

Transplanted technologies and rural relics: Australian Industrial Archaeology and questions that matter

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The settlement of Australia has long been interpreted as a consequence of the Industrial Revolution (Jack 1979:7). As a result, Australian Industrial Archaeology has been primarily concerned with three overlapping research themes: the importation of overseas equipment and technologies, the adaptation of these resources to local conditions, and the development of home-grown innovations for both local and international application. These traditional topics have provided an essential framework for appreciating the vital role of industry in Australia's recent past. More importantly, they have also illuminated the broader meanings of the sites, landscapes and structures associated with modern industrial society. Given the recent call for a more socially-oriented Industrial Archaeology within Great Britain and America, this paper considers the relevance of these 'new' research themes within an Australian context. It demonstrates how Australian scholarship has offered advanced international leadership for the development of an explicitly social archaeology of the industrial past.

The scope of Industrial Archaeology was classically identified by R. Angus Buchanan over three decades ago:

There is no agreed definition of industrial archaeology. My own preference is that it is a field of study concerned with investigating, surveying, recording, and in some cases, with preserving industrial monuments... in practice it is useful to confine attention to the monuments of the last 200 years... (Buchanan 1978:53)

While passionately nurtured by extra-mural classes, amateur interest groups, engineering historians and dedicated individuals, Industrial Archaeology in both Great Britain and America has generally been ignored by mainstream academics—a curious silence in contrast with the richly detailed industrial research completed over the early years of Australian archaeology. For many trans-Atlantic scholars, Industrial Archaeology was seen as little more than train-spotting. At best, it offered a stimulating weekend pursuit—derided recently by one (male) British academic as a good excuse ‘to get a girl up in the Pennines on a sunny day’ (Buchanan 2000:21). Broader research—if it took place at all—was limited in scope, and pursued at local, or at best regional levels.

While this empirical approach undoubtedly succeeded in creating many worthy accounts of technological processes and detailed chronologies for the growth of local and regional industries (see Gordon and Malone 1994; Symonds and Casella 2006 for extended discussions), it failed to inspire the general interest of Anglo-American academics as it usually stopped short of exploring the wider social relations of industrial production (Palmer and Neaverson 1998:3; Cranstone 2004:314). This continued absence of what may be regarded as a sustainable academic research base in trans-Atlantic scholarship led Shane Gould to recently observe:

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).

AN INDUSTRIAL REVOLUTION? EXPANDING THE RESEARCH FRAMEWORK

In the last decade, a growing popular anxiety over the displacement of labour markets combined with the rapid

re-development of ‘brownfield’ districts to forge a new political apprehension over the heritage management of former industrial sites (Cooper 2005; Gross 2001). In response, the trans-Atlantic reinvigoration of Industrial Archaeology has acquired a fresh urgency. Within Britain, such concerns culminated in an invitational workshop on ‘Understanding the Workplace’ jointly sponsored by English Heritage and the Association of Industrial Archaeology during June 2004. Recently published as a special thematic edition of *Industrial Archaeology Review* (Gwyn and Palmer 2005), the volume called for an examination of ‘not just the technological innovations... but also the social context of the process of industrialisation, expressed through settlement patterns and material culture’ (Palmer 2005:9).

Most significantly, the introductory paper of this journal edition established a series of research themes intended to explicitly guide the future evolution of British Industrial Archaeology. While these nine specific themes ranged from technological change and labour mobilisation, to the application of scientific analysis techniques on industrial sites, five underlying fields of enquiry could be summarized from this new (and explicitly social) framework (Palmer 2005:16–17):

- **Continuity and Change.** How did industrial-scale production replace, or supplement, the continuity of home-based production? Is social continuity among the workforce more characteristic of Britain’s industrial landscape than dynamics of transience and mobility? How would these patterns correspond with the large-scale dynamics of urbanisation and labour migration that characterised the Industrial era? Can these patterns of continuity and transience be archaeologically interpreted?
- **Production and Consumption.** How was technological change in the processes of production reflected in patterns of consumption? Were these changing material patterns consumer-led, or technologically-driven?
- **Settlement Patterns and the Characterisation of Historic Landscapes.** How do we ensure that archaeological investigation accommodates a multi-scalar approach? Do we examine the household, the neighbourhood, a range of districts, and even specialised manufacturing villages beyond the city in order to capture the whole manufacturing process? What were the motivations for new settlement patterns? When did new patterns displace existing settlements, and when did these

existing settlements flexibly respond to changes in labour and industry? How does the concept of a 'cultural landscape' enhance understandings of the industrial past?

- **Class, Status, Power and Identity.** How do social class and gender relations articulate with industrial developments? How important was status in creating manageable hierarchies in working communities? How far are practices of paternalism and philanthropy reflected in the historic environment? How did entrepreneurs and workers develop alternative material expressions of identity? How were these identities expressed in leisure activities, religious practices and commemorations of death? Is it possible to tell how far employers sought deliberately to manipulate the workplace or industrial settlement to achieve social control? What evidence is there for worker resistance to control and paternalism?
- **International Contexts of Industrialisation.** To what degree is it possible to foster the international exchange of data in order to comparatively assess the national and global significance of surviving sites and monuments? Can we identify patterns of international technological exchange in buildings or artefacts? What evidence is there of workforce mobility on a global scale?

A similar process of soul-seeking has occurred in American Industrial Archaeology, with various scholars seeking to infuse the sub-field with both social theory and social relevance (Gordon and Malone 1994; Hardesty 2000; Hyde 2001; McGuire and Reckner 2002). In an echo of British developments, these debates also encouraged an explicit embrace of social themes as a central research direction for the twenty-first century. Redefining the subject of enquiry as the 'archaeology of labor' (Shackle 2004), these American approaches emphasized the social dynamics of work relations, the affiliations of status, race, and gender that articulate with class interests, and the situational patterns of agency, opportunism, and resistance that have constructed the lived experiences of labour in both households and workplaces. By adopting such a holistic approach, these scholars are ultimately attempting to dismantle the boundary between Industrial Archaeology and the wider practice of Historical Archaeology:

The labor that occupies the attention of historical archaeologists is the labor that is colonized, enforced, controlled, exploited, indebted, hierarchical, unequally distributed, often rigidly structured, and simultaneously global and local. Such labor forms the crux of colonialism, mercantilism, capitalism, and class. This type of labor stands as a hallmark of the expansion of the European world economy from the 15th through the 21st century (Silliman 2006:147).

ON INDUSTRY, LABOUR AND THE PRODUCTION OF AUSTRALIAN SOCIETY

But does this emerging intellectual crisis of purpose apply outside the trans-Atlantic world? As Ian Jack classically argued, European settlement of the Australian continent can be seen as an expression of the consequences of Britain's industrial revolution, with industry 'bound up in every part of the tale' (Jack 1979:7). Perhaps, as a result of this legacy, Australian Industrial Archaeology has always maintained a proud tradition of socially-focused scholarship. The study of 'pioneer technology' (Birmingham, Jack and Jeans 1979) has generated far deeper questions of identity and belonging, of landscape and ownership, of entrepreneurial creativity and callous exploitation. Certainly, the intellectual origins of this distinctive strand of research can be traced backwards to the

early publications that established the regional sub-field of Historical Archaeology (Allen 1967; Culican and Taylor 1972; Birmingham 1976; Birmingham, Jack and Jeans 1979, 1983). As a group, these seminal works portrayed early Australian industries as historically enmeshed in the broader process of landscape settlement and use—dynamics that in turn shaped the nature of colonial society itself (Linge 1979). Indeed, when systematically compared against the 'new' thematic aims of the (British) Association for Industrial Archaeology's freshly-minted national research framework, Australian scholarship would appear to command quite a place of leadership within this international field of archaeological inquiry.

Continuity and change

At first glance, this initial topic identified for British research would appear to be of limited relevance to the Australian context—for as a 'settler nation', themes of transience, mobility, migration, relocation and adaptation infuse the historic landscape. Nonetheless, three decades of research have effectively demonstrated that the story of Australian industrial evolution basically concerns the underlying tension between forces of continuity and of change. Even in the current climate of 'deindustrialisation', the heritage preservation of obsolete industrial relics (as national symbols of both technological and social continuity) can be understood as the latest manifestation in a broader global story of labour migrations and capital mobility (Gross 1993). Previous Australian work has illuminated two aspects of this profound tension.

First, archaeologists have traced the importation of overseas technologies and skilled labour to Australia. These studies of technological continuity have ranged from the internal operation of salt-works (Rogers 1990) and iron smelting (Jack and Cremin 1994), through the introduction of designs for beam engines (Bell 1987), water wheels (Pearson 1996), flour mills (Godwin 1983; Connah 1994, 1998) and even decorative domestic plasterwork (Capon 1993). Such approaches have illuminated broader dynamics in the global economy, with results from work on quartz roasting pits in New South Wales (Gojak and Allen 2000) suggesting, for example, a shift from the importation of British to American sources of industrial technology during the mid-nineteenth century. This research can also be seen to demonstrate links of social continuity with the working communities of Europe, Asia and America, as previous socio-economic, ethnic and gendered modes of work ultimately shaped the urban, rural and maritime landscapes of the Australian colonies (Gaughwin 1995; Lydon 1999; Hill 1998; Karskens 1999; Staniforth 2003; Lawrence 2005).

Research on patterns of continuity and change also explored the establishment of specifically Australian-based industries and technologies (Todd 1995). This valuable work has included examples of both primary production—such as eucalyptus oil distilling (Pearson 1993), wool production (Cummins 1989; Pearson 1984) and oil shale mining (Jack 1995)—and secondary industries—such as brewing (Bairstow 1985), glass bottle manufacture (Carney 1998), steel production (McKillop 2006) and textiles (Worrall 1991; Stenning 1993). With classic fieldwork by Judy Birmingham first demonstrating the significance of pottery production as a locally-based industry (Birmingham 1976, 1983; Birmingham and Fahy 1987; see also Bickford 1971), more recent work by Casey & Lowe extended our appreciation of the scale of this local industry within nineteenth-century New South Wales. Excavations at the DMR site in central Sydney (Casey 1999) recovered a diverse range of locally produced ceramics from



Fig. 1: Lead-glazed earthenware pottery thought to be produced in the Brickfields of Sydney CBD. Recovered from the Parramatta Children's Court Site, George & O'Connell Streets, Parramatta, New South Wales. Vessel forms include: chamber pots, wash basin, pans, candle stick, teapot spout and lid knob and jar. Scale 10 cm. Photo by Mary Casey, Casey & Lowe Pty Ltd

the 1830s and 1840s, including lead-glazed earthenwares, slipped earthenwares and stonewares (primarily ginger-beer bottles). Although analysis of the finer earthenwares suggested some local imitation of English annular creamwares, the collection also yielded material evidence on the evolution of a distinctly Australian productive economy (Figure 1). While this study suggested a limited range of wares were produced for commercial sale within the local Sydney market, comparative data from a contemporary site in South Australia indicated a far greater variety of forms fell under local colonial production (Ioannou 1987).

Production and consumption

Previous archaeological work has revealed both the breadth and dynamism of Australia's historic industrial economy, with sophisticated questions on the complex links between technological production, market-based distribution and popular consumption developed throughout the literature. Various traditional Australian forms of primary resource production have undergone study, including pastoralism (Higginbotham 1993; Woodhouse 1993; Grimwade 1998; Harrison 2004; Paterson 2005), whaling and sealing (Pearson 1983; McIlroy 1986; Lawrence and Staniforth 1998; Gibbs 2003a; Russell 2005), salt-making (Rogers 1990) and timber (Kostoglou 1993; Davies 2005). Mining has captured particular scholarly interest in terms of both extraction and processing technologies, and the wider industry itself. Publications include detailed studies of coal (Bairstow 1986; Bairstow and Davies 1987; Cremin 1989), tin (Gaughwin 1992; Jackman 1995), copper (Kerr 1995), lead (Gibbs 1997) and oil-shale (Jack 1995) industries. As one of the iconic Australian colonial industries, gold mining has acquired special attention, with archaeologists and engineers recording virtually every aspect of the extraction and processing of the unique mineral—from stamp batteries, crushers, winding gear and beam engines (Davey 1996; Wegner 1995; Milner 1989, 1997) to smelters, roasting kilns, cyanide vats and dredges (Bell 1987; Kerr 1995; Davey 1996; Gibbs 1997; Lawrence, Hoey, and Tucker 2000; Gojak and Allen 2000).

Secondary production, based on the manufacture or production of finished commodities, has also come under detailed examination, with studies of iron smelting and foundries (Jack and Cremin 1994; Milner 1991; Collins and Fenwick 1992; McKillop 2006), cement works (Culican and Taylor 1972), lime-burning (Allen 1967; Pearson 1985, 1990;

Harrington 1996); flour-milling (Connah 1994; Pearson 1998), brick-making (Stuart 1995, 2005), bottle-making (Carney 1998), hydro-electric power generation (Gojak 1988); potteries (Casey 1999; Ioannou 1987) and textile production (Worrall 1991; Stenning 1993) all demonstrating broader patterns of economic diversification and colonial innovation.

Australian research has explored distribution systems, with a number of scholars examining the means by which primary resources and manufactured commodities circulated across the colonial landscape (Jeans 1983). While nineteenth-century road construction and historic routes have attracted research interest (Karskens 1986; DMRT 1988; Thompson 2004), other studies also illuminated the significance of Australia's rail industry. This latter body of work offered a framework for the inventory of railway heritage (Walker 1993), demonstrated the central values of historic rail industry sites (Watson and Cordell 1993), situated railway engineering developments within a broader expansion of regional industrial landscapes (Milner 1991) and revealed the geography of labour organization and resistance within locomotive workshops (Taksa 2005). Other studies have considered distribution systems within the pastoral industry, focusing on the heritage of annual livestock transportation corridors, such as the remote Canning Stock Route of Western Australia (Grimwade 1998; see also Paterson 2003; Harrison 2004). Finally, studies of urban sewage removal, storage and treatment industries have expanded our appreciation of the complex distribution networks that shaped Australia's industrial (and increasingly urbanised) landscapes (Miller 1991; Higginbotham 1991; Callaghan 1990; Wong 1999).

With scholars questioning the socio-economic role of manufactured commodities within Australian colonial settlements, consumption studies have gained increasing attention over the last decade (see Brooks 2005). Such research has extended the focus of Australian Industrial Archaeology from the workplace to the marketplace and residential household. The sheer concentration of archaeological work at The Rocks neighbourhood of Sydney has produced a rich literature on the nature and meanings of modern commercialised products within this particular nineteenth-century working community (Lydon 1993; Karskens 1999, 2003). However, other studies of urban neighbourhoods (Murray & Mayne 2001), rural settlements (Lawrence 2000, 2005; Nayton 1992; Kerr 1995; Allison 1998; Rains 2003) and maritime cargo (Staniforth 2003) have begun to illuminate the significant role of manufactured consumer goods within the changing and multi-ethnic fabric of Australian society. Most recently, Penny Crook (2000, 2005) explored dynamics of consumer choice through the quantification of material patterns, relating both decorative variations within ceramic assemblages of different households, and variations in artefact 'quality' as a physical attribute of workmanship, to the broader 'shopping practices' of urban consumers.

Settlement patterns and the characterisation of historic landscapes

Even a brief consideration of this research theme reveals the extent of Australian leadership within Industrial Archaeology. In contrast with trans-Atlantic studies, much Australian work has been undertaken within a heritage conservation framework—thereby producing a distinctly holistic approach to industrial landscapes. From Graham Connah and Judy Birmingham's early fieldwork at Regentville, New South Wales (Connah 1986; Wilson 1988; Birmingham 1990), through Susan Lawrence's more recent projects on the Victorian goldfields (Lawrence 2000, 2004; Figure 2),

Australian research has always implicitly acknowledged that a study of a working landscape necessarily requires a study “Of the Hut I Built” (Connah 1988).

Whether a result of its national origins in the last decades of the ‘preindustrial’ era (Karskens 2003:37), or the underlying interests of those who established this field of scholarship, Australian work has never maintained rigid boundaries between different arena of labour. Rather, most practitioners have followed Grace Karskens’ observation of ‘little separation between home and work’ (2003:42), when examining both the densely populated urban communities of The Rocks and ‘Little Lon’, as well as the isolated mining camps and pastoral stations of rural Australia. Previous work on Australian working settlements has extended our understandings of historic building techniques and fabrics (Lewis 1985; Varman 1987; Connah 1988:64–79; Bell 1990; Murray and Mayne 2001), patterns of mobility in both labour and capital (Kerr 1995; Lawrence 2000; Davies 2005), ethnic solidarity and chain migration (Gaughwin 1995; Comber 1995; Hill 1998; Freeman 1999; Stankowski 2004) and essential household-based industries (Lawrence 2004; Karskens 1999; Casey 1999; Allison 1998; Lydon 1993). Indeed, this particularly Australian approach to industrial-period settlements guided the comparative research framework for recent excavations of workers’ cottages in north Cheshire, England, funded through English Heritage as a pilot study of working-class domestic life during the Industrial era (Casella 2005a, b).

The acknowledgement of industrial places as historic landscapes may ultimately prove to be one of the most significant Australian contributions to the international discipline. Initiated during the mid-1980s as a two-year archaeological survey of sites within Ironbridge Gorge, Shropshire, the Nuffield Survey represented both the first British attempt to record an archetypal industrial district as an inter-related set of sites and structures, and one of the earliest examples of British industrial archaeology undertaken as a process of heritage conservation (Clark 1987; Alfrey and Clark 1993). As a result of her ground-breaking survey and inventory, Kate Clark received support from the Heritage Lottery Fund to develop guidance notes on the conservation of Post-medieval heritage across the United Kingdom. Searching for existing models of best practice, and drawing upon her initial Australian training, Clark turned to the work of James Kerr, and adapted his approach to a European industrial context (Clark 2005). Thus, Australia’s *Burra Charter*—with its explicit focus on objects, buildings and archaeological remains as integrated cultural landscapes—provided the initial framework for the conservation management planning practices now increasingly applied to historic industrial districts across Britain.



Fig. 2: A ruined cottage at Lady’s Gully, Mount Alexander Goldfield, Victoria, 2000. Photo by Susan Lawrence, La Trobe University

Class, status, power and identity

Questions of social affiliation have remained an enduring theme in Australian Industrial Archaeology, with various studies of status, gender, socio-economic class and ethnicity diversifying our understandings of colonial working life. Despite a widespread ideology of egalitarianism, Australian industrial relations have been marked by questions of status and inequality since the First Fleet delivered its cargo of convict settlers in January 1788. While themes of socio-economic hierarchy can be found throughout the literature, more recent research has explicitly illuminated how the built environment and spatial layout of workplaces materially participated in the perpetual tension between labour and management (Paterson 2003; Davies 2005). In her geographic analysis of the Eveleigh railway workshops, Sydney, Lucy Taksa (2005) investigated the locations of mass meetings organised by the employee union to demonstrate how spatial practices of resistance enabled workers to negotiate the management strategies that choreographed internal work activities. Through a social reading of this workshop compound, Taksa demonstrated both how and where industrial workers appropriated spaces ‘to interact and communicate with each other, to identify common experiences and interests, and to articulate and share their own collective meanings and values’ (Taksa 2005:21).

Perhaps as a legacy of the six Australian ‘Women in Archaeology’ conferences, gendered studies of industry can be frequently found within the literature. Many of these studies linked specific types of worksites to women’s labour, including homes (Lawrence 2000; Karskens 1999; Allison 1998; Young 1998; Bickford 1993), domestic gardens (Lawrence 2004), textile factories (Stenning 1993), market bazaars (Crook 2000) and boarding houses (Lydon 1995). Other approaches adopted a gendered perspective to situate particular artefactual assemblages within the wider colonial economy. When subjected to detailed formal and functional analysis (Casey 1999), ceramics recovered from the DMR site of central Sydney suggested the presence of dairying—a home-based food preparation activity traditionally operated and managed by women. Local production and distribution of specialist ceramics designed for this particular domestic industry thus illuminated gendered aspects of the procurement and production of food within early colonial Australia. Finally, some studies drew upon oral history as a source to provide a living social context for ‘work in the home’, with interviews conducted in South Melbourne illuminating how women’s responsibilities, skills, products, tools and stress helped link families into their wider community (Dale 1991).

Various studies of ethnicity have explored the material dynamics of cultural diaspora and cross-cultural encounter through industrial contexts. As previously discussed, much of this literature examined the colonial importation of specific Anglo-American technologies and skilled labour, tracing their material legacy in the built environment and artefact assemblages of Australia. Recent research has explored the formation of ‘Shared Landscapes’ through studies of interactions between Aboriginal people and European settlers within the pastoral industry (Paterson 2005; Harrison 2004). Revealing a range of cross-cultural encounters, based circumstantially upon ‘time period, location, season, climate, individual decisions and opportunities, pastoral practices, work roles and responsibilities, and access to rations’ (Paterson 2003:63), this research raised important questions on the complex relationships between shared work experiences, attachments to place and inter-cultural contact. Lynette Russell (2005) offered a similar critique of strict binary dichotomies in her analysis of the sealing industry of the Bass Strait islands, with European men and Tasmanian

Aboriginal women mutually sharing technological skills and ecological knowledge within their hybrid multi-ethnic households.

A particularly diverse body of research has been devoted to illuminating the significant role of Overseas Chinese working communities within Australia, situating their presence within colonial industries such as mining (Bell 1996; Comber 1995; Gaughwin 1992; McGowan 2003; Smith 2003), blacksmithing (Comber 1995), market gardening (Jack, Holmes and Kerr 1984; Lawrence 2000) and merchant trade (McCarthy 1988; Lydon 1999; Rains 2003). These studies have demonstrated the profound influence of ethnicity in regional patterns of technological innovation and skilled labour migration. They have also revealed the central importance of social gatherings in the development of close-knit working communities. In this regard, both temples and outdoor stone ovens have attracted particular archaeological attention (Bell 1995; Comber 1995; Grimwade 2003). In her survey of the Chinese tin mining settlement of Garibaldi in Northeast Tasmania, Denise Gaughwin (1995) interpreted both the stone structures, and surrounding fragmentary artefact scatters, as material signatures of the feasts that accompanied the communal consumption of pit-roasted pork (Fig. 3). Similarly, the presence of Overseas Chinese cemeteries associated with the goldfield settlements of Croydon (Queensland), Beechworth and Ballarat (Victoria) have been interpreted as expressions of ethnic inter-generational obligations of shared ritual and responsibility between the Australian industrial community and the family of the deceased who remained in China (Abraham and Wegars 2003).



Fig. 3: Ah Gar's Pig Oven, Tasmania, 1990. Ah Gar was a miner who lived alone near his mine not far from Garibaldi, a Chinese tin mining settlement in northeastern Tasmania. His pig oven is small, but very well made. Photo by Denise Gaughwin, Forest Practices Authority of Tasmania

International contexts of industrialisation

As noted previously, questions of technological diffusion have guided Australian Industrial Archaeology since early publications first established the regional and theoretical scope of enquiry (Allen 1967; Birmingham 1976; Birmingham, Jack and Jeans 1979, 1983). When applied to the specific context of this settler nation, this research theme helped cultivate a comparative international perspective within the sub-discipline. For example, current technological practices in other global regions have been studied as comparative 'ethno-archaeological' models for Australian colonial industries (Altenburg and Jack 1990). Conversely, industrial machinery across Australia has been recorded as survivals of imported foreign technologies (Jack 1979; Rogers 1990; Walker 1993; Pearson 1996; Milner 1997; Stuart 2005).

In many cases, these imported 'relics' provide material examples of colonial ingenuity or regional market strength, with technological design features specifically adapted and manufactured to meet local Australian conditions (Fig. 4).



Fig. 4: Timber-powered steam engine, Coal Mines, Tasmania, 2005. Manufactured in England, this engine represents an early adaptation of traditional British designs for coal fired steam engines. Used on the Tasman Peninsula, the engine supported extractive industry undertaken by unfree convict labour.

Further, research on the international transfer of specific technologies has situated the local development of Australian industries within broader dynamics of the nineteenth-century global economy (Staniforth 2003; Gojak and Allen 2000; Connah 1998; Rogers 1990; Bell 1987). Both the rise and decline of shore whaling in Western Australia have been linked to growing American technological and economic dominance within this maritime industry (Gibbs 2000). Similarly, the evolution of Australia's kerosene industry—as archaeologically represented in the fortunes of Joadja, the archetypal oil-shale community of New South Wales—has been situated within global economic forces (Jack 1995). The introduction of Scottish methods for processing 'boghead' (or oil-bearing minerals) led to the establishment of Australian oil-shale mining and kerosene production during the 1860s. Three decades later, this industry's decline, and the subsequent abandonment of Joadja, was hastened by aggressive competition from the American oil cartel that controlled global production of kerosene and lubricants—those fuels, in other words, required by the motors that powered the heavy machine engines of the late Industrial era.

AND OVER THE HORIZON?

Given this impressive research legacy, what sort of future directions could be proposed for Australian Industrial Archaeology? With various trans-Atlantic scholars now lobbying for closer engagements with social approaches and theories, Australian research has a strong likelihood of maintaining its leadership position over the next decade. Nonetheless, three possible research themes might help situate Australian research at the forefront of these new comparative directions in Industrial Archaeology.

Distinctive cultures of labour

Would particular social relations of labour generate the emergence of unique working cultures? Perhaps as a reaction to the dislocation and loss of traditional industries, a growing



Fig. 5: Fitzroy Dock, Cockatoo Island, Sydney, New South Wales, 2005.

body of British heritage work has begun to record, map and characterise the distinctive cultures that evolved as a result of long-standing regional industries. Thus, a local sense of social 'belonging'—of being Scouser, Manc, Brummie or Geordie—is now recognised to be inextricably linked (respectively) with dock work, textile manufacturing, jewellery crafts, or coal mining. Similarly on the Continent, Erik Nijhof (2004) linked the inter-war twentieth-century mining industry to the emergence of a unique working culture within the German Ruhr and adjacent Dutch and Belgian Limburg regions. Through a combination of workplace solidarity and shared leisure activities, the Polish, Czech, Slovak, Slovenian, Croatian, Hungarian, Dutch and German miners developed both a unique pidgin language known as 'cité-German', and a distinctive multi-ethnic 'industrial culture' acknowledge today by heritage initiatives within both Belgium and The Netherlands (Nijhof 2004; Nijhof and Scholliers 1996).

Would studies of industry-based 'ethnogenesis' translate to an Australian context? Did the shared experiences of pastoralism in the arid regions of Central Australia and the Kimberleys, for example, create an occupational or regional culture distinct from that of the timbering communities in the temperate zones of Tasmania and southern Victoria (McGrath 1987; Paterson 2005; Kostoglou 1993; Davies 2005)? Did the sheer influence of the gold mining industry help nurture not only the distinctive urban landscape, but unique 'feel' of Melbourne? What about the agri-business plantations of Queensland? Would the cross-cultural encounters sustained by these regionally-based industries foster the emergence of different 'creolised' working communities? Australian heritage projects, such as recent work on Sydney's Cockatoo Island (Fig. 5), suggest radical new directions for Industrial Archaeology by not only recording the material remains of built environments and machine 'relics', but also historical evidence of skilled technologies, and oral histories of everyday working life at these monumental worksites. Similarly, Australian work on maritime communities has explored how aspects of seafaring life became translated and applied to terrestrial conditions (Gojak and Iacono 1993; Gibbs 2003b). Drawing from such holistic perspectives, would these shared experiences of labour ultimately produce a special sense of community, a distinct language pattern, a common worldview, or even a unique industrial 'culture'?

Industrial archaeology and the political economy of industry

Australian research could also provide critical perspectives on the wider socio-economic contexts that both constrained and enabled the development of local industries (Todd 1995).

Such an approach would consider both technological innovation and obsolescence as complex political and situational histories, rather than inevitable or accidental events. For example, Colin Rynne's study of designs for the suspension waterwheel within County Cork, Ireland demonstrated not only the dynamics of technology exchange between the engineers and manufacturers of nineteenth-century Ireland and Northwest England, but more importantly the enmeshed (and ultimately exploitative) political economies of these two regions within the United Kingdom (Rynne 2005). Kept dependent upon English coal imports, Irish manufacturing industries were limited to the immediate hinterland districts around port towns. Expansion into the island's interior required the development of an alternative power source—one that utilised a cheap and abundant local resource. As a result, Irish-based manufacturers, far more than their English counterparts, embraced water power (rather than steam) as the basic engine of local industry. 'Relics' of this colonial legacy are therefore ubiquitous across the inland counties, with the surviving remains of Irish water powered mills and factories themselves a reflection of the unequal socio-politics of industry within the nineteenth century United Kingdom. Would the adoption of water power hold similar meanings within the Australian colonies (Pearson 1996)? Or would it simply represent a technological continuity with long-standing European industrial traditions? Did hierarchical dynamics of resource exploitation and market control shape the industrial landscape of colonial Australia? What industries were established, regulated, or restricted to enhance English political and economic interests? How did Australian entrepreneurs materially and technologically respond to such overseas controls? Could this industrial heritage be used to expose the stark inequalities of global capitalism itself?

Australian convict places can similarly be seen to articulate with the trans-national politics that sustained the consolidation of European wealth and empire from the eighteenth century. As places of coerced (and semi-voluntary) labour, these Australian convict sites can be historically linked to both the contemporary factories and mines of Northern England, and the tobacco, cotton and sugar plantations of the Caribbean and American South. By analysing the material heritage of convict transportation as part of a much broader story of unfree labour and global capital, of exploitation and

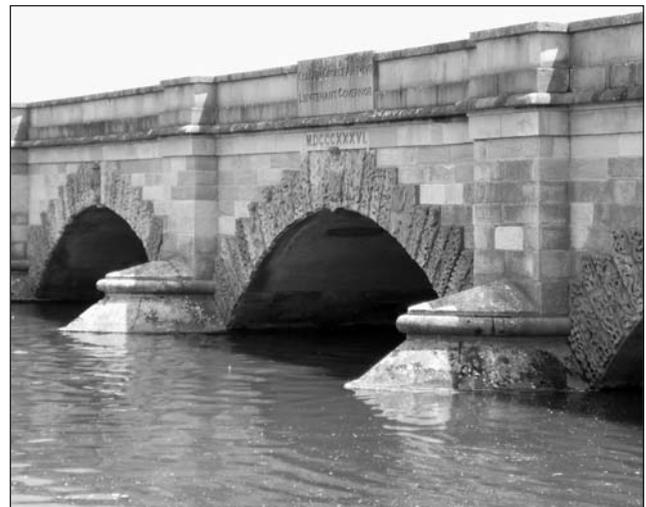


Fig. 6: Ross Bridge, Tasmania, 2005. Designed by Daniel Herbert, transported from Britain in 1828 for highway robbery. Built by convict labourers. Celebrated as an extraordinary example of convict art, the arch sculptures have been interpreted as portraits of Herbert's family and colonial authorities, symbols of oppression, and icons of Celtic mythology (Greener and Laird 1971). Photo by Jody Steel, Parks Service of Tasmania

opportunism, archaeologists can illuminate profound dynamics of coercion, insubordination and social agency (Fig. 6). Thus, as places like the Tasman Peninsula and Great Northern Road come to be understood as integrated landscapes of industrial production and resource distribution, they will teach us about the ‘creativity and accomplishments of the participants, the inventors, designers, architects, machinists, and assembly line workers who produced the machines, processes, buildings, and other artefacts that helped shape our industrial cultures’ (Gross 1993:118).

All work and no play makes Jack a dull boy

With an increasing number of trans-Atlantic scholars redefining the field as a critical ‘archaeology of labor’ (Shackle 2004), Australian scholarship could further explore how working communities not only laboured and lived, but how they also recreated and relaxed. Acknowledging the dominance of the tertiary sector within post-industrial western economies, some recent overseas archaeological projects have explored leisure and sporting facilities as both service-based industries, and places of social activity that shaped the everyday lives of workers. Could these studies of local cinemas (Richardson 2005), swimming pools and playing fields (Wood 2005; Casella 2005c), or even flashy gambling palaces (Hall 2005) inform similar research on Australia’s recreational heritage?

In a recent publication series commissioned the National Parks and Wildlife Service (NSW), questions of attachment and belonging to ‘place’ have been explored through the diverse cultural values of public park lands and heritage sites (Thomas 2002; Byrne and Nugent 2004). By adopting a similar landscape perspective, industrial archaeology could examine whether specific sporting grounds, seawater baths, zoos or public gardens cultivated a unique shared experience of working-class life. How did the cinemas, beaches, parks, dancing-halls, Mechanics Institutes, pubs and hotels—those beloved places that framed daily life for the eight hours between work and sleep—help promote a sense of solidarity among the various Australian communities of working men, women and children (Waterhouse 1990, 1995; Cliff 1999)? How did patterns of multiculturalism, ethnic affiliation, gender and family life intersect with the experience of recreation (Thomas 2001)? Did the nature of these service industries differ between regions? How were they regulated, and by whom?

CONCLUSION

Ultimately, in following new social lines of research, clear distinctions between Industrial Archaeology and the wider sub-field of Historical Archaeology become meaningless. And yet, perhaps such rigid definitions were always murky, or even fictitious. Perhaps, just as early practitioners like Judy Birmingham enthusiastically advocated a holistic study of the recent past, Australian scholarship continues to fully reintegrate places of work and places for living. With growing trans-Atlantic disillusionment over the intellectual scope of Industrial Archaeology, many have begun to call for an end to the discipline. Perhaps Australian scholarship demonstrates that an alternative future already exists.

ACKNOWLEDGEMENTS

I would like to thank Judy Birmingham for both my initial introduction to the archaeology of Australia’s historic past and for grand camping adventures on the banks of Boggy Hole in

Central Australia. A number of people generously supported this literature review. Denis Gojak, Mary Casey, Penny Crook, Jody Steele, Susan Lawrence, Martin Gibbs and Denise Gaughwin all supplied essential references and images, typically at short notice. In addition to editorial suggestions from two anonymous reviewers, this paper particularly benefited from discussions with Denis Gojak and Martin Gibbs—although any inaccuracies or misinterpretations are, of course, my own fault.

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