

Colonisation in the Industrial Age

The Landscape of the Australian Gold Rush

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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

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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

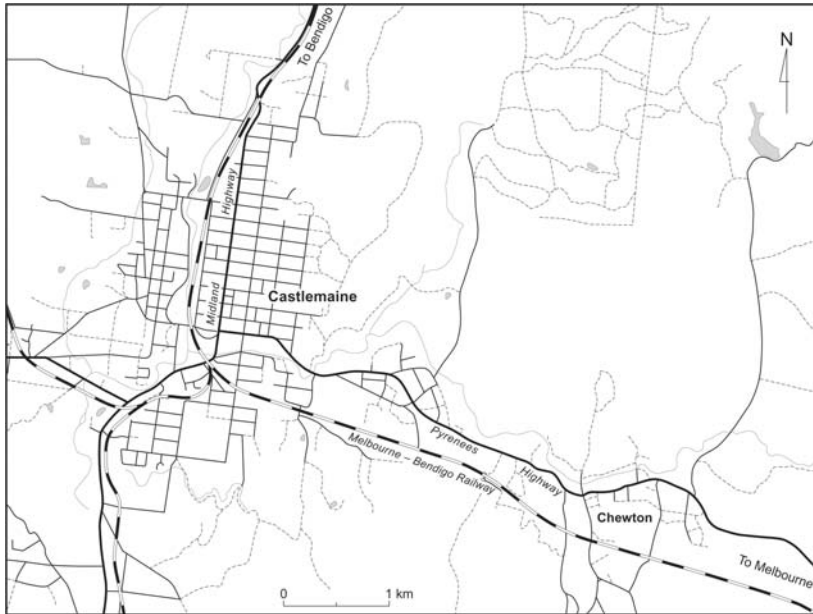


Figure 2. The grid plan of Castlemaine, the government town, and the organic plan of Chewton, showing the influence of the diggings.

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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