IN SITU CONSERVATION VERSUS RELOCATION:  
THE CASE OF SIR DOUGLAS MAWSON'S HUTS  
IN ANTARCTICA

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INTRODUCTION

It is now nearly four years since my brief visit to Mawson's Huts. Since then, few visitors have been able to land at Commonwealth Bay, and the present condition of the buildings and related artefacts is not accurately known. There has been controversy in the press about whether the huts should be brought back to Australia, and disagreement about which city would be a suitable home for this important symbol of Australia's involvement in Antarctic exploration.

Press coverage has largely favoured repatriating the hut - and this seems to mean the Main Hut* only - back to Australia while 'professional' opinion have generally favoured in situ preservation. The difficulty of doing anything at all arises from the extremely remote location of the site - some 2,000km south of Hobart and accessible only by sea for some three months of the year when the pack ice relents. Commonwealth Bay holds the record as the windiest place on earth, and Mawson called it with justification the 'Home of the Blizzard'.

With the Antarctic Treaty due for renegotiation in 1991 and with limited scope for scientific work elsewhere in the Eastern Sector of the Australian Antarctic Territory, it is important for Australia to make some effort at Commonwealth Bay. Mawson was Australia's most important Antarctic explorer, and one of the first to realise the importance of scientific research on this remote continent. Thus the base of the 1911-14 Australian Antarctic Expedition is a very important historic site which Australia has an obligation to preserve. As a signatory to ICOMOS, the Australian government acknowledges this: the contentious issues is how this should be achieved.

Having thought about these difficult issues for some time, I have come to the conclusion that the huts must be preserved in situ, in Antarctica. However in this paper I will explore the opposing case for repatriation as fairly as I can. I wrote a detailed report for the Antarctic Division and published a precis of that report which was published in AICCM (Hughes 1989) - in effect a 'condition report' for the site.

Having argued that the hut should be preserved in situ, one then faces the greater question: how can it be done?

* In this paper, the term 'the hut' means the Main Hut, that is the conjoined living and workshop huts, unless otherwise stated.

DEFINING THE MAJOR ISSUES

Brief description of the site

Full descriptions of the site are in my previous reports on this subject (Hughes 1989), but briefly the historic site consists of the whole headland of Cape Denison in the locality of Commonwealth Bay, 67°S 145°E with major features being:

Main Hut - the conjoined living hut and workshop, a 'pyramidal' building of oregon and Baltic pine largely filled with ice;

Transit Hut - a small outhouse used for scientific observations;

Magnetograph house - a timber building heavily buttressed with rocks in good condition;

Absolute Magnetic Hut - small derelict timber building used for delicate magnetic measurements, allegedly with non-ferrous metal components;

Memorial Cross and plaque - made of timber with steel bands, the cross member has blown down, the plaque was placed in a bronze case some ten years ago, but was repatriated to Australia in 1985;

Puffometer pole - a galvanised pole to which the Proclamation plaque was attached. The plaque was placed in a bronze and perspex box, later repatriated to Australia; Extant artefacts - numerous scattered remnants of the AAE occupation including remains of radio aerials, packing crates, and explosives.

The problem of preserving the main hut can be examined by considering the following aspects: problems in moving the hut; problems in leaving the hut in situ; advantages in moving the hut; advantages in leaving the hut in Antarctica.

Problems in moving the hut

(a) Dismantling the hut can only be done in good weather - a rarity! A sudden gust would be an obvious disaster. A temporary shelter would be difficult to anchor and would disturb surrounding artefacts. The wooden battens, sailcloth and other interesting features would be very difficult to catalogue and preserve if the hut were to be disassembled.

(b) Foundations are frozen into the ground (thus difficult to remove).

(c) Logistical difficulties of removing material from the site - a flotilla of amphibious vehicles would be needed and would again damage surrounding artefacts.

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(d) A museum would need to be on standby to treat the material when it arrives in Australia especially for fumigation and quarantine clearance. The museum would also need a large space to handle and display the hut.

(e) Fungal growth would accelerate in a warmer climate - ideally it should be treated before leaving Antarctica but this could threaten the wildlife.

(f) What would be done with the other huts remaining on the site? The historic and visual integrity of the site would be destroyed.

(g) Changes in temperature and humidity could cause warping - so the hut may not go back together. It would take much time and expense to slowly condition the timber to 'temperate' equilibrium moisture conditions.

Problems of leaving the hut in situ

(a) The timbers are subjected to ice abrasion which is a major source of damage, and if a hole develops in an outer wall the katabatic wind conditions could cause enormous damage.

(b) There is no established method of preventing this damage - no acceptable coating has been found which can withstand the polar conditions.

(c) While there are many people who would like to see the hut, few people are able to see it because of the remote location.

(d) It is difficult to get people to the site to work on the historic site: there is no base for accommodation, no laboratory facilities or materials handling capabilities.

Advantages of moving the hut

(a) It would be more accessible to visitors in a museum: no doubt it could be a major feature of a display on Antarctica.

(b) It could be more easily protected indoors in a controlled climate: though this would be expensive to maintain. The fungus could be effectively fumigated.

(c) Australian Antarctica Expedition (AAE) artefacts could be put in place to give historic re-creation.

Advantages of leaving the hut in Antarctica

(a) Maintains its historic integrity - it would stay with the other three huts, the Memorial Cross and the Proclamation pole.

(b) Controlled tourism may eventually be possible at the site, and the huts would be a major feature of interest.

(c) It would be possible to easily produce a facsimile by bead-blasting and bleaching timber to give a better impression of the hut as it once was: this would be cheaper than moving and treating the hut in Australia.

Why the Memorial Cross should be moved

While I believe the balance of argument favours leaving the hut in Antarctica, I would like to consider the case of the Memorial Cross which commemorates the deaths of Mawson's companions: Niness who fell down a crevasse, and Mertz who died of Vitamin A poisoning after eating dog liver. The Cross is in a prominent position on a hill, and was meant to be seen by all who came to this place marking the deaths of these men who gave their lives to science. There is no doubt that the Cross should dominate the area visually: the difficulty is to preserve the Cross in such adverse conditions. I believe that it is impossible to re-erect the Cross, that without the cross-bar the monument is meaningless, and that the only feasible method of preservation is to repatriate the original, and erect a replica on site. The reasons can be summarised thus:

(a) The cross member has blown down three times already, each time causing damage to the timbers. Engineering calculation show that the erosion of the timber at the base of the Cross make it likely that it could break at that point if the extra weight of the cross-member were added by re-erection.

(b) Inherent design fault (notch facing away from the katabatic) will cause continual difficulties, as the wind acts to separate the notched join.

(c) A reasonable replica of the Cross and plaque can be reproduced easily from timber and it can be replaced regularly as needed. A small, invisible modification to the design - a reinforcing plate inside the cross-member notch - would prevent rotation of the cross-member and lengthen its life-span.

(d) The original monument is unique and evocative and would be a centrepiece in a suitable museum: the original could be preserved without damage.

(e) The Cross is easy to remove and the replica could be installed in one field season.

Tourism

The recent (1989) report of the House of Representatives Standing Committee on Environment, Recreation and the Arts, 'Tourism in Antarctica', has shown there is considerable interest by tourist operators in taking visitors to Mawson's Huts; in fact it is the most favoured single site for Australian entrepreneurs wanting to operate in Antarctica.

The Government report received conflicting views on the potential market for tourists in the Australian Antarctica Territory, varying up to 16,000 per annum. The Government has yet to decide on the Standing Committee report, but it is thought likely it will accept major recommendations, including the following which are relevant here:

(a) The Australian Government to provide funds to enable studies to be undertaken relating to the development of a conservation strategy for the AAT (p. 17).

(b) The proposed visit to Commonwealth Bay and the Mawson's Hut site is of great concern to the Committee. This concern is shared both by the Australian Heritage Commission and the Antarctica Division.
Mawson's Hut is highly fragile, and there is no guarantee that it could withstand a few, let alone the hundred or so, passengers who will be involved in such voyages. There is no government presence at the site to ensure no damage occurs or that artefacts are not stolen. (p. 21).

(c) "In the absence of any guidelines relating to visitors to the Mawson's Huts site, the Committee cannot support tourist visits. Members were concerned at the neglect and lack of interest which various governments has shown concerning the preservation of these historic sites." (p. 21).

(d) "The Committee is aware of pressures to have Mawson's Hut removed from Antarctica and placed in museums either in Adelaide or in Hobart. This attitude is, in part, a result of the neglect and lack of interest shown by various governments in the preservation and proper management of this historic site."

Heard Island - sealing sites are subjected to blasting by windborn scoria and are being eroded by the sea.

Macquarie Island - penguin oil digester site, AAE base.

NZ Ross Dependency: Scott and Shackleton huts, Ross Island

Borchegrevink's Hut, Cape Adare: Cape Adare is perhaps the most similar climatically, and also is very difficult of access. Temperatures exceed 0°C occasionally during the summer; meltwater and fungal attack are problems, but there is not the same extent of ice abrasion.

The Ross Island huts are further south though they still have some meltwater problems, ice abrasion is not as severe, since katabatic winds are infrequent, but fungal attack is occuring. The huts were cleared of ice in the 1960's and objects that were in perfect condition when removed from the ice are now rapidly deteriorating; damage from tourists is a problem: over 500 people have visited in recent years.

The NZ Antarctic Division has set up the Antarctic Heritage Trust and an archaeologist is co-ordinating preservation attempts. The Ross Island huts contain more artefacts than at Commonwealth Bay, and the huts are presented as a re-creation of their supposed past appearance.

COMPARISON WITH SOME OTHER POLAR HISTORIC SITES

Historic sites in other polar regions face similar problems, as illustrated by the following examples:

Other Australian Antarctic (and sub- Antarctic) sites

Wilkes - a paper is being presented by Lynda Clarke and Elspeth Wishart at this conference.
Nordenskjold’s Hut, Snow Hill Island, Antarctic Peninsula

Climatically similar to Commonwealth Bay, but without the katabatic winds.

Canada: Arctic sites

These include: Inuit (Eskimo) sites such as camp sites, houses and burials; and later sites associated with whaling and explorers, such as the graves on Beechy Island, and Kellett’s storehouse on Dealey Island where much research has been done by Archaeologists and Conservators.

Canadian Arctic sites are generally more accessible (by air), and the climate is warmer and there are no katabatics. Damage by polar bears is a potential threat. The sea is eroding many sites and rescue excavations have been done on many Thule (Inuit) houses.

Scandinavia: including Greenland, Jan Mayen and Svalbard

Generally similar material and conditions to Canada, though there are katabatic winds in Greenland, Jan Mayen and Svalbard.

Soviet Union

Sites include Barents’ Hut on Novaya Zemlaya, and ‘Frozen Tombs’ (the Scythian burials in Central Siberian permafrost and native campsites, houses and burials). Material from the Scythian Tombs includes animal and human skins, metals, textiles and ivory: much of it obviously required conservation treatment. Some of these artefacts were exhibited in the ‘Frozen Tombs’ exhibition at the British Museum.

Generally, there are no katabatics since there are no ice caps, the climate is warmer than Commonwealth Bay and access is easier (by air). The permafrost (frozen subsoil) regions are extensive: the ‘snap frozen’ woolly mammoths came from the permafrost in the Yakut Republic.

Comparisons

Obviously there is much that can be learned from comparing studies of these various sites: whilst there are differences, there is much common ground. A review of the literature (see Bibliography in Hughes, 1988) shows that much research, especially that done in Canada, is directly applicable to Mawson’s Huts. The problems revealed in NZ reports on the Ross Dependency Huts shows the inadvisability of removing the ice from inside the huts, without immediate conservation treatment. Conservation with researchers at CCI recently revealed the fibreglass replica grave-markers at Beechy Island are less than a success. The problems of tourism are common in many reports. It would save much effort for all these researchers if they were to exchange information: many assume their work is of limited outside interest and do not publish in well-known journals, if at all, and some work is not published in English.

A proposal - I would like to volunteer to contact other researchers seeking to form an informal network of conservators, archaeologists and others interested in polar historic sites by placing notices in appropriate journals such as Polar Record, ICOMOS and Conservation journals. I would be very pleased to hear from anyone who is interested in joining this network.

PROPOSALS FOR FURTHER RESEARCH

The following topics need further investigation before treatment can be undertaken:

Meltwater problem

It is important to assess the impact on the foundations of the building to determine whether it is endangered structurally by the build-up of a meltwater pool during the summer. The role of the meltwater pool in promoting fungal growth is obvious but the danger to the foundations which were ‘iced-in’ could be very significant.

Mould treatments at low temperatures

The treatment of fungal infestation in a sensitive environment when it is impossible to seal-off the area is very difficult, and seems to be unpublished in the literature I have studied so far. This requires investigation and consultation with a mycologist.

Development of coatings for timber

The erosion of the timbers of the Main Hut is one of the most contentious issues in the preservation of the site, and is the reason most commonly advanced for the repatriation of that building. It is difficult to propose a long-term solution to this problem, but a short-term solution which could easily be developed may be used to give an extension of time for the development of more permanent measures.

By using an elastomeric coating which absorbs the impact of the ice particles the rate of wearing of the timber can be reduced. If a reversible base-coat is used with a ‘peelable’ elastomer over the top, it would satisfy the reversibility criteria set by conservators and could be periodically reapplied over a number of years. Limited field tests with Silastic RTV 738 gave promising results in terms of durability but needs more development aesthetically. The climate at Commonwealth Bay imposes difficulties for using such a paint since it must be quick and easy to apply between katabatics!

Corrosion studies

Corrosion rates are important to determine since many critical parts of the hut are metal such as the nails and ridge-
capping. The site is so close to the sea that, despite the low temperatures, the rate of corrosion of some artefacts is relatively-high. The rate of corrosion of metals varies considerably throughout the site in a manner which cannot be explained solely by varying compositions and exposure: this should be further investigated. A survey of chloride concentrations in snow over the site showed great variation, even in different layers of snow inside the hut.

Weather Station

An automatic weather station was to have been installed at Commonwealth Bay, but did not reach its destination due to the sinking of the Nella Dan. Accurate weather data is essential for the corrosion and coatings field-testing program.

Tourist impact assessment

There has been a history of previous interference by visitors to the site, who have removed artefacts, dug-out snow, and done work on buildings and other features. Much of this work was done with the very best of intentions, but it has generally not been beneficial. It has caused disturbance to archaeological studies by relocating artefacts, and efforts at preservation have been unsuccessful: such as mounting the plaques in bronze boxes, and covering the Workshop roof with lead sheeting.

Reasons for limiting access to the site

Since many tourist companies propose to visit the site, it is vital to consider their potential impact, and try to objectively measure their impact on the site, refine the guidelines for visitor behaviour (which I drafted for my visit in 1985) and develop strategies for management or limitation of tourists. It is impossible for large number of people to walk around the site without standing on artefacts. There is a danger from explosives (carried on the AAE for use in rock blasting for the foundations of the huts), which represent a threat to visitors and the other site itself.

A comparison of tourist management at other polar historic site is needed, with the experience in the Ross Dependency and Canada being very important.

IMPLEMENTATION OF IDENTIFIABLE TASKS

I believe the 1989 recommendations of the Standing Committee should be implemented, and the Antarctic Division be urged to act. A paper (Warren, 1989) has recently been put before the Antarctic Treaty Committee urging increased protection for historic sites, and Australia should fulfil its commitments to preserve the site.

Field work at Commonwealth Bay needs to be approved by the Australian Heritage Commission (AHC) and the Antarctic Division. If permission were obtained from the AHC the following tasks could be completed in the first season's filed work:

- Repatriation of the Memorial Cross;
- Move all dangerous chemicals inside the hut to the Granholm hut;
- With the involvement of an archaeologist collect outdoor artefacts, which may otherwise blow-away and be lost into sea;
- Remove fungus-affected items inside the hut: move them to the Granholm hut for treatment;
- Field-testing plates: coatings developments, metal corrosion.

CONCLUSIONS

The strongest argument for leaving the hut in Antarctica at present is that we have not yet established that it is impossible to preserve it in situ. Repatriation is the option of last resort. While it is possible to understand the anxiety some people have that the hut may soon blow away, I believe there is sufficient evidence that it is not in imminent danger, and thus we are bound to leave it in Antarctica while we evaluate all the reasonable alternative theories for its preservation.

By temporarily moving items that are in imminent danger, such as the Memorial Cross, Memorial Plaque and some fungus-affected items inside the Hut, more time is available to consider the overall structural preservation of the Hut.

The development of a durable reversible temporary timber coating, suitable for polar conditions, may also give more 'breathing space' and time to develop a long-term solution to the problem of ice-blasting.

Depending on the recommendations of a structural engineer, the installation of a drainage system could largely control the fungus problems, by draining the meltwater pool which forms around the hut each summer. The issue of whether the ice inside the hut has any role in supporting the hut structure could also be resolved.

The corrosion-mapping could predict the damage to the metal components of the hut and the extant artefacts. The temporary coating could also be used on metals: it is possible that with consideration for the shipping timetable it should be possible to provide sufficient working-time on site for a team of professionals to carry out the measures I have identified.

If the hut is preserved in Antarctica, it may be possible to allow small-scale tourist visits: perhaps a levy could be imposed on tour operators to provide a 'bond' against damage of theft, and to provide for ongoing maintenance. This could include guided-tours of the site by archaeologists and conservators working there, and would help to minimise damage and interference with the interesting scientific material on site. To satisfy political interest, it could be said that these visits and this preservation work will demonstrate Australia's continuing interest in Antarctica and compliance with its Antarctic Treaty obligations.
By contrast, if the hut is moved, there will be a huge ongoing work program - masses of timber to treat, tonnes of material to fumigate, hundreds of artefacts to treat: yet with their present commitments, no Australian museum could handle it. There would be no interest from tourists, and the historic and scientific interest of the site would be destroyed. While cost should never be the arbitrating factor in a case like this, I also believe it would be cheaper to preserve the hut in situ than to move it.

I would recommend the reading of the 1989 report 'Tourism in Antarctica' to my fellow conservators, and would urge them to write to Senator Richardson to hasten the acceptance and implementation of that report.

REFERENCES

Barr, Susan (date unknown) Tromura, Fellesserie No. 6, Tromso, Norway.