CONSERVATION IN SITU OR RELOCATION AND CONSERVATION

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PREAMBLE

It is almost invariably better to conserve a relic within its operating milieu rather than remove it to another place and conserve it there. However, in the redevelopment of many sites, the original proposals of the developer include disposing of significant relics and structures by offering them to museums or attempting to mount them as static exhibits in open space areas of the development.

The consultant's task then is to determine the significance of the relic in situ, determine its likely significance in its relocation position and decide whether it is more appropriate to spend energy in:

1. Trying to persuade the developer or statutory authorities to conserve the relic on site;
2. Trying to extract a commitment for funds to relocate and conserve the relic; or
3. Recording the relic thoroughly in its present milieu, and allowing it to be scrapped.

It should be stated at the outset that some relics, if they cannot be conserved in situ, will actually be destroyed. This is because some cannot practically be moved (such as a boiler which is an integral part of a building), some will suffer too great a decrease in significance (for example a stone bridge), and others are so large and complex that relocating them is financially exhorbitant (for example a gas holder).

INTRODUCTION

The Industrial Heritage

Items of the industrial heritage include relics, which are generally regarded as those artefacts which are mobile, or small enough to be moved by hand or by mechanical means from one place to another, as well as industrial structures such as bridges, gasholders, poppet heads and industrial buildings. The category covers an enormous range from small electric motors to steam engines and giant turbo-alternators. However, the great majority of piece are mechanical devices used in power generation, manufacturing, fabricating or transport which have had, directly or indirectly, an enormous impact on our standard of living. Many are nearing the end of their economic life and are constantly under threat from recyclers.

Many items of the industrial heritage have only been recently recognised by heritage legislation and only a little longer by bodies such as the National Trust and the Institution of Engineers of Australia. Some items of the portable industrial heritage, such as motor vehicles and fire-arms, have been long cherished by certain members of the community. However it is the vast array of machine tools, lathes, steam hammers, electro-pneumatic hammers, sharpeners, millers, riveting machines, turbo-alternators, frequency changers, brick presses, clay-pan crushers, hydraulic lifts and hoists, and saw benches which are the subjects of this paper. The other, generally larger structures, which are often more significant, have been largely ignored by collectors and conservationists.

Principles of Assessment and Conservation

The principles of assessment and conservation of industrial relics and structures are similar in many respects to the assessment and conservation of buildings, and are just as complex. The terminology used in this paper will be the same as that used in the Burra Charter of ICOMOS Australia.

ASSESSMENT

Existing Procedures

There have been many systems devised for assessing industrial relics and structures. The Historic American Engineering Survey, Institution of Civil Engineers (Great Britain), the Institution of Engineers of Australia and the National Trust, as well as other groups, all have their own assessment procedures.

Engineers have tried to quantify assessment, and to introduce consistency among assessors. However, any method of assessment depends to a larger extent on the experience, training and knowledge of the assessor. By approaching a relic in the same way as a building is approached by a conservation architect, a relatively reliable and consistent result will be obtained. Documentary and physical evidence must be gathered and analysed and comparisons made with other existing stock.

Assessment Using Seven Categories

Relics and structures can be assessed by considering the seven categories of: historical association, technological importance, relative rarity, social significance, interpretive ability, structural integrity and operational ability.

Historical association refers to the length of association a relic has with the historic environment in which it is found. Consideration must also be given to the time the relic has been sited in the one place within that environment.
Technological importance of a relic is the contribution it makes to the understanding of the history of technology, or the contribution it has made to the development of technology. It also takes into consideration such data as whether it was the first made, the largest of its type, or a most revolutionary design.

Relative rarity is the measure of the number of similar items existing now, as compared to the number originally made. For example, the sole remaining 4m long quadruple-sheave hydraulic ram, of which there were literally hundreds made, it regarded in the relative rarity category as being of greater significance than the sole remaining 10m long single-sheave hydraulic ram of which only four were ever installed.

Social significance refers to the importance a relic may have to a social group, or it may be the association a relic has with an important individual such as an engineer or designer.

Interpretive ability is the ease with which a relic can demonstrate the part it played in a process or in the development of a site.

Structural integrity refers to the physical condition of the relic and the sympathy with which alterations have been made to its fabric.

Operational ability is the ability of a relic to operate in its present condition, with a minimum amount of work being done to it, and providing normal facilities such as power source of other materials are available.

Each of the above categories may be given a rating from 1 (lowest) to 5 (highest). From these ratings an average score, called the Significance Assessment Score, can then be given, which reflects the cultural significance of the relic or structure.

The different categories should not always be regarded as being equivalent in considering the total significance assessment, and in some cases the consideration of one or more of the categories may not be appropriate.

The Significance Assessment raw score corresponds to the following values:

- 5 exceptional significance
- 4 high significance
- 3 moderate significance
- 2 some significance
- 1 little significance

It is normal practice to initially assess a structure or relic in the four categories of: historical association, technological importance, relative rarity, and social significance. If the relic is assessed as having moderate or greater significance a full assessment is then completed. If the initial assessment in the four categories is below moderate signifiance, the use of the remaining three categories of interpretive ability, structural integrity and operational ability will give an inflated value.

Relics or structure which have exceptions significance or high significance should be conserved and should be the subject of a conservation policy report.

A relic or structure which is regarded as having moderate significance many be considered for conservation if it ranks highly in one particular category.

Relics or structures which rate as having some or little significance should have their form, construction, function and other relevant details fully recorded before they are modified or moved.

It should be stressed that the assessment of structures and relics will change over time and that the assessment is relevant only for the period in which it was written.

ASSEMBLAGES, COLLECTIONS AND SYSTEMS

So far I have spoken of structures and relics as if they were separate, isolated artefacts. More usually, they are part of an assemblage, a collection or a system.

Assemblages

An assemblage may be regarded as a relic or structure including all the artefacts, tools and items normally associated with if when it was operating. This would include the spanners and wrenches used to tighten loose nuts, adjust gears and other speed-regulating mechanisms, screens to prevent contact with moving parts, and samples of completed and partially-completed work. It would also include signs, pipework and associated services. A lathe, for example, is not merely a single machine-tool, it is an assemblage consisting of a number of lathe tools which are necessary for it to perform its range of operations, a wooden chequerboard foot-stand on which the operator stands, any safety devices worn by the operator, and the oil-cans and grease-guns which are essential to keep it working. Without these items it is not complete, and its interpretive value is reduced.

Collections

A collection is usually a number of relics or structures which belong to a group because they perform the same function, or produce the same finalised product.

Cockatoo Island has an exceptional collection of metal turning lathes. There are over 40 in the collection; none are very old, but some are very large, and they do illustrate the development of lathes over the last half century. Four have great cultural significance in their own right, however there is no equivalent collection of lathes, lathe tools and associated equipment in Australia. As a collection it deserves to be conserved in total.
Systems

A system is more than a collection of artefacts. It is an operational group of related relics or structures which cannot function effectively if any one is removed.

An example of a system is the hydraulic power system at the Eveleigh Locomotive Workshops in Redfern. The steam boiler provides energy to the steam pump, which applies pressure to water which feeds into a network of pipes. Two accumulators reduce the need for the pump to operate continuously and regulate the pressure fluctuations throughout the network of pipes. The pipes bring high-pressure water to a variety of forges, spring-formers, presses and bending-machines.

It is almost invariable that removing a relic from a system decreases the cultural significance of both the relic and the system.

There will be exceptions to such a rule of course. A relic may be of exceptional significance - which as a steam engine - and its removal from a system, with which it is not contemporaneous, may in fact allow its significance to be increased. But in the main assemblages, systems and collections should not be separated.

ASSESSMENT OF ASSEMBLAGES, COLLECTIONS AND SYSTEMS

Where an assemblage, collection or system is intact, it may be assessed as a whole. In almost all cases the criteria used to assess individual relics are suitable for assessing these groups. It is worth noting that when an assemblage, a collection or a system is assessed, it is quite often of greater cultural significance than any of the individual relics of which it is composed.

In some instances a site may contain several structures, a number of relics and assemblages, and several collections of relics all within a single system. At the State Brickworks at Homebush, NSW, there are a number of Fosters brick presses. Each press is a relic of some significance in its own right. The significance of each is increased because each has an assemblage of tools and items normally associated with it when it was operating. This includes the spanners and wrenches used to tighten nuts that vibrated loose, screens to prevent injury, home-made dampers to reduce dust, special clothing worn by the operators, and the dusty hessian bag of just the correct thickness and coefficient of insulation which kept the steam pipes that dried the brick mould at exactly the correct temperature.

The presses themselves, as a collection, illustrate the development of dry-press brick technology over a limited period, and thus their significance is further enhanced.

All the presses are associated with a large number of relics and structures which all play a vital part in the brick-making process. The total collection is housed in a number of inter-connected buildings and kilns. These are situated on the edge of a brick-pit which is an essential part of the system.

The total system of brick-making, from quarrying shale to sorting the fired bricks into groups, is still complete on this site. The system as a whole is of high to exceptional significance.

CONSERVATION OF RELICS, STRUCTURES, ASSEMBLAGES, COLLECTIONS AND SYSTEMS

Preservation, Restoration or Reconstruction

In conservation terms, many relics and structures have been over-conserved. Many are brighter and more colourful than the day on which they were commissioned. Conservation is essential to ensure survival, but the wholesale replacements of parts, re-machining of others and repainting of obviously-worn parts in vibrant colours complete with scrolls, is not in the best interest of many relics. In some cases, painting is part of essential maintenance, but many relics, such as steam-engines, were never painted by their owners and operators, simple because it was unnecessary. They were cleaned during servicing and usually were protected during operation by a healthy layer of dust, oil and grease. With such a layer and with constant supervision, no part was allowed to rust.

Relics, structures, assemblages, collections or systems, when being restored, should have as much original fabric as possible preserved. Where reconstruction is to take place, the original parts should be preserved for possible later research. As a guideline, a relic or structure, when conservation is complete, should have the appearance of having undergone a major overhaul. In general, this means that it does not look new, but does appear to be, and should be, operational (but not necessarily operating).

The survival of a relic or structure is more likely to be ensured if it retains the ability to be operated. Even if the effect is psychological, more care will be taken by those who work with them if there is a possibility that it will be productive again. Routine maintenance is seldom carried out on relics or structures which appear unlikely ever to be used.

Short Term Preservation

In some cases, relics or systems must undergo short-term preservation measures before restoration can be carried out. In this case, it is imperative that every part of the system is collected, catalogued and made secure, and that each part is correctly treated to ensure that, with a minimum of work, the system will be made operational.
IN SITU CONSERVATION VERSUS RELOCATION AND CONSERVATION

Changes in Significance

The cultural significance of structural relics changes with time. This change in overall significance is a reflection of the change which has taken place in all or some of the categories used to assess the significance. The following discussion does not take into account the change which may take place to the significance of a relic through preservation, restoration or relocation.

Increase in Significance

As relics become older, there is a consequent increase in their historic association. Some relic become extremely rare because all other examples of that type are destroyed.

Certain relics become extremely important technologically because the part they played in the history of technology becomes more apparent. As an example Parson's turbines were regarded as important initially because of their association with a famous designer, but now the part they played in the efficient generation of electricity is regarded as having greater significance than their relationship to their designer or manufacturer. On the other hand the social significance of a relic may increase as the designer or manufacturer becomes more prominent or more recognised.

Decrease in Significance

The significance of a relic may decrease over time as well. Structural integrity and operational ability are the two categories of significance which are most likely to suffer a decrease. However, other factors such as disassociating a structure or relic from an assemblage, collection or system, or dismantling the building in which the relic was found, will have a detrimental effect.

For the purpose of this paper, it is sufficient to recognise that before any decisions are made about in situ or relocated conservation, a current conservation policy must be available to the consultant.

Threats to the Fabric of a Relic

Some structures or relics although significant, are not protected by legislation, and when placed under threat must be relocated or face destruction. If the relic is of sufficient significance it must be relocated and conserved.

However, in some instances the significance of a relic depends primarily on its location on a particular site, and relocating it would decrease its significance to such an extent that it would be best to record it and allow it to pass to the great industrial graveyard in the sky.

Assessment assuming relocation

In most cases that have occurred in recent years, the relocation of an artefact has resulted in a decrease in cultural significance. It is the role of the consultant to determine whether the decrease is acceptable, or unacceptable (in which case the consultant must decide whether to have the relic conserved in situ, or to record the relic and allow it to be destroyed).

It is appropriate to use the categories by which the significance was assessed to determine whether it should be conserved in situ or relocated for conservation.

The relic should be re-assessed in all seven categories as an individual relic, and as part of an assemblage, collection or system. It will be necessary, of course, to assume that the relic is in its new location. The new location may be close to the original, it may have a functional similar to the original, and it may be such that it will allow all the other associated relics to be conserved with it. In this case, there would be little decrease in heritage significance. An example of this would be the relocation of several of the smaller lathes at the Cockatoo Island Turning-shop to the Engineering Shop. In this new location they become part of the extremely significant collection of lathes, they are operated, they are removed from an area of threat, and they are moved as assemblages and as a collection.

In another instance some of the lathes may be moved to a technological museum. Here they would not be operated, they would be separated from a collection, and it is fair to assume they would not be moved as an assemblage. In this case the significance would be decreased. The results of the assessment will determine if the items should be relocated and conserved, or recorded and dispersed.

It should be noted that, in almost every case, if a relic is not under threat in its present location, and there is no pressure to move it, it should stay where it is.

If its ultimate position is not known, then a worst-case situation should be presumed, and the assumption made that it will simply be stored with only a chance of being conserved in the future. If its new location is know, the assessment will be more accurate and possible more optimistic.

In this instance, moving the relic will almost certainly result in a decrease of significance.

Specific Questions Within Categories

Within each category used for assessing the heritage significance there are a series of questions which must be answered. The specific questions will depend to a great extent on the relic being assessed. When a relic is being considered for conservation is situ, or for relocation and conservation, the following questions must be posed:
1. Was the relic or structure designed or manufactured for use on a specific site? (e.g. the hydraulic hoists in building 89 Garden Island).
2. Has it been located on the present site for most of its life? (e.g. the Day 1500-ton hydraulic press at Eveleigh loco/workshops at Redfern).
3. Is it identified with its present location? (e.g. the Caisson in Morts Dock, Balmain).
4. Will it be separated from an assemblage, collection or system if it is relocated? (e.g. the crane on the Commonwealth Stores Building at the Royal Edward Victualling Yards, Darling Island).

If the answer to two of the questions is 'yes' then it would appear preferable to expend all resources to have the relic conserved in situ.

The Caisson at Morts Dock, for example, rates a low 4 even though it has been badly damaged, cannot be operated, and most of the system with which it was associated has been destroyed. It is a remarkable relic and one of the pathetic few which remain, on what was once one of the greatest engineering enterprises in Australia.

However, when it was proposed that the Caisson be relocated to another place on the Mort's Dock site, it was assessed again using the seven categories. An assumption was made concerning its new location. The new assessment was a low 3. In addition the answer to the above four questions in each case was 'yes'.

CONCLUSION

Items of the industrial heritage should have their cultural significance assessed twice. First, as an industrial item, and secondly as part of an assemblage, collection or system.

If there is a proposal to relocate the item, then its new position should be determined, and a third assessment conducted using the same criteria as used in the first assessment.

The results of the third assessment will indicated to the consultant whether it is appropriate to:

1. Spend resources persuading the present owner or controller to conserve it in situ.
2. If it is not possible to conserve it in situ then either (a) relocate it and conserve it, or, (b) record it and allow other action to be taken.