SURVIVING THE RESOURCE BOOM: Historic Minesite Conservation in the 1980s

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This paper is based on experience in recording and conserving historic minesites in Queensland, Western Australia, South Australia and the Northern Territory. Its aim at this conference is to provide comparative background from other parts of Australia against which the Victorian situation can be understood.

The paper will identify the four principal threats to historic minesites which are active in Australia today. These are:

1. the renewal of mining on historic sites,
2. vandalism and theft,
3. natural decay, and sadly
4. shire councils.

Decisions about what to conserve must be based on a clear understanding of what is significant. It goes without saying that it is not possible to conserve every abandoned minesite as a heritage item; there are simply far too many of them, the great majority of them are not of importance, and the resources simply do not exist to conserve the historic relics more than a tiny proportion of the hundreds of thousands of mines which have operated in Australia in the past two hundred years. Therefore it is necessary to be very selective and to recognize when a minesite has some feature which singles it out as of special significance.

This recognition of special significance is made difficult by the great diversity of evidence which mining creates. There is a dramatic contrast between the sites, say, of an 1840s copper mine in South Australia, such as Burra, and a 1950s uranium mine in the northern Territory, such as South Alligator. What the two sites do have in common, however, is that the evidence to be found there today is only a small fragment of what was there when the mine was operating. Frequently the most significant aspect of a historic mine was the process which was carried on there. You will never find the process preserved today, simply isolated fragments of the plant which performed it.

The evidence of mining takes many forms. At Moonta, where copper was mined from 1861 until 1923, and then the tailings were retreated until 1943, there is an entire landscape in which everything visible is mine waste: tailings dumps, cementation ponds, slimes extending to the horizon. At hundreds of places across Australia where copper was smelted you will find black dumps of slag, potentially the most durable works of humanity on the continent. There are many communities created by mining, and some of them show their origins in their architecture; a building such as the Imperial Hotel at Ravenswood could only be built in a fold mining town. In the grounds of the University of Adelaide is a bronze sculpture of Walter Watson Hughes, a benefactor of that institution. The reason Hughes could afford to fund education on a lavish scale was that for a time he personally owned the Moota and Wallaroo mines; thus his statue is a distant part of the Copper Triangle's mining landscape. In the rubbish heaps of a thousand "Depression camps" you will find iron containers with the bottoms worn out of them by miners hand-dollying specimens, evidence not only of mining industry, but also of poverty. Stand fifteen minutes drive south of Burra, at the border of the Burra Burra mine lease and the Princess Royal lease. Look south and you see a scattered canopy of red gums covering the landscape around the Princess Royal Mine, which was a hopeless duffer. Turn and look north, and there is not a tree to be seen in the landscape where the Monster Mine burned firewood to provide steam to its pumps, day and night for over thirty years. This is the landscape of mining.

All evidence on historic minesites, without exception, is fragmentary, giving only a small part of the greater picture. This gives rise to a conservation axiom, that things are significant in proportion to the extent to which they reveal that greater picture. What we should ask of every mining fragment is what it tells us about the landscape of which it was once part.

A fragment's significance may be enhanced by its historical context. The Mount Mulligan coalmine in Queensland today exhibits the physical evidence typical of a small-scale coalmine of the early twentieth century. Only by visiting the cemetery can one see anything to suggest the role the mine played as the scene of Australia's third-worst industrial accident, on the day in 1921 when a coal dust explosion killed the entire underground workforce. On the Wallaroo smelters site today, a single brick smokestack is virtually all there is to be seen above ground. That stack's historical context is best illustrated by photographs taken at the turn of the century, when it was one of about twentyfive, pouring black smoke into the sky above one of the world's largest smelters. To understand these places today, we must know their past

Distinctiveness may contribute to a place's significance. In its simplest form, this may mean rarity.
There are only two intact arsenic labyrinths recorded in Australia, one each in South Australia and New South Wales. Arsenic was common enough as an impurity in ores everywhere, but in few places was it mined and treated in its own right. These examples surely warrant conserving on grounds of their numbers alone.

Technological distinctiveness means that not all look alike. The gold mines of Charters Towers and Ravenswood had a local peculiarity: an underlie headframe whose design was duplicated nowhere else in the country. They were an excellent example of the way in which local conditions (in this case the persistent shallow-dipping quartz reefs) imposed variety on an industry that was otherwise highly standardized in its technology. Only one of these headframes still stands, at the Sunset Mine in Ravenswood. It is in poor condition, and nothing is being done to conserve it.

At a few places there are local pieces of ingenuity, such as the use of cast slag blocks as a building material. In these cases, I equate distinctiveness with significance. And sometimes a whole industry may be distinctive. The uranium mines that operated in the north of Australia in the 1950s and 1960s left abandoned minesites unlike any others in this country. To my knowledge, none of these has been recognised by any heritage conservation measures to the present.

The distinctiveness test helps to inform conservation decisions. In South Australia the remains of the gold treatment battery at Mongolata were briefly considered for the Register of State Heritage Items. Originally this was one of five nearly identical batteries built by the State to encourage gold production during the 1930s, but whereas Mongolata is now reduced to fragmentary machinery relics, another of the same group at Mount Torrens is largely intact, and the one at Peterborough even remains in service, although it has been extensively modified. The Mongolata battery is an evocative ruin in its local setting, but is that a reason to conserve it?

In the national context such sites are relatively common, and large and historically significant gold treatment works such as the Venus battery at Charters Towers, with a large proportion of its plant still complete, provide a benchmark against which others of the same general type must be measured. Is it necessary or desirable to conserve ruins when the intact article exists elsewhere?

The danger in these questions is that they can easily be converted into a justification for the destruction of historic sites on the grounds that something similar exists somewhere else. To avoid this pitfall it is necessary to be very clear about the degree of distinctiveness which the site exhibits, the extent to which its features are really duplicated elsewhere and the part that historical and physical context play in determining its significance. I reiterate that we must commence the conservation process in the knowledge that only a small proportion of the historic minesites now in existence can be preserved. We must have a means of determining how many examples is enough.
Cultural distinctiveness ought to be a guide to things in need of conservation. On Australian minesites can be found copious evidence of technology and folkways imported from Cornwall, from Wales, from Germany, and from the U.S.A. All of these origins are well documented, and the onsite evidence is well understood. But there are many fields where in contrast the evidence of Chinese habitation and industry is abundant, sometimes in such overly identifiable forms as Chinese grave markers or pig ovens, elsewhere in more subtle indications such as a proliferation of drystone retaining walls, or footholds cut in the corner of a mineshaft. The archaeological evidence left by the Chinese is complex, and at present poorly understood. In the face of a paucity of documentary evidence about Chinese settlement on the nineteenth century mining fields we cannot safely dismiss any part of their physical evidence as unimportant. It must all be assumed significant unless proved otherwise.

The physical context in which fragments occur is very important. I have already suggested that a more complete site is likely to be of greater significance than a less complete site. Why preserve trees if you can preserve forests? Sites in a high state of intactness are very precious, and justify a considerable effort in conservation, but they are still fragments; they have-always been altered, reduced and degraded, and they can only show plant, not processes.

They can also be very misleading, if anyone is foolish enough to attempt to interpret them without doing the necessary documentary homework. The Tyrconnell mine on the Hodgkinson Goldfield in Queensland opened in 1876 and remained the major mine on the field until it closed in 1941. Visitors to the site in recent years could be forgiven for believing they had walked into a nineteenth century time capsule where everyone had just gone to lunch: a skip waited at the headframe brace, ore sat in the stamper bins, the blacksmith’s tools lay beside the anvil. But what the Tyrconnell really demonstrated was how little some aspects of mining had changed between the 1870s and the 1940s; the mine surface workings were completely rebuilt on at least four occasions in those sixty years, and the plant in the photographs all dates from 1937.

Even the most complete-looking industrial site will almost certainly have undergone dramatic alteration, both during its working life and since its closure. Mining sites of any age have invariably undergone periods of updating, and often complete abandonment and subsequent reoccupation. These events will have left their evidence in layers on the mining landscape. This has important implications both for the assessment of the mines’ significance, and for their future management as historic sites.

Let us look at the threats which historic minesites face. The first is natural decay. This is not usually a problem on long-abandoned sites which have stabilised; the critical time for rapid decay is usually immediately after closure of the mining operation and the cessation of care and maintenance, long before conservation measures for historic preservation reasons are even contemplated. But catastrophic natural events are possible at any time. The Tyrconnell mine structures were severely damaged by a bushfire in 1984. Sixty years earlier another bushfire had consumed the timber and other organic elements of the Burra mine, leaving only the empty masonry shells. The North Rhine mine in South Australia has the only surviving Bull engine-house in Australia, that is, one which had a direct-acting steam engine inverted over the pump rod in the shaft. As late as 1972 its shingled roof and boiler stack (both dating from 1860) were intact, then in a matter of minutes both were levelled in a thunderstorm. Perhaps nothing could have been done to prevent these losses, but normal maintenance and security would have minimised the risks. None of these places was being managed as a historic site at the time, but they should warn us to remain alert to these mundane threats to historic places.

Vandalism and theft are serious problems on many minesites, increasing with the ready availability of off-road vehicles and the popularity of metal detectors. There is a whole genre of books and periodicals which encourage their readers to loot historic sites, and this noxious form of recreation is visibly destroying archaeological evidence and eroding cultural significance in even the remotest places, many of which were protected until recent years by their inaccessibility. Nor is the problem confined to small-scale pilfering. In 1981, two eight metre long Cornish boilers and a quantity of other
may be desirable to preserve elements of the site by removing them to another location. It is necessary to understand the cultural significance of both the individual elements and the site as a whole before that decision can be made.

However, when removal of plant is done in these circumstances, it rarely seems to be done well. The machinery from the Iron Blow mine in the Northern Territory stood in the path of a new open-cut operation, and was removed to town to save it. It now sits in Pine Creek beside the headframe from the Enterprise mine, which was also on the site of an open-cut mine, the stampers from the Mount Wells battery, which were superseded by a ball mill, and not very far down the street from those Zapopan boilers. Now in every case the reasons for taking the machinery to town may have seemed to be for the best, but the net result is that the town of Pine Creek is slowly disappearing behind its collection of historic mining machinery, all of which is still awaiting conservation decisions and a lot of funding.

From removing plant out of the way of an imminent mining operation, it is a short step to removing it just in case there is ever a mining operation in the future. This seems to be the principal threat to some of the minesites of the Palmer Goldfield in Queensland, where the Mines Department has for some time been proposing to remove the machinery from the principal mines and relocated it more centrally in the abandoned townsite of Maytown. The aim appears to be to clear the ground in case a mining proposition emerges. Given the geology of the field, and the well-documented history of the mines in question, the prospect of their viable reopening seems remote, even in present economic circumstances. What is of particular interest in this case is that a government agency with a pro-development orientation has apparently identified cultural conservation interests in advance as a possible environmental constraint on its clients and has sought to pre-empt those interests by quietly altering the cultural landscape before it became a public issue. The attempt appears to have failed, but it gives notice to people with an interest in conserving the past to keep a sharp lookout in the direction of the future.

The resumption of mining operations on a historic minesite is of course a threat with serious and far-reaching implications for conservation of the historic environment. This may seem to contradict what I said earlier in this paper, when I referred to successive periods of operation leaving their evidence in layers on the mining landscape. Renewed mining by traditional methods on a scale compatible with the earlier mining evidence on the site is not necessarily a cause for alarm: it can usually be accommodated on a historic minesite, subject to appropriate conditions. However in the 19-80s we are witnessing a new generation of mining developments which have destructive consequences of an unprecedented kind and scale.
Minerals now dominate Australian export commodities. The most productive of these, coal, iron ore and bauxite, are produced for the most part from deposits that have only been exploited in recent times, typically since the 1960s, and thus there is little impact on historic places. However, the fourth largest export earner this year will probably be gold, and there the picture is very different.

There have been virtually no significant new discoveries of gold in Australia since the 1930s; the new gold boom is concentrated almost entirely on long-known deposits, that is, on historic minesites. The methods of separating gold from ore have increased in efficiency to the point where most of what is mined today would have been regarded as barren ground a century ago. Some mines in the 1980s operate profitably at a grade of 2g/t. At the turn of the century, most miners regarded their break-even grade as an ounce per ton, or about 30g/t. The extraction methods almost universally adopted involve very large-scale open-cut pits, whose operations and machinery are derived from the earthmoving industry. Fuelled by a gold price which rose dramatically in the late 1970s, the mining industry now has the technological capacity and the economic motivation to remove entire landscapes and treat them.

The modern tendency of the mining industry to alter the landscape on a massive scale was first felt in Australia in the tin and gold industries which, from the early twentieth century onward, have made extensive use of dredging and hydraulic mining. The implications of these activities for the historic environment, while dramatic, usually involved only the destruction of early small-scale alluvial mining evidence and its replacement by its modern equivalent. Sometimes a settlement or industrial plant site would be lost, as has happened in places in the Coolgarra-Brownville-Mount Garnet district of Queensland, where tin dredging has been carried on for nearly fifty years. In general, however, any form of new mining operation on an old site before the 1980s meant an intensified revival of old methods rather than a transition to new technology.

The principal instances of destruction of significant cultural resources by the new mining boom have come about either when an old underground mine has reopened as an opencut mine, or when dumps have been taken for retreatment. In the Northern Territory, open-cut extraction or the extensive sampling that precedes it have devastated mining sites at Pines Creek, Wandi, the Union, the Howley and Mount Bonney, among other places. Many of these were Chinese settlement sites of some significance, most notably Wandi, where the remains of a large Chinese township have been totally destroyed. Ravenswood in Queensland was for a century dominated by the mullock dumps that stood on the ridge overlooking the town. In 1984 these were removed, along with all the other mullock and tailings in the town and surrounding district. This has irreversibly altered the character of the town of Ravenswood, but the story becomes much worse than that. The dumps of the Ravenswood district were taken to a central location for retreatment by agglomeration heap leaching, and the place chosen for the new treatment plant was directly on the site of the abandoned 1880s silver mining town of Totley. This has also altered the character of the town of Totley, to say the least.

The Sons of Gwalia mine in Western Australia will be well known to ICOMOS members who visited it in November 1984. It was one of Australia's great underground gold mines, closing as recently as 1963 after producing over two and a half million ounces of gold from workings nearly a mile in depth. Its first manager was Herbert Hoover, later President of the U.S.A., and it was the only place in Australia where one could see tangible evidence of his career as a mining engineer. The surviving mine plant included a technologically distinctive woodgas producer, a remarkable timber headframe designed by Hoover, and almost certainly the largest steam winding engine in Australia. All in all, a mine with the most impeccable heritage credentials.

There is nothing from the period of underground operations on the site today. The new Sons of Gwalia mine, which opened in 1982, is a sixty metres deep pit which occupies the entire historic mine, treatment plant, and part of Gwalia township. When the new mine commenced production, it was at first intended to preserve part of the historic mine surface workings alongside the new operation, even though this would leave a portion of the orebody inaccessible. However, fluctuations in the gold price and the requirements of mine development eventually outweighed this altruistic impulse and the new mine has subsumed the entire site. The head-frame and winder were retrieved from their original position, and have been relocated a few hundred metres away as museum pieces.

It is not unusual to find that early relics have survived alongside new mining developments. At Kidston in
Queensland, Australia's current largest producing gold mine has left the 1921 battery intact, although seriously neglected. At Mount Isa, amidst a landscape that has seen massive opencut reworking and rebuilding of plant, there are still such monuments as the winding gear of the Lawler shaft, and the Urquhart, Davidson and Man & Supply headframes, all of which date from the 1929 expansion of operations under British ownership. There is a sentimental streak in many mining engineers that gives them pride in having these relics of the old days of the industry around the place, as long as they don't get in the way. But the Sons of Gwalia experience demonstrates very clearly that historic mine plant will not be tolerated if it threatens profitability, regardless of its significance.

Of the parts of Australia dealt with in this paper, South Australia differs from the others in being the only one with heritage legislation in force, with some statutory powers to protect historic places such as mining sites. But it is difficult to draw any comparative conclusions from this, because South Australia, unlike the other states mentioned here, is not experiencing a gold boom with its attendant pressures on historic sites.

Nonetheless, there is some value in looking at the South Australian experience of administering minesites as historic places in the face of development pressures. The major instance of resumed mining on a historic site in South Australia in recent decades was at Burra, which reopened in 1969 and operated as an opencut mine until 1981, producing four-fifths as much copper as it had in its earlier phase of operation between 1845 and 1877. The decisions about reopening the Burra mine were made before there was heritage legislation, but they were shaped to some extent by community wishes. The result was a reasonable compromise between conservation and mine development; it would be done differently today, but the results are acceptable.

However the operation at Burra was simply a reopening on a larger scale of a mine which had already operated as a very early opencut mine in the 1870s, and most of the mine planning merely reinforced decisions made in an earlier generation, based on the same geological indications. If very few historic structures were lost in the 1970s, it was not because the miners tried hard to preserve them, but because the plant on that part of the site had already been demolished a century earlier. The orebody was the principal determinant of mine morphology in both phases of mining.

In other cases where there appears to have been a direct conflict between mining and conservation of the historic environment, a satisfactory resolution has always been found. At Kapunda, a company that proposed to reopen the copper mine withdrew without ever applying for a lease. The company blamed heritage restriction (which had never been imposed, as there was no development application), but it is universally believed that the operation was simply not economically viable. Conservation interests sometimes serve as useful scapegoats for company directors who are unwilling to tell shareholders that they have wasted five years diamond drilling a duffer.

At the Worthing Mine, Australia's oldest Cornish pumping-house appeared for a time to be under threat from a quarrying operation. Negotiations led to a guarantee that the site would be preserved, although only after exploration had established that there were no commercial stone reserves underneath. The tailings of the Moonta mines were being removed for road-making purposes. The practice stopped as soon as an alternative supply of suitable sand was located. In each of these cases there was a happy outcome for the historic site, but in every case that outcome was determined by the economic resource present and its profitability relative to other sources of the commodity.

No mining operation on a historic site in South Australia has ever been refused approval. The heritage legislation is administered in the belief that modern mining operations represent a legitimate continuation of the site's historic function, although it may be necessary to impose conditions to minimise impacts on the site. A distinction may also be made between exploration and production, for a greater degree of intervention in a historic site may be tolerated by the community when a miner's intention is serious, and likely to produce tangible benefits. More stringent conditions are likely to be imposed on exploration activities, which rarely benefit anyone but the explorer.

This policy implies that a trade-off is possible between economic and cultural resources. While in principle it undoubtedly is possible, an equitable solution is extremely difficult to quantify, for it involves putting a dollar value on historic evidence. One must ultimately be able to calculate whether the Sons of Gwalia mine, the village of Totley or the Chinese archaeological site at Wandi were worth more or less to our culture than the value of the gold extracted from their sites. I do not know how we can do this. But then, why should I be
the one to do it? It is surely more reasonable to expect the mining industry to be accountable for its actions, and to provide an environmental impact statement informing the community of the cost of its proposed operations in cultural resources lost, balanced against the financial and other benefits to be gained.

The general finding of my paper is that throughout Australia the likelihood of preservation of a historic minesite in the 1980s depends almost entirely on the economic value of the mineral resources on the site, virtually regardless of the legislation in force to protect historic places. Some of you will find that a very pessimistic summing up, but I believe it leads to a constructive conclusion. In the knowledge that a great many historic sites will be lost, we must be very clear about which ones should be preserved, and why. We need research, and criteria, and values. We need to speak the language of the miners, to look for trade-offs for the community, and to know what is an acceptable loss and what is not. We can no longer afford the luxury of thinking a minesite might be of heritage significance. We must be sure.