rejects the world system as a theoretically constituted holistic framework and that studies people and local objects in a piecemeal way, integral to and embedded in discontinuous, multi-sited objects of study. The notion is that cultural logics are multiply produced. Bestor, in his study of the middlemen of the global trade in Atlantic bluefin tuna, links Marcus's notions of multi-sited ethnography with Arjun Appadurai's way of conceptualizing of transnational ebbs and flows of culture, the complicated tides and undertows of people(s), of technology, of capital, of media representations, and political ideologies that concurrently link and divide regions of the globe. Appadurai visualizes global integration and disintegration as taking place in a deterritorialized world in which place per se is not as important as the loosely constructed domains—which he refers to as 'scapes'—across which influences travel in multiple directions. Such 'scapes' are experienced differently by different actors on the world stage, and indeed persons can simultaneously have their own experiences of a variety of 'technoscapes,' 'finanscapes,' 'mediascapes,' and 'ideoscapes' (Appadurai, 1990).

If we consider what these developments in anthropological theorizing about globalization and transnational interactions based on trade and commercial exchange might bring to a global historical/industrial archaeology, we can readily see that they provide an approach that allows for a contextualization of global studies. They make it clear that it would be more productive to examine specific sets or networks of transnational connections based on commodity flows and linkages among urban centers or between nodes and scattered hinterlands, acknowledging that while trade is global it is intimately rooted in local activities. Hence we need to develop sets of comparisons, or better yet, multiple sites of

study, based on genuine connections that once existed, by reconstructing the networks and the nodes or points of contact (for an example of a recent attempt at such an approach, see Hicks, 2003, n.d.).

Here we return to Symonds' call for greater attention to 'the experience of industry' through a multi-sited approach that considers innovation, urban expansion, and demographic shifts in terms of local and regional diversity. Symonds notes that towns and cities that grew up around industry were influenced by the nature of the industries that spawned them as well as by the distinctive characteristics of their surrounding hinterlands. He argues for an archaeology that examines the onset and timing of industrial specialization as varying expressions of the development of regional economies, each of which led to regionally-based patterns of settlement set in re-ordered, 'industrial' landscapes (Trinder, 1987) and types of housing, and to local responses to the consumer revolution that accompanied the rise of industrial production. In this volume several chapters, including Casella's aforementioned Alderly Edge project, provide examples of the sorts of studies Symonds advocates. Colin Rynne notes that innovation in cotton mills in County Cork, Ireland, in the early 19th century was greatly affected by the flow of technical knowledge between this region of Ireland and English centers of industry like Manchester. He sees the receptivity to innovation on the part of Irish millworkers in this instance as arising out of their self-identification with Britain and with 'Britishness'—a fact that has been obscured in most post-independence histories of Ireland. Likewise the Manchester Archaeology Unit's long-term research into the industrial landscape of greater Manchester as set forth by Michael Nevell graphs patterns of change according to locally specific characteristics of Manchester's development, most particularly its wealthy merchant class of potential investors, combined with a weak governmental structure and lack of regulation that rendered the city open to rapid development and to embrace the newest technologies. These situations both differed dramatically from the conditions that were created by the development of industry as part of British colonial projects, as Susan Lawrence demonstrates in her case study from Australia's gold fields. As we begin to comprehend the significance of differing trajectories of industrial growth, we also begin to accumulate nuanced insight into the social aspects of technology and into just how variable the 'experience of industry' was for people not just in the nation most closely associated with the Industrial Revolution but elsewhere, across the globe.

We must accept the challenge to push our interpretations beyond the screen thrown up by overarching generalizations about the external manifestations of capitalism and industrialization, or about 'colonial'

or ‘imperial’ material culture and colonial interactions, to ply back and forth between our study of the local and the global to discover how in each instance the material signature of industry and its accompanying transformations add to our understanding of the ‘experience of industry’ as the variable outcome of an unlimited series of discourses on the relationships among the structures imposed by local and regional environmental conditions, the demands of industrial specialization, and the human beings whose experience of industry was as much collective and social as it was deeply personal.

HERITAGE

All archaeologists are in one way or another involved in ‘the heritage business’—recovering it, preserving it, presenting it, but industrial archaeologists have increasingly decried the passivity of a heritage-based approach to their discipline (see, e.g., Clark this volume; Palmer, 2000). Is recording the rusted-out hulks of industry enough? Are we complicit in constructing a past for industry and ushering more and more people, along with buildings and landscapes, into it? Worth (this volume) argues that the conservation of industrial landscapes can serve to further development objectives in the future; it is clear that a realistic approach to the industrial archaeological heritage must accommodate social and cultural change—but we have not yet come to a consensus about how far accommodation can go before it becomes a means of permitting industrial structures, sites, and landscapes to be used and experienced in ways that have nothing to do with industry.

Symonds in this volume stresses that we should not lose sight of the people behind the processes we are attempting to study and makes the critical point that ‘process recording’ needs to be done while industries are still active, while workers are still at work, performing the tasks that, he notes, place industrial archaeology ‘at the heart of contemporary culture.’ Laurence Gross notes that IA has been particularly helpful in promoting an understanding of that ‘least artifactual aspect of industry, labor—the evanescent sequence of acts for which the only complete artifact is the person in the midst of performing it’ (2001:38). He believes that industrial archaeologists have done a good job when it comes to what he refers to as ‘labor study’ but goes on to admonish industrial archaeologists that our accounts of industry and/or labor in service *only* to history or heritage management or any backward-looking endeavor are inadequate. He advocates activism (Gross, 2001:39–40; see also Gross, 1993).

Scholars such as McGuire et al. (this volume) make us aware that industrial archaeology can play a role in contemporary struggles between workers and management; the study of the Ludlow Massacre and the labor strife that surrounded this infamous incident in American labor history has provided more than an insider account of worker resistance and defiance. It has served as a catalyst and inspiration for union-based action in the present. Again, Gross has argued that industrial archaeology

includes ways of thinking, of valuing, which transcend the simplistic archeology of measurement that is a base but not the end of IA. The goal is to inform historical analysis, to influence scholarly debate, to demonstrate the value of a particular point of view. . . . Acknowledge the politics of our attachment to manufacturing, seize the work of our compatriots [in allied disciplines], living and dead, and we will enrich our arguments in historical literature and in the national debates of which we are a part.

This, then, is a direction for the future. We must revolutionize industrial archaeology not just to make certain that it continues to be a vibrant field making contributions to knowledge and the preservation of heritage; we need to promote the notion that industry is not solely a thing of the past and most assuredly not an aspect of our past that, so long as it remains an element of the contemporary landscape, evokes only the culturally constructed negative images of industry as generative of squalor, blight, and exploitation (see Cooper, this volume). Nor, on other hand, can we become too complicit in the cultural productions that are the tidied-up industrial theme parks people visit for strong doses of heritage, misinformed nostalgia, and, often, new forms of consumerism (i.e., shopping). The most important direction for industrial archaeology is to ensure that there is not just a future for industrial archaeology but also that the subjects we study—machines, buildings, landscapes, people—have a future as well.

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