

Industrial archaeology: a thematic or a period discipline?

MARILYN PALMER*

If industrial archaeology is defined by its industrial subject-matter, then is it a theme within archaeology that runs back to prehistoric flint-mines and metal workshops? Or is it to be defined by period, as the archaeology of the industrial society that follows post-medieval? And, if it is concerned with documented history and standing structures, is it archaeology at all?

A thematic or a period discipline?

Industrial archaeology has generally been defined as a thematic discipline, concerned with only one aspect of man's past activity. Although the term 'archaeology of industry' was used in the 19th century, it was Michael Rix who used the phrase 'industrial archaeology' in print for the first time (Rix 1955). He later defined industrial archaeology as 'recording, preserving in selected cases and interpreting the sites and structures of early industrial activity, particularly the monuments of the Industrial Revolution' (Rix 1967: 5). The emphasis on the term 'industrial monument' followed a need to define an industrial class of Ancient Monument so that some examples would be scheduled. Industrial archaeology, then, grew from the need to record and preserve standing structures threatened with demolition rather than an inherent desire to understand more about the historical period of the monuments. It was perhaps felt that *understanding* of the industrial revolution period was more readily arrived at by other means, particularly written historical evidence. During the 'rescue' years of the 1960s and 1970s, archaeology was one of the two areas of fastest university expansion and very popular in extra-mural teaching. But none of the archaeology departments took up industrial archaeology, although many of the extra-mural departments did; it is largely as a part-time, amateur interest that industrial arch-

aeology has flourished ever since. The author's post as an industrial archaeologist in the Leicester archaeology department is one of the first occasions on which the specialism has been given a place in full-time undergraduate archaeology courses.

So, despite its definition as a form of archaeology in the 1950s and 1960s, industrial archaeology remains outside the mainstream, partly because industrial archaeologists have never made up their minds whether it is a thematic or a period discipline. If it is thematic, then archaeologists from the prehistoric to the post-medieval are all 'industrial' when they include industries in their studies. Angus Buchanan in 1972, admitting that the term 'industrial monument' could refer to any obsolete industry or transport system, suggested that in practice it was useful to confine study to the monuments of the last 200 years or so; earlier periods were dealt with by more conventional archaeological or historical techniques (Buchanan 1972: 20-21). Kenneth Hudson attempted to break out of the strait-jacket of the Industrial Revolution by defining industrial archaeology as 'the organised, disciplined study of the physical remains of yesterday's industries', hinting at a broader chronological span but limiting the subject even more firmly to one aspect only of past society (Hudson 1963: 17-21). Arthur Raistrick developed Hudson's argument, insisting that the starting point of industrial archaeology is

* Department of History, The University, Leicester LE1 7RH.

the appearance of organized industry with special techniques, on a scale larger than a craft (Raistrick 1972: 9).

Raistrick also attempted to lengthen the breadth of the discipline: 'Industrial Archaeology must also be a human study, and industry will appear as a means by which man has achieved his material civilization and modified or created the environment in which he lives' (Raistrick, 1972: 12). With this, we move away from the emphasis on the recording and preservation of the industrial monument to a more acceptable archaeological approach, the utilization of physical evidence to arrive at a better understanding of past human society. Yet Raistrick's interpretation of industrial archaeology is so broad that it embraces nearly the whole of archaeological study. Recognizing this, he suggested that industrial archaeologists from many different backgrounds – geology and engineering in his own case – needed to work with those in other disciplines to extend what was already being done. In 1975 Neil Cossons, accepting the cultural definition of the subject, laid even greater stress on industrial archaeology as part of a landscape study, but returned to the period of the Industrial Revolution as the main core of the subject (Cossons 1975: 17).

Industrial archaeology in its early days, then, was rightly concerned with the need to preserve industrial monuments which were not recognized as worthy of a permanent place in the built environment. The pioneers of industrial archaeology have succeeded – perhaps almost too well. Industrial museums, industrial heritage sites and preserved industrial structures now figure large in the tourist literature, although the recent relisting of buildings by English Heritage or the current Monuments Protection Programme perhaps includes fewer industrial buildings and sites than we would like. The English, Scottish and Welsh Royal Commissions on Historic Monuments routinely record industrial buildings and undertake specialist industrial studies like those of West Yorkshire industrial housing (Caffyn 1986), of the textile mills in the northern counties of England (Textile Mills 1988), and of the Montgomeryshire Canal (Hughes 1988). So has industrial archaeology come of age, now that the term has been in existence for not just 21 but 35 years? Yes, according to the early definitions of the subject. But industrial archaeology has

only just begun to gain recognition alongside the archaeology of other periods. Both the Theoretical Archaeology Group and the Institute of Field Archaeologists have included sessions on industrial archaeology at recent conferences and the Society of Antiquaries now hears an annual paper on the subject. But industrial archaeologists still need to give more thought to how conventional archaeological concepts and techniques apply to their own particular field.

Industrial archaeology as archaeology

Archaeology utilizes physical evidence to arrive at an understanding of society, not only a particular aspect of man's past activity. Policy statements have recently been prepared for the Ancient Monuments Division of English Heritage by the Prehistoric Society, the Society for the Promotion of Roman Studies, the Society for Medieval Archaeology and the Society for Post-Medieval Archaeology, the four period societies which cover British archaeology from prehistoric times to what the Society for Post-Medieval Archaeology defines as 'before the onset of industrialization'. This leaves a clearly defined area where archaeological study is not fully recognized – society from the onset of industrialization until the present day. Industrial archaeology has, then, an important place if it is regarded as a period archaeology, concerned with all the physical evidence of society after the Industrial Revolution and not confined to industrial in the narrow sense?

Since the period with which industrial archaeology is concerned has left a large quantity of written sources, could the term 'industrial archaeology' be abandoned in favour of 'historical archaeology' which is widely used in North America and Australasia? It would be a pity to abandon a term which has gained such wide recognition in both this country and in Europe. In Great Britain, industry in its broadest sense has been the dynamic force which has shaped human development and changed the landscape over the past two centuries. Recognizing this, the industrial archaeologist must place the monuments of industry in their topographic and human environment and consider himself as the archaeologist of industrial society. He cannot examine sequences of change over a long period of time as is possible in earlier period archaeologies, but this is offset by the incredibly rapid pace of development in the past two

centuries compared with that in any other period of the past.

In medieval and more recent archaeology, the special value of archaeological evidence lies in determining the living and working conditions of social groups of ordinary people, since the illiterate in society were generally members of the Church, the government and the social elites. Even in the industrial period, written evidence about ordinary living and working conditions is rare and, where it does exist, was often undertaken for political purposes; the various government Commissions of the 19th century frequently approached their work with predetermined views. In the field of industry itself, written material tends to be concerned with the latest and the best, as it is today: the humdrum was rarely recorded, yet it was the backbone of industrial activity. Written evidence is, then, an asset rather than an alternative in the study of the industrial period.

The main concern, then, of the industrial archaeologist is to use surviving physical evidence, whether above or below ground, to study society in the industrial period. Industrial archaeology is not just a source of illustrations to enliven economic or technical history, but a period archaeological study in its own right. How do conventional archaeological techniques require modification for the industrial archaeological field? What areas of archaeological study illuminate social, technological and economic development in the industrial period? The case studies that follow are chosen from fieldwork undertaken by the author with her fellow editor of *Industrial Archaeology Review*, Peter Neaverson.

Stratigraphy and sequence

Techniques in industrial archaeology include measured survey, photography, field survey, excavation and documentary research, conventional techniques which need to be re-thought for the different problems and kinds of evidence faced by industrial archaeologists. In excavating sites of the industrial period, stratigraphy is naturally important. In David Cranstone's work on the Killhope lead-dressing site in Weardale or at Nenthead, the stratigraphic relationship of one structure to another has shown the site development (Cranstone 1989). But the understanding of the sequence of development on a particular industrial site can also be determined

by a combination of techniques not necessarily including excavation. Fieldwork on lead and tin dressing sites has been selected to clarify this point. The complex site of Esgair Hir and Esgair Fraith in Cardiganshire was worked for lead and copper from the late 17th to the early 20th century (Palmer 1983). It was a large site on uncultivated land above the 1000' contour, and so not mapped at 25"-to-the-mile scale in the 1880s. To unravel its history, then, the site was mapped and all standing structures recorded. Excavation uncovered one of the dressing floors, and the two horse capstans used for winding in the shafts, which were not visible on the surface. These structures were related to surviving 19th-century maps – lease maps, mining maps and so on, together with scattered documentary evidence. (Full excavation, impossible with limited resources, particularly after the Forestry Commission destroyed part of the site, would have shown the location and extent of the Mines Adventurers' activities in the late 17th and early 18th centuries.) But the combination of techniques enabled reconstruction of the site during its maximum production of lead, the period 1839–57, and of copper, 1882–1904, and threw light on ore-dressing techniques.

At the Basset Mines of Cornwall, clearance of structures rather than actual excavation was carried out (Palmer & Neaverson 1987). As at Esgair Hir, our interest was in the sequence of mineral dressing operations, which in the late-19th-century tin industry changed with bewildering rapidity. As the site was abandoned during the First World War, the surviving structures were those of this last period. On the dressing floor at West Basset were the remains of an engine house which had powered Cornish stamps, vertical iron-shod rods used for crushing tinstone. Documentary evidence indicated that the buildings below this had housed Frue Vanners, continuous-moving-belt machines used for separating heavier tin ore from lighter gangue materials. A floor below this contained 16 round buddles of various kinds: these were also used for gravity separation of the crushed ore from the gangue minerals. Clearance and survey indicated that two additional buddles remained, one adjacent to the Frue Vanner House, together with numerous strips where tin slurry was allowed to settle out, and wooden launders used to convey slurry





FIGURE 1. Different kinds of buddles in use in 19th-century and early 20th-century mineral dressing. Opposite, above: Concrete faced convex centre head buddle constructed at West Basset, Cornwall. c. 1874.

Opposite, below: Concrete stepped base of stationary buddle erected in the early 20th century for tin-dressing at Brea Adit, Cornwall.

Above: Rough stone running buddle at Bonsall Leys, Derbyshire, probably constructed for lead dressing in the mid 19th century.

from one dressing machine to another. Documentary research indicated that the Frue Vanners below the stamps had been installed shortly after 1900, but what had they replaced? Excavation below the Vanner house floor might have provided the answer, but a photograph taken in the 1890s provided the necessary information. It showed round buddles directly below the stamps: the Vanner house had been built over these, leaving one remaining buddle east of it. The dressing floor was actually constructed in 1875; were the round buddles below the stamps original to the installation? The technical literature of 1880s includes a great deal of controversy in Cornwall about the loss of tin slimes, particularly in the immediate process once the crushed tinstone left the stamps

grates: was it better to allow the crushed tinstone to settle out in strips (long, rectangular pits), or to feed it straight to round buddles? At Basset, then, were there originally strips below the stamps? Here the site had been mapped on a 25" scale during the early 1880s and confirmed that the original installation had included strips rather than buddles below the stamps. So it was possible to determine the sequence at this site without excavation.

Typology

Work at Esgair Hir and Basset, together with the study of other dressing sites, led the author to consider the place of another archaeological technique, typology, to industrial archaeology. Her favourite class of industrial structure, the

buddle, will illustrate this point. She had excavated wood-lined round buddles in Cardiganshire, while the Cornish examples, in a variety of different shapes, were of concrete. In Derbyshire and North Pennine ore-dressing sites, on the whole, round buddles were not used; instead the rectangular buddle, abandoned in Cornwall by the middle of the nineteenth century, remained in use. A typology of 19th-century buddle structures needed to take into account the type of mineral being processed and regional variations, as well as their evolution with time. Whereas contemporary technical literature suggested a steady technological progression of mineral dressing equipment, archaeological evidence indicates technological inertia in the dressing of minerals in many areas, and prompts examination of the capitalization and technical awareness of mining companies in different areas (Palmer & Neaverson 1989a; 1989b).

A national perspective

Not enough comparative work has been carried out on industrial structures either nationally or between regions, except perhaps for watermills, tidemills, windmills and wind generators. The Scottish Royal Commission has undertaken this kind of national survey, Graham Douglas producing a typology of waterwheel development in Scotland. The English Royal Commission's textile mill survey is a valuable initiative (Giles & Goodall 1986), and isolated surveys of other important mills, like Stanley Mill, in the south of England (Stratton & Trinder 1988) should be integrated into the large scale survey being undertaken of the north of England (see Textile Mills 1988). But there are many other industrial structures where a national typology is needed, and one which takes into account both chronological and regional variation – lime kilns, brick and pottery kilns, glass kilns, coke-fired blast furnaces, arsenic calciners, waterwheels and turbines, maltings and warehouses. So much survey work is undertaken on a county basis, often by county groups, that a national picture is not easily arrived at.

Another aspect in which industrial archaeology lacks a national perspective is in reference collections of artefacts comparable to the collection of post-medieval ceramics maintained by the Society for Post-Medieval Archaeology at Stoke-on-Trent Museum. Since less excavation

generally is carried out on sites of the industrial period, it could be argued that it is less vital to maintain reference collections. But museums tend to house the aesthetically pleasing, and nowhere is there a collection of typical working-class pottery from the 19th century. The author's recent work on limekilns on the Calke Abbey estate in Derbyshire for the National Trust revealed a large quantity of pottery in one of the kilns, presumably rubbish from kitchens in the main house. It proved possible to date and provenance the better class pottery, but not the more numerous dairy ware and other rough pottery. Reference collections of ordinary pottery, glass bottles, metal slag and similar artefacts would be of considerable assistance. The bank of information about stamped clay tobacco pipes established by David Higgins of Liverpool University will assist archaeologists of both post-medieval and industrial periods (Higgins 1989: 1–2) and could be emulated for other artefacts.

Structural anomalies

Another familiar technique is the use of structural anomalies to identify later alterations to a building or site, as applied to conventional excavations of industrial structures by David Cranstone (1985) at Moira Furnace in Leicestershire or by Anne Wilson (1988) at the Clydach Furnace in Gwent. It equally applies to standing buildings, and industrial archaeologists often have documentary evidence to help explain the anomaly. While technical historians have defined the development of the stationary steam-engine, little archaeological attention has been paid to engine houses excavated as landscape features. David Bick (1989) has attempted to remedy this in Wales. Yet careful survey of even the empty shell can reveal both the type of engine which the house contained and alterations when the original engine was modified or replaced. Documentary evidence may add to the story, but it is field evidence which first indicates the anomaly. The Glyn Pit colliery site in South Wales is a scheduled Ancient Monument and the only site in Britain with a rotative beam-engine and a vertical steam winder *in situ*. It has recently been surveyed as part of an attempt to secure its future. Measured drawings of the rotative beam-engine and its loadings indicated various anomalies, including large pits, broken off beams and strong

...d-down bolts now serving no actual purpose. Comparison between the site drawings and technical drawings of engines in the Neath Abbey papers has shown that the engine, still serving as a pump in the 1920s, was originally built both to pump and to wind. Survey and documentary research has also enabled a sequence of the structural evolution of the engine houses built for Neath Abbey engines to be produced; these included a pre-fabricated cast-iron floor structure and cast-iron cylinder supports, features very different from Cornish engine houses. The field evidence is vital, since all the correspondence accompanying the Neath Abbey drawings has been destroyed.

These are some of the ways in which conventional archaeological techniques can equally apply to the wider range of evidence available to the industrial archaeologist. As in post-medieval archaeology, documentary evidence can also be used to draw a preliminary distribution map of structures like windmills or watermills, which can be tested in the field, and some of the surviving examples chosen for more detailed treatment. This is the methodology used by the textile mills survey in West Yorkshire, faced by something like 1800 examples: sites for more detailed treatment were selected by documentary research and initial field survey as significant to the development of the factory system, to the structural evolution of the textile mill, or in the landscape as centres of communities (Giles & Goodall 1986). The Nuffield survey in the Ironbridge Gorge has made similar use of map evidence to reconstruct earlier landscapes, and followed up by detailed fieldwork and recording (Clark & Alfrey 1987).

Research priorities

Industrial archaeology is, then, a branch of archaeology which applies the techniques of mainstream archaeology to a wider variety of evidence than exists for earlier periods. As a period archaeology, dealing with social and economic development from the onset of industrialization to the present, what are the research priorities? Typologies of structures and reference collections of artefacts are obvious needs. What additional aspects of society in the industrial period would benefit from the study of field evidence? Some of the distinctive sites of the industrial period are themselves agricultural:

farming landscapes of the post-enclosure period are rapidly disappearing. The National Trust and other public owners of country estates should consider the entire economic organization of a country estate rather than concentrating on the house, which is only the visual evidence of consumer spending, often out of the profits of the estate. Lime-burning, brick-making, saw mills and smithies, together with amenities such as water supply and effluent disposal are frequently ignored. In the processing of foodstuffs, maltings are a highly distinctive class of building which has received a regional recognition but no national survey; yet these buildings, highly attractive to developers, are undergoing drastic alteration, particularly in East Anglia where redundant maltings are nearly as great a problem as Yorkshire textile mills. Warehouses have a similar value in the business of wholesale and retail distribution, which includes cattle and food markets as well as retail shops. Hotels and catering are topics not usually tackled by industrial archaeologists, but the tourist industry is not just a feature of the 20th century. The redevelopment of hotels into faceless uniformity makes this study an urgent priority, particularly in the East and South coast towns, the Isle of Man, Scotland and the Lake District. The changing relationship with transport, both for goods and guests, is clearly an important feature. The repair of consumer goods and vehicles, preserved in structures like garages which are even more ephemeral than hotels, is another urgent field of study. Other aspects of working life include water supply, sewage disposal, personal and domestic services such as laundries, and recreational and cultural services like cinemas, theatres, film studios and even seaside piers which are all tangible aspects of life in the period since the onset of industrialization.

Conclusion

Industrial archaeology is a period study embracing the tangible evidence of social, economic and technological development in the period since industrialization. As a discipline, it uses conventional archaeological techniques and concepts such as stratigraphy, typology, assemblages of finds and structural anomalies, but recognizes that these can be applied to a wider range of evidence than that

derived from excavation. In the industrial period, when at least the élite were literate, many aspects of society – patterns of government, religious allegiance, domestic and foreign policy, patterns of trade (although perhaps not of consumer spending) – are better arrived at by other means. Familiarity with, or even interest in, all aspects of working life in the industrial period is not essential for the industrial archaeologist so long as he recognizes their existence and is prepared to ask for advice from other specialists whose interest they are. And,

some kind of national perspective is important. The 19th century saw the final breakdown of regional self-sufficiency, and the accelerated growth of markets and systems of distribution. Ideas as well as goods circulated much faster and the pace of change in both industry and working life was extremely rapid. Local and regional studies of the archaeology of the industrial period will probably always be pre-eminent, but they do need to recognize what was happening on the national scene if a true perspective is to be achieved.

References

- BICK, D.E. 1989. The beam engine house in Wales, *Industrial Archaeology Review* 12(1): 84–93.
- BUCHANAN, R.A. 1972. *Industrial archaeology in Britain*. Harmondsworth: Penguin.
- CAFFYN, L. 1986. *Workers' housing in west Yorkshire 1750–1920*. London: Royal Commission on the Historical Monuments of England and West Yorkshire Metropolitan County Council.
- CLARK, C.M. & J. ALFREY. 1987. *Nuffield survey: first and second interim reports*. Ironbridge: The Institute of Industrial Archaeology.
- COSSONS, N. 1975. *The BP book of industrial archaeology*. Newton Abbot: David & Charles.
- CRANSTONE, D. 1985. *The Moira Furnace: a Napoleonic blast furnace in Leicestershire*. Coalville: North West Leicestershire District Council.
1989. The archaeology of washing floors: problems, potentials and priorities, *Industrial Archaeology Review* 12(1): 40–9.
- GILES, C & I.H. GOODALL 1986. Framing a survey of textile mills: RCHME's West Riding experience, *Industrial Archaeology Review* 9(1) 71–81.
- HIGGINS, D. 1989. Perceiving the pipe, *AIA Bulletin* 10(4): 1–2.
- HUDSON, K. 1963. *Industrial archaeology: an introduction*. London: John Baker.
- HUGHES, S. 1988. *The archaeology of the Montgomeryshire Canal*. Aberystwyth: Royal Commission on Ancient and Historical Monuments in Wales.
- PALMER, M. 1983. *'The Richest in All Wales!': the Welsh Potosi or Esgair Hir and Esgair Fraith lead and copper mines of Cardiganshire*. Sheffield: Northern Mines Research Society.
- PALMER, M. & P.A. NEAVERSON. 1987. *The Bassett Mines: their history and industrial archaeology*. Sheffield: Northern Mines Research Society.
- 1989a. Nineteenth century tin and lead dressing: a comparative study of the field evidence, *Industrial Archaeology Review* 12(1): 20–39.
- 1989b. The comparative archaeology of tin and lead dressing in Britain during the nineteenth century, *Bulletin of the Peak District Mines Historical Society* 10(6): 316–53.
- RAISTRICK, A. 1972. *Industrial archaeology: an historical survey*. London: Eyre Methuen.
- RIX, M. 1955. *Industrial archaeology*, *Amateur Historian* 2(8): 225–9.
1967. *Industrial archaeology*. London: Historical Association.
- STRATTON, M. & B. TRINDER. 1988. Stanley Mill, *Post-Medieval Archaeology* 22: 143–80.
- TEXTILE MILLS. 1988 Special issue of *Industrial Archaeology Review* 10(2).
- WILSON, A. 1988. The excavation of the Clydach ironworks, *Industrial Archaeology Review* 11(1): 16–36.