

BLIZZARD CITY
Built Environment and Civilization
in Antarctica, 1911-1961

Alex Moffat-Wood

A thesis submitted
to Victoria University of Wellington
in fulfillment of the requirements for the degree of
Master of Arts in History

Victoria University of Wellington

2012

Abstract

This thesis investigates four Antarctic built environments between 1911 and 1961: Robert Falcon Scott's 1910-1912 *Terra Nova* expedition base at Cape Evans, Ross Island; Sir Douglas Mawson's 1911-1914 Australasian Antarctic Expedition base at Commonwealth Bay; Australia's Mawson Station in MacRobertson Land, founded in 1954; and New Zealand's Scott Base, also on Ross Island, founded in 1957.

Examining unpublished and published diaries of expeditioners, government files and newspaper reports, this thesis demonstrates that, to the expeditioners who built and occupied them, these places created protective bastions of civilization in an extreme environment. It investigates what residents and architects (figurative *and* literal) thought and felt about these blizzard cities, their meaning and significance. In doing so, this study reinforces, extends, and at times challenges broader conceptions of built environment, nature, civilization, Antarctica, and their thicket of interrelationships.

The first two chapters – one focused on the Heroic Era and the second on the post-WWII bases – argue that Antarctic built environments were embattled, modern sanctuaries. The extreme environment of Antarctica also demonstrated to expeditioners that built environment had plasticity, which challenged the expeditioners' expectation of built environment being stable, durable, and impermeable. Chapter three argues that Antarctic built environment allowed expeditioners to create civilization in the wilderness, in a variety of ways. Through examining facets of occupation such as etiquette and international cooperation, the chapter argues that civilization took many forms, not all of them positive from the expeditioners' point-of-view.

Acknowledgements

To Monique and Charlotte for their sharp eyes –

To Hugo, Kerstin, Steve, James, Kumudu, Lucy, and Heff for their hospitality –

To Tom Scott at Antarctica New Zealand for his unwavering image support –

To Merata for her refusal to accept that I didn't want to do postgrad yet –

To Lee for her superb and enthusiastic supervision –

And most especially to Kate, for supervising, guiding, mentoring, challenging,
encouraging, developing, and stabilising me through three qualifications –

Cheers.



(Bruce Stinear, Mawson Station, 1957, 4999B4, Australian Antarctic Division, © Commonwealth of Australia).

Contents

List of Illustrations	2
Introduction	6
Chapter One	33
Chapter Two	69
Chapter Three	110
Conclusion	141
Appendix	150
Bibliography	151

List of Illustrations

Acknowledgements Page. Morrie Fisher, 'Bar Antarctica', Christmas 1957. Bruce Stinear, Mawson Station, 1957, 4999B4, Australian Antarctic Division, © Commonwealth of Australia.

Illustration 1. Hut at Cape Evans mid-construction. Herbert Ponting, Cape Evans, 1911, personal collection of Julian Evans.

Illustration 2. The view north from Wind Vane Hill, overlooking Scott's hut at Cape Evans. Herbert Ponting, Cape Evans, no date, personal collection of Julian Evans.

Illustration 3. Interior of Scott's hut at Cape Evans. Herbert Ponting, Cape Evans, no date, personal collection of Julian Evans.

Illustration 4. Plan of Mawson's hut at Commonwealth Bay. Alfred Hodgeman, no other information, 10000A5, Australian Antarctic Division Collection, © Commonwealth of Australia.

Illustration 5. Interior of Mawson's hut at Commonwealth Bay. Frank Hurley, Commonwealth Bay, no date, 727A3, Australian Antarctic Division Collection.

Illustration 6. The telephone at Cape Evans. Herbert Ponting, Cape Evans, no date, personal collection of Julian Evans.

Illustration 7. The acetylene plant at Cape Evans, with portable acetylene lamps hanging to its right. Herbert Ponting, no date, Cape Evans, personal collection of Julian Evans.

Illustration 8. View over Mawson's hut at Commonwealth Bay. Commonwealth Bay, no other information, PXE725-753, Mitchell Library.

Illustration 9. Scientific corner at Cape Evans hut. Herbert Ponting, Cape Evans, no date, personal collection of Julian Evans.

Illustration 10. The smaller hut being constructed alongside the main living hut at Commonwealth Bay. Frank Hurley, Commonwealth Bay, no date, 726D3, Australian Antarctic Division Collection.

Illustration 11. Alleyway between huts at Mawson Station. Robert Wyers, Mawson Station, no date, 3981D4, Australian Antarctic Division Collection © Commonwealth of Australia.

Illustration 12. View north over Mawson Station. Kevin Felton, Mawson Station, no date, 2263A5, Australian Antarctic Division Collection © Commonwealth of Australia.

Illustration 13. Map of Mawson Station in 1959. Division of National Mapping, 'Mawson, February 1959', 1960, 5-3-8, SCAR Special Map Collection, National Library of Australia.

Illustration 14. View of mid-section of Scott Base in 1960. Scott Base, 1960, no other information, BSE3, © Antarctica NZ Pictorial Collection.

Illustration 15. Plan of Scott Base. Ministry of Works, 'Scott Base, Antarctica', no date, R4915319-C676441-CAYP-CH947-3384-Folder9, Archives New Zealand.

Illustration 16. Aerial image of Scott Base, looking south. Scott Base, 1961, no other information, BSA11, © Antarctica NZ Pictorial Collection.

Illustration 17. Waiters at Scott Base's 1957 Midwinter Party. Scott Base, 1957, no other information, BSE122, © Antarctica NZ Pictorial Collection.

Illustration 18. The erection of a stores huts at Mawson Station. Phillip Law, Mawson Station, no date, 3979A1, Australian Antarctic Division Collection © Commonwealth of Australia.

Illustration 19. Interior of Mawson Station powerhouse. Peter King, Mawson Station, no date, 2350B1, Australian Antarctic Division Collection © Commonwealth of Australia.

Illustration 20. Mawson Station at night. Geoffrey Newton, Mawson Station, no date, 4609A6, Australian Antarctic Division © Commonwealth of Australia.

Illustration 21. Powerhouse fire at Mawson Station. Graham Budd, Mawson Station, 1958, 3365B4, Australian Antarctic Division Collection © Commonwealth of Australia.

Illustration 22. Interior of Mawson Station's recreation hut after a blizzard. Ross Dunlop, Mawson Station, no date, Australian Antarctic Division © Commonwealth of Australia.

Illustration 23. Snow drifts at Scott Base. Scott Base, 1958, TAE908, © Antarctica NZ Pictorial Collection.

Illustration 24. Plan of sleeping hut at Scott Base. Ministry of Works, 'Scott Base Antarctica, Sleeping Hut "C"', 1956, R4915319-C676441-CAYP-CH947-3384-Folder9, Archives New Zealand.

Illustration 25. Dinner for Scott's birthday.. Herbert Ponting, Cape Evans, 1911, personal collection of Julian Evans.

Illustration 26. Interior of Mawson Station's mess hut. Robert Wyers, 3982A6, Australian Antarctic Division © Commonwealth of Australia.

Illustration 27. The 'Christmas Tree' at Cape Evans' 1911 Midwinter Dinner. Herbert Ponting, Cape Evans, 1911, personal collection of Julian Evans.

Illustration 28. Flag-raising ceremony at Scott Base. Scott Base, 1957, no other information, TAE385, © Antarctica NZ Pictorial Collection.

Introduction

Lost and blinded in a blizzard only metres from his expedition's hut, itself almost entirely buried in snow, the Australian Antarctic explorer Sir Douglas Mawson crawled on his hands and knees, feeling around desperately for the hut's entrance. 'No light from the Hut,' he wrote in his diary that evening, 'it is difficult to tell when one is on top of it ... Outside one is in touch with the sternest of Nature ... Inside the Hut all is 20th Century civilization. What a contrast'.¹ Almost fifty years later, two men stood behind a window at the Antarctic station named for Mawson, gazing thoughtfully out into another blizzard. One of the men later wrote in his diary that it 'is always pleasant to stand behind a double window, idly watching the drift patterns, and to feel the contrast of storm and sanctuary. For a few minutes we watched the bowing power-lines and fell to talking of our fathers'.²

These comments display the practical and symbolic importance of huts, bases, and stations in Antarctica. They show that, to the expeditioners who built and occupied them, these places created protective bastions of civilization in an extreme environment. This thesis examines such Antarctic built environment. It investigates what residents and architects (figurative *and* literal) thought and felt about these blizzard cities, their meaning and significance. The research shows that beyond permitting simple survival, Antarctic built environment also allowed expeditioners

¹ Douglas Mawson, *Mawson's Antarctic Diaries*, eds. Fred Jacka and Eleanor Jacka (Crows Nest: Allen and Unwin, 2008), p.72.

² John Bechervaise, diary, 15 April 1955, Papers of John Bechervaise, MS7972-6, National Library of Australia (NLA).

to create civilization in the wilderness. In doing so, this study reinforces, extends, and at times challenges broader conceptions of built environment, nature, civilization, Antarctica, and their thicket of interrelationships. The thesis' title, then, summons for inspection not only the particular blizzard cities of Antarctic bases; loitering just below the surface are ideas of nature and built environment, the blizzard and the city, in general.

The period

The research focuses on the period 1911 to 1961. It thus begins in the 'Heroic Age' of Antarctic exploration: that sepia-toned time of sledging expeditions, wooden huts, and what Sara Wheeler has called 'men with frozen beards ... [trying] to see how dead they could get'.³ It ends with the Antarctic Treaty entering into force, a significant moment in the human history of Antarctica. Importantly, the period also covers a broad transition in the continent's built environment: it opens with the Heroic Age's temporary wooden huts, built to house limited expeditions, and by its close has seen the construction of the first permanent, more recognisably modern stations.

The period also provides a backdrop of significant social, economic, political, cultural, and technological changes in the wider Western world that had bearing on its thoughts about civilization, and about itself as civilized. The two World Wars were thought to be two of the most uncivilized events that had ever occurred, and yet there was a sense that they were battles over the future of civilization, or even its existence – the first was called 'The Great War for Civilization'.⁴ The period also saw, in some part a cause and in some part an effect of the World Wars, the end of major imperial exploration and collection into empires of far-flung places by Western

³ Sara Wheeler, *Terra Incognita: Travels in Antarctica* (London: Jonathan Cape, 1996), p.1.

⁴ See Samuel Hynes, *A War Imagined: The First World War and English Culture* (New York: Atheneum, 1991).

powers – by 1961 many of these former colonies were, or were becoming, independent and autonomous states, bastions of civilization themselves. The wars and their aftermaths also brought the United States and the Soviet Union to the fore as two great world powers, locked in a Cold War that threatened the whole world with an atomic nightmare.

The sites

Within this fifty-year period the thesis studies four Antarctic built environments (see Appendix). The first two are from the beginning of the period, having been built and occupied principally between 1911 and 1914, and so are from the Heroic Age. They were, in fact, the huts of two of the most well-known expeditions of the period: Sir Douglas Mawson built his hut – the lost structure with which the thesis began – at Commonwealth Bay in East Antarctica as the main base for his 1911-1914 Australasian Antarctic Expedition (AAE). The AAE became famous primarily for Mawson's long sledging expedition during which his two companions died, leaving Mawson to trudge, malnourished and frostbitten, back to base alone over several weeks. He arrived at the hut in time to see the relief ship departing, leaving him and a skeleton crew on the frigid coastline for another year. The other of the two early built environments under study is that at Cape Evans, Ross Island, built by perhaps the most famous Antarctic explorer: Robert Falcon Scott. Scott built the hut for his 1910-1912 British Antarctic Expedition, better known as the *Terra Nova* expedition after the ship that carried him and his companions to the Ross Sea Region south of New Zealand. Scott and his four companions died on their journey to the hut from the South Pole, having been beaten to first place by Norwegian Roald Amundsen.

Less well known, the second two built environments examined in this thesis were built in the post-war period, between 1954 and the end of the period under study, 1961. Mawson Station was the first permanent station built on the Antarctic

continent, and remains the oldest continuously operating today. It was built on the coast of MacRobertson Land (due south of India) by the Australian government for scientific purposes, and to strengthen Australia's claim over a vast swathe of Antarctica. The second station, Scott Base, was built by the New Zealand Government and Commonwealth Trans-Antarctic Expedition in 1957 on Ross Island, just south of Scott's *Terra Nova* hut at Cape Evans. It was first used to establish depots over the Antarctic ice plateau for the Trans-Antarctic Expedition advancing towards it, and then taken over by the New Zealand government as a scientific station and a symbol of its claim over the Ross Dependency.

Antarctica

The states that constructed and operated these bases – the United Kingdom, Australia, and New Zealand – were some of the most active in Antarctica between 1911 and 1961, and indeed for a century or two before that. Other significant Antarctic actors were Norway, France, the United States, the Soviet Union, Chile, and Argentina. Further countries undertook expeditions south, of course, such as Japan, Sweden, and Germany, but the aforementioned group were far and away the most frequent visitors.

Humans have not been travelling to Antarctica for very long, let alone living there.⁵ The prize for first person to travel beyond sixty degrees south is generally awarded to Captain James Cook, who trundled into the Antarctic Circle as recently as 1773. The continent's visual sighting was preserved for 1820, and for the next two to three decades the Antarctic was visited by a succession of whalers, sealers, scientists, and explorers (two or more of the roles often being combined in one

⁵ For general histories of human exploration of Antarctica, see for example: G. E. Fogg, *A History of Antarctic Science* (Cambridge: Cambridge University Press, 1992); David McGonigal and Lynn Woodworth, *Antarctica: The Complete Story* (Auckland, Random House, 2001); Stephen Pyne, *The Ice: A Journey to Antarctica* (Seattle and London: University of Washington Press, 1986); or Tom Griffiths, *Slicing the Silence: Voyaging to Antarctica* (Cambridge, Mass. and London: Harvard University Press, 2007).

person), almost entirely from Europe or the United States. The first boot placed on the continent was perhaps in 1821, but at the latest in 1853, depending on which American sealer's account one trusts the most.

For the second half of the nineteenth century there was a lull in the West's jaunts to the Antarctic. It was not until the very end of the century that the Royal Geographic Society declared at an 1895 London meeting that Antarctica ought to be more deeply studied. The multinational European *Belgica* expedition promptly headed south in 1897 and became the first to spend a winter there after their ship was trapped in ice. An 1899 British expedition became the first to intentionally overwinter, taking with them a hut, the first building in Antarctica. These events are considered to have kicked off the Heroic Age, which became focused on scientific investigation and the pursuit of geographic 'firsts'.

Scott quickly followed with his first expedition in 1901, on board the *Discovery*. Scott's party came close to reaching the South Pole before being forced to turn back. Sir Ernest Shackleton, who had been with Scott, led his own expedition from 1907 to 1909. He too made an attempt on the Pole, and he too turned back before reaching his goal (although he got closer than Scott had). Scott returned again on the *Terra Nova* and raced Roald Amundsen to the Pole, coming in second and perishing on his return to Cape Evans. While Scott and Amundsen hurled themselves at the Pole, Douglas Mawson's Australasian Antarctic Expedition set up shop on the coast of Eastern Antarctica for a couple of years. Shackleton returned in 1914 leading the Imperial Trans-Antarctic Expedition on the *Endurance*, planning to be the first to cross the continent. The crushing of his ship and stranding of his expedition, however, forced him to abandon these plans and instead take on the rescue journey for which he is most famous.⁶

The 1930s and 1940s saw the increasing mechanisation of Antarctic exploration, with mechanical sea and land transportation coming to dominate – but

⁶ See Ernest Shackleton, *South: The Endurance Expedition* (London: Penguin Books, 1919).

most especially the period became that of exploration by air.⁷ Expeditions such as a returning Mawson's 1929-1931 British, Australian, and New Zealand Antarctic Research Expedition used aircraft to quickly explore swathes of the continent, a feat impossible when sledging was the only real way of penetrating the continent's interior. Antarctic flight was most extensively and famously used, however, by the American Richard Evelyn Byrd's expeditions, beginning in the late 1920s and continuing into the late 1940s.

Australia returned to the continent in 1954 to establish Mawson Station. Three years later, New Zealand took on its first independent expedition to the Antarctic continent as part of the 1955-1958 Commonwealth Trans-Antarctic Expedition (TAE). The TAE sought to complete Shackleton's task and be the first to cross Antarctica by land, making valuable scientific observations along the way. The expedition's leader, Vivian Fuchs, left his base on the Weddell Sea and headed for the Ross Sea via the South Pole. Scott Base was erected as Fuchs' destination. The party at that base was led by Sir Edmund Hillary, whose job was to lay supply depots for the second half of Fuchs' journey. Having achieved this task, Hillary commenced his infamous, unauthorised 'dash to the pole', arriving at the new American South Pole base before Fuchs. Fuchs arrived at Scott Base in March 1958, completing the crossing.

In 1957 and 1958 the International Geophysical Year (IGY) caused a great spike in human – but particularly Western – activity in the Antarctic. Dozens of countries focused scientific energies on, particularly, research in space and Antarctica. Assorted national expeditions went south, many new bases were constructed around the continent, and a huge amount of science was undertaken. Co-operation and information-sharing were successfully encouraged among

⁷ Stephen Pyne, 'Heart of Whiteness: The Exploration of Antarctica', *Environmental Review*, vol. 10, no. 4, 1986, p.240.

different states' expeditions; it was, according to historian Tom Griffiths, 'the single biggest cooperative scientific enterprise ever undertaken on earth'.⁸

The success and international harmony of the IGY, especially against the backdrop the Cold War, contributed to the signing of the Antarctic Treaty. Agreed upon in 1959 and effective from 1961, the treaty designated Antarctica a continent for peace and science. Seven states (Australia, New Zealand, the United Kingdom, Norway, France, Chile, and Argentina) had claims over parts of Antarctica. Those of the United Kingdom, Chile, and Argentina overlapped, but otherwise these states recognised one another's claims – although nobody else did. The United States and the Soviet Union reserved the right to make future claims. The Antarctic Treaty dealt with this tense, complex situation by, in some senses, pretending it did not exist. The signatories to the treaty agreed that all claims would be put into abeyance, that those claims could not be expanded, and that no new claims could be made while the treaty was in effect. In addition, Antarctica was demilitarised, freedom of scientific investigation and co-operation were encouraged, and freedom of travel across and access to the continent and other states' bases were guaranteed.

It was in this environment of ice, science, exploration, and politics that expeditioners built their huts and stations.

Sources

The sources for this research are varied, and drawn from a variety of places. Few expeditioners wrote explicitly, entirely, or voluminously about the built environment they were creating, maintaining, and occupying in Antarctica. Consequently material was found scattered liberally across a wide range of sources, often in the form of off-hand comments, related notes, or inferences made between the lines.

⁸ Tom Griffiths, 'The Cultural Challenge of Antarctica: The 2007 Stephen Murray-Smith Memorial Lecture', *La Trobe Journal*, no. 82, 2008, p.7.

This was most particularly the case with the diaries of expeditioners, one of the two major types of source used in the thesis. The various diaries of twelve expeditioners provide much of the material that attends to the thoughts and feelings of those who built and occupied the built environments studied. These sources' strength is the insight they provide into the daily lives, thoughts, feelings, preoccupations, and assumptions of their writers. In throwaway comments about the comfort of sleeping quarters, in detailed descriptions of days spent erecting huts, or even in the absence of any consideration of their built environment at all, expeditioners revealed aspects of their relationships with the bases they built and inhabited.

Diaries are not simple, neutral documents that perfectly capture and preserve the writer's thoughts and feelings in the moment of experience. The writers were reinterpreting events that had happened to them earlier in the day, or in some cases several days or weeks beforehand. Their intended audience was important as well. Were they writing for themselves in later life, their families, a future historian, or a combination of those? The answer would certainly have an effect on what was recorded, and how. The diaries are then re-read and re-interpreted again, of course, by the historian in the archive. Readers change the diary with their receptions of the text, both through their interpretations of the expeditioners' words but also through a sense of dramatic irony – we recipients potentially know more about their situation than they did.⁹

These diary sources are predominantly Australian. In an almost exquisitely ironic demonstration of this thesis' argument that built environment has plasticity and is not simply an unshakable bastion, the earthquakes that struck Christchurch in 2010 and 2011 closed the archive at Canterbury Museum and put personal records related to Scott Base out of reach. Sources for Mawson's hut at Commonwealth Bay and Mawson Station were sought in Australian archives. The Mitchell Library in the

⁹ Liz Stanley, 'The Epistolarium: On Theorizing Letters and Correspondences', *Auto/Biography*, no. 3, vol. 12, 2004, p.208.

State Library of New South Wales in Sydney furnished many Heroic Age records, while the National Library of Australia in Canberra holds a number of diaries from the early years of Mawson Station.

Diaries and accounts of Scott's *Terra Nova* expedition have been published, and these are used as sources about the hut at Cape Evans. Published diaries can be more problematic than manuscripts, of course. They have been through another editing process – that of the publisher – which will often have changed the text. When Scott's diaries were published, for example, numerous changes were made. Most of these adjustments were minor, but in some cases entire lines were deleted or words changed, most commonly where Scott criticised others. Newer editions of Scott's diaries point out the changes in appendices, but this cannot be relied upon for some of the other expeditioners' journals.

Four narrative accounts written by expeditioners are used. Written and published after the expeditioner's return from Antarctica – and sometimes up to several years after – these sources are, compared to diaries, at another remove again from the action. While usually based on the writer's diaries and notes from the time, memory, the intervening period of time, consciousness of a real public audience (compared to the imagined audience of a diary), and a publisher's expectations must have had effects on what was recalled and written about, and how. Taking these limitations into account, though, published accounts can still provide insights into what it was like to occupy a base.¹⁰

The other major type of source used in this research is government files. They are a valuable source of information about the attitudes and intentions of the Antarctic bases' funders, planners, and administrators. In the course of their work these officials were generally more concerned with the bigger-picture purposes of the bases, their position in political and strategic concerns as well as scientific ones. Government files provide insights – often quite frank ones – into the behind-closed-

¹⁰ For more on edited diaries and later accounts as sources, see G. McCulloch, *Documentary Research in Education, History and the Social Sciences* (London and New York: Routledge, 2004).

doors conversations, debates, and decisions that added up to create a public government decision. The files allow a view of decision-making processes, including rejected and abandoned ideas, rather than simply the end result; they give a sense of different personalities and conflicting ideas, rather than just an apparent monolith of government opinion.¹¹ Physically, apart from the occasional visit for high-level officials, few of these people ever visited the bases, let alone lived and worked on them. Altogether this more distant, but still engaged, position gives a usefully different perspective to that of the expeditioners.

Government files as sources have their flaws as well, of course. Most importantly, one cannot assume that they are a complete or representative archive. The presence of documents relies on officials choosing to file them, and filing them correctly. Furthermore, the documents that do exist are a snapshot only of a written facet of the complex business of government, missing out any personal interaction.

The files used in this research were found in a number of archives. Files regarding Mawson's huts at Commonwealth Bay are held in the Mitchell Library in Sydney, and those regarding Mawson Station are divided between the National Archives of Australia offices in Canberra and Hobart, and there are some in the library of Australian Antarctic Division, also in Hobart. Files for Scott Base were found in the Archives New Zealand offices in Wellington and Christchurch. Files in both countries generally belonged to the departments of external affairs, as early Antarctic programmes operated from within these agencies. These files are the most concerned with the 'bigger picture' of their governments' approaches to Antarctica. Later they were shifted to departments of scientific research, and so many files come from these agencies as well. Many of the files relating to Scott Base are from the Ministry of Works, which designed the base. Paperwork regarding the hut at Cape Evans is located in British archives, and so was out of reach for this study.

¹¹ W. H. McDowell, *Historical Research: A Guide* (Harlow and New York: Longman, 2002), p.56.

Officials collected and filed newspaper clippings, providing the research with some newspaper sources. Written by staff reporters based on governmental press releases, and sometimes by journalists who travelled to the bases, these articles give a sense of what the public was interested in knowing (or what editors thought they were interested in knowing) about the bases, the level of that interest, and the ways in which the bases were thought of and discussed in the public realm, away from the realities of the bases.

A number of visual sources were also used, albeit in a more supportive fashion. Architectural plans for Scott Base, government public education films about the foundation of Mawson Station and Scott Base, and a large number of photographs were collected. These are used throughout the thesis as illustrations of points in the text, and as another way of evoking, beyond the textual descriptions, what the bases were like as occupied spaces. Architectural plans giving measurements of buildings give an accurate sense of how cramped or spacious rooms were, for example, while photographs of the mess area during dinner show how spaces were actually used.¹²

Environmental and Antarctic historiography

In the words of J. R. McNeill, 'Environmental history is many things to many people'. McNeill goes on to suggest, though, that the field might be defined as 'the

¹² Heritage sources and studies were of little use to this research. They generally either focus on details of the huts' construction, which can easily be drawn from the sources already used here, or deal with issues of conservation, modern memory, and other aspects of heritage historiography, which are outside this thesis' scope. For more on Antarctic built environment as heritage, see for example: Antarctic Heritage Trust, *Conservation Plan: Scott's Hut, Cape Evans* (Christchurch: Antarctic Heritage Trust, 2004); Jonathan Chester, *Going to Extremes: Project Blizzard and Australia's Antarctic Heritage* (Sydney: Doubleday, 1986); David Harrowfield, *Icy Heritage: The Historic Sites of the Ross Sea Region* (Christchurch: Antarctic Heritage Trust, 1995); Val G. Kirby, Emma J. Stewart, and Gary D. Stee', 'Thinking About Antarctic Heritage: Kaleidoscopes and Filters', in *Landscape Research*, vol. 26, no. 3, 2001, pp.189-202; or Susan E. Ladd, *Southern Comfort on Ice: Issues of Ownership, Use and Management of Heritage in the Ross Sea Region of Antarctica*, unpublished Master of Applied Science thesis, Lincoln University, 1999.

history of the mutual relations between humankind and the rest of nature', an incredibly useful description.¹³ Such a definition is carefully phrased ('*the rest of nature*') to take account of one of environmental history's great preoccupations: the perceived dichotomy in many 'Western'¹⁴ cultures between human and animal, town and country, city and forest, civilization and wilderness – that is, between culture and nature. 'God made the country,' wrote William Cowper, 'and man made the town'.¹⁵ 'Such beliefs are deeply embedded in Western thought,' writes the prominent environmental historian William Cronon. 'We learned our city-country dichotomy from the nineteenth-century Romantics, who learned it in turn from pastoral poets stretching back to Virgil'.¹⁶

Recent decades of scholarship have shown, however, that this dichotomy is a cultural construct, and that 'nature is not nearly so natural as it seems', in Cronon's words.¹⁷ As Raymond Williams has written, 'the idea of nature contains, though often unnoticed, an extraordinary amount of human history'.¹⁸ What Western culture considers to be 'nature' and 'natural' are categories created by that culture. It determines the way those categories are understood, and the things that are placed within or excluded from them. Any environment is thus formed by both the physical material of a place – such as rocks, plants, climate, and wildlife – and the cultural constructs with which people interpret it – such as narratives, traditions, and social, political, and economic relationships. 'Ideas of nature never exist outside a cultural context,' writes Cronon, 'and the meanings we assign to nature cannot help

¹³ J. R. McNeill, 'Observations on the Nature and Culture of Environmental History', *History and Theory*, vol. 42, no. 4, 2003, p.6.

¹⁴ Scholars in this field, such as William Cronon, Donald Worster, and Carolyn Merchant, use this generalising phrase to refer to the cultures of Western Europe and North America, and societies that trace significant influence back to those places, such as New Zealand and Australia.

¹⁵ William Cowper, *The Task*, 1785, quoted in Leslie A. Clarkson, 'God, Man, and Cities: Creation, Re-Creation and Construction', *Journal of Urban History*, vol. 22, no. 6, 1996, p.720.

¹⁶ William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York and London: W. W. Norton, 1991), p.17.

¹⁷ William Cronon, 'In Search of Nature', in William Cronon (ed.), *Uncommon Ground: Rethinking the Human Place in Nature* (New York and London, W. W. Norton, 1996), p.25.

¹⁸ Raymond Williams, *Problems in Materialism and Culture: Selected Essays* (London: Verso, 1980), p.67.

reflecting that context'. He points out that environmental historians are not getting carried away: 'This is not to say that the nonhuman world is somehow unreal or a mere figment of our imaginations'. However 'the way we describe and understand that world is so entangled with our own values and assumptions that the two can never be fully separated'.¹⁹

Geographer Doreen Massey agrees, writing that space is 'the product of interrelations', 'constituted through interactions, from the global to the intimately tiny'.²⁰ Massey states that places 'are always constructed out of articulations of social relations (trading connections, the unequal links of colonialism, thoughts of home)'. The identity of a place, she writes, is created by internal social relationships as well as relationships that extend beyond the immediate locale. The consequent variety of possible constructions mean that 'the past of a place is as open to a multiplicity of readings as is the present'. 'Moreover,' she continues, 'the claims and counter-claims about the present character of a place depend in almost all cases on particular, rival, interpretations of its past'.²¹ 'The result,' picks up Cronon, 'is a human world in which these many visions of nature are always jostling against each other'.²² New Zealand scholars Eric Pawson and Tom Brooking conclude that the 'making of environments is a social process'.²³

Historians are consequently changing their approaches to thinking about nature – and 'place' in general – to better take account of the layers of social and cultural process that contribute to forming an environment. Massey suggests that 'a really "radical" history of a place' would recognise 'that what has come together, in this place, now, is a conjunction of many histories and many spaces'.²⁴ Cronon has called for historians to tell 'not just stories about nature, but stories about stories

¹⁹ Cronon, 'In Search of Nature', p.25.

²⁰ Doreen Massey, *For Space* (London, Thousand Oaks, and New Delhi: SAGE, 2005), p.9.

²¹ Doreen Massey, 'Places and Their Pasts', *History Workshop Journal*, No. 39, 1995, pp.183-6.

²² Cronon, 'In Search of Nature', p.51.

²³ Eric Pawson and Tom Brooking, 'Introduction', in Eric Pawson and Tom Brooking (eds.), *Environmental Histories of New Zealand* (Melbourne: Oxford University Press, 2002), p.3.

²⁴ Massey, 'Places and Their Pasts', p. 191.

about nature'.²⁵ A number of environmental historians have undertaken this sort of study.²⁶

One consequence of the recognition of the social construction of environment has been questioning of Western culture's traditional separation of nature and culture. Once it began to become clear that there was a great deal of human culture in 'nature', the boundary between Cowper's town and country was not quite so clear. Accepting that the divide between nature and culture is constructed, then, one of environmental history's major projects is dissolving – or at least complicating – that boundary between culture and nature. It seeks to show, as McNeill writes, that the 'rogue mammal' of humankind 'has long been part of nature, but a distinctive part'.²⁷ The subdiscipline is thus concerned with 'the history of the mutual relations between humankind and *the rest* of nature'.

It is only in recent years that built environment has claimed a significant place for itself within environmental history. Environmental history has primarily been concerned with rural environments and wilderness. Supporting that bias, prominent environmental historian Donald Worster argued that environmental history should explicitly adopt an 'agroecological' approach, investigating 'the role and place of nature in human life'. The social and built environments were explicitly excluded, considered 'the scene of humans interacting only with each other in the absence of nature' and 'the cluster of things that people have made'. The agroecological approach considered that 'the built environment is wholly expressive of culture',

²⁵ William Cronon, 'A Place for Stories: Nature, History, and Narrative', *Journal of American History*, vol. 78, no.4, 1992, pp.1367, 1375.

²⁶ See, for example: Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (San Francisco: Harper and Row, 1980); Carolyn Merchant, *Reinventing Eden: The Fate of Nature in Western Culture* (New York and London: Routledge, 2004); Simon Schama, *Landscape and Memory* (New York: Vintage Books, 1995); David E. Nye, 'Technology, Nature, and American Origin Stories', *Environmental History*, vol. 8, no. 1, 2003, pp.8-24; or Alan Taylor, "'Wasty Ways": Stories of American Settlement', *Environmental History*, vol. 3, no. 3, 1998, pp.291-311.

²⁷ McNeill, p.6.

and that other disciplines such as architectural, urban, and technology history were attending to it.²⁸

The agroecological approach to environmental history raised a number of eyebrows and questioning hands. Critical scholars argued that it was mistaken to imply that built environment was a modern development or to ‘view the built environment as only a recent industrial phenomenon’.²⁹ ‘The history of the built environment, the human-made environment’, they countered, ‘is intimately related to the history of the nonhuman natural world’, pointing out that ‘the natural and built environments evolved in dialectical interdependence and tension’.³⁰ Martin Melosi, an urban environmental historian and dogged advocate of built environment taking a place within environmental history, asked: ‘how can we understand “the role and place of nature in human life” if we create an artificial physical environment devoid of human communities – including cities?’³¹

Furthermore, the agroecological approach seemed to miss the problematisation of divisions between culture and nature, designations of ‘artificial’ and ‘natural’. ‘[W]hile the built environment is expressive of culture’, wrote Melosi, ‘it is not *wholly* expressive of culture, since upon its creation it is part of the physical world, and whether we like it or not, interacts and sometimes blends with the natural world’.³² This was not even a recent idea: others had written years earlier that ‘completely artificial environments are ... unlikely’, humanity ‘in common with all organisms [being] a persistent configuration of matter through which the

²⁸ Donald Worster, ‘Appendix: Doing Environmental History’, in Donald Worster (ed.), *The Ends of the Earth: Perspectives on Modern Environmental History*, (Cambridge: Cambridge University Press, 1988), pp.292-3; Donald Worster, ‘Transformations of the Earth: Toward an Agroecological Perspective in History’, *The Journal of American History*, vol. 76, no. 4, 1990, pp.1089-90.

²⁹ Maureen A. Flanagan, ‘Environmental Justice in the City: A Theme for Urban Environmental History’, *Environmental History*, vol. 5, no. 2, 2000, p.159.

³⁰ Christine M. Rosen and Joel A. Tarr, ‘The Importance of an Urban Perspective in Environmental History,’ *Journal of Urban History*, vol. 20, 1994, p.307.

³¹ Martin V. Melosi, ‘The Place of the City in Environmental History’, *Environmental History Review*, vol. 17, no. 1, 1993, p.4.

³² Melosi, ‘The Place of the City in Environmental History’, p.4.

environment ebbs and flows continuously'.³³ Critics summarised this pithily: 'cities themselves are environmental spaces'.³⁴

While not all environmental historians explicitly accepted the agroecological approach, its outline has nonetheless dominated the subdiscipline. The 'persistent intellectual and emotional gulf between something we label as "nature" and the so-called "built environment"' was only widened, charged the critics of the approach, with the 'place of the city in environmental history [remaining] largely ill-defined'. This gulf seemed even to be perpetuating rather than helping problematise the nature/culture divide, with cities still 'typically portrayed ... as social artifacts, in opposition to their rural or natural surroundings'.³⁵ Built environment was 'pushed to the periphery of environmental history, appended rather than integrated'.³⁶ Despite an increasing number of environmental histories that focused on built environment,³⁷ or at least took it into account, Melosi warned as recently as 2010 that the problem was by no means fixed: 'Urban historians have succeeded in placing cities within the purview of environmental history,' he wrote, 'but much remains to be done to reconcile the natural and built environments and to treat cities as more than an anomaly'.³⁸

This thesis responds to and supports the call to integrate the place of built environment more tightly into environmental history. Indeed, by considering small clumps of built environment in a remote and extreme environment, it extends this

³³ Ian L. McHarg, 'The Place of Nature in the City of Man', in Ian G. Barbour (ed.), *Western Man and Environmental Ethics: Attitudes Toward Nature and Technology*, Reading, Addison-Wesley, 1973, p.177.

³⁴ Flanagan, p.159.

³⁵ Catherine McNeur, 'The "Swinish Multitude": Controversies over Hogs in Antebellum New York City', *Journal of Urban History*, vol. 37, no. 5, 2011, p.640.

³⁶ Martin V. Melosi, 'Humans, Cities, and Nature: How Do Cities Fit in the Material World?', *Journal of Urban History*, vol. 36, no. 1, 2010, p.4; Melosi, 'The Place of the City in Environmental History', p.2.

³⁷ Cronon's 1991 *Nature's Metropolis* was an almost immediate riposte to Worster's claims, and is a classic of the field, demonstrating how, to understand the development of Chicago as a city, it could not be separated from its hinterland, the huge area of countryside on which it drew for resources.

³⁸ Melosi, 'Humans, Cities, and Nature', p.5. Flanagan has even pointed out that lauding *Nature's Metropolis* as the model for studying built environment, as many have done, 'still casts urban environmentalism within the models of "environment" as natural resources identified in the features of open, rural spaces, or the use and exploitation of external natural resources by the city'. See Flanagan, p.160.

call and suggests that constantly talking about 'cities' is itself too narrow. Urban environmental historians, this research points out, don't only need to study typically 'urban' places.

How then does the study of Antarctic bases contribute to understanding built environment's place in environmental history? Or in the creation of the division between nature and culture? Or, in terms of environmental history's widest aims, in the mutual relations between humankind and the rest of nature? Before turning one's attention south, it is necessary to look briefly at the connections between built environment, nature, and civilization in the culture of the primarily British, Australian, and New Zealand men who built, occupied, and administered the bases under study here.

In a material sense, buildings can reveal much about a culture's relationship with its environment. 'Each gesture that we make means something,' argues architect Andrew Ballantyne, 'but the meaning depends on the culture in which the gesture is understood. Architecture is gesture made with buildings'.³⁹ Hazel Conway and Rowan Roenisch agree, explaining that built environment 'has material form, but it also represents our ideals and aspirations', illustrating 'not only how we live, but our aspirations for the future'.⁴⁰ The early urban historian Lewis Mumford 'argued that cities always reflect the societies that built them'.⁴¹ There are large historiographies of, for example, zoos and museums that use the form of the institution's built environment to interrogate attitudes towards nature.⁴²

This thesis extends these observations, and environmental history's arguments about the social construction of nature, and connects them. It contributes to the literature by showing that built environment is as much socially constructed

³⁹ Andrew Ballantyne, *Architecture: A Very Short Introduction* (Oxford: Oxford University Press, 2002), p. 20.

⁴⁰ Hazel Conway and Rowan Roenisch, *Understanding Architecture: An Introduction to Architecture and Architectural History*, 2d ed. (London and New York: Routledge, 2005), p.8.

⁴¹ Conway and Roenisch, p.16.

⁴² See, for example: Elizabeth Hanson, *Animal Attractions: Nature on Display in American Zoos*, (Princeton and Oxford: Princeton University Press, 2002); or Carla Yanni, *Nature's Museums: Victorian Science and the Architecture of Display* (Baltimore: Johns Hopkins University Press, 1999).

as a forest or a farm. Buildings, this thesis points out, are not just wood, concrete, furniture and a plumbing system, but are also built from narratives and social relationships.⁴³

In this wider cultural sense, built environment, and in particular cities, were seen in the expeditioners' culture as both the product and the site of progress, science, technology, and, in general, civilization. A common and long-held theme in the expeditioners' culture was that humanity was in a battle with the elements of nature, and for hundreds of years the science and technology of civilization were seen to give human culture great power to subdue and control nature.⁴⁴ Cities, as places in which this science and technology were developed, and themselves showcasing many of those developments (such as electric lighting or water provision), seemed to be the paramount site of human civilization and progress, 'exalted as the intelligent creation of civilized man and ... sharply distinguished from the products of unreflective nature'.⁴⁵ Nineteenth century Americans 'linked rapid urbanization to "the prospective greatness" of the nation and cited city growth as the most telling measure of national progress', with one declaring that 'nature builds us no house or temple'.⁴⁶ The cities of colonial Australia sought to follow 'the urban styles and traditions of continental Europe', and travellers were delighted when Sydney seemed to be 'an English city transported to the other side of the

⁴³ Melosi has written that when studying cities, 'Perceptions, ideas, images, and other manifestations of culture can be – and should be – part of the story', but has not expanded significantly on this. See Melosi, 'Humans, Cities, and Nature', p.4.

⁴⁴ There is a great amount of writing on this topic. See, for example: Merchant, *Reinventing Eden*; Keith Thomas, *Man and the Natural World: Changing Attitudes in England 1500-1800* (London: Allen Lane, 1983); Lynn White Jr., 'The Historical Roots of our Ecologic Crisis', in Ian G. Barbour (ed.), *Western Man and Environmental Ethics: Attitudes Toward Nature and Technology* (Reading: Addison-Wesley, 1973), pp.18-30; Nye, 'Technology, Nature, and American Origin Stories'; or Jeffrey K. Stine and Joel A. Tarr, 'Technology and the Environment: The Historians' Challenge', *Environmental History Review*, vol. 18, no. 1, 1994, pp.1-7.

⁴⁵ Graeme Davison, 'The City as Natural System: Theories of Urban Society in Early Nineteenth-Century Britain', in Derek Fraser and Anthony Sutcliffe (eds.), *The Pursuit of Urban History* (London: Edward Arnold, 1983), p.349.

⁴⁶ Carl Abbott, 'Thinking About Cities: The Central Tradition In U.S. Urban History', *Journal of Urban History*, vol. 22, no. 6, 1996, p.687; 'Taste and Fashion', *New Englander and Yale Review*, April 1843, quoted in Nye, 'Technology, Nature, and American Origin Stories', p.11.

world'.⁴⁷ Missionaries trying to 'civilize' Aborigines in Australia, argues Bain Attwood, 'took it for granted that a "village" was a basic prerequisite for their work'. Such a mission could be 'an emblem of progress and civilization'.⁴⁸ In New Zealand, too, wrote David Hamer, 'A key role in the replacement of "primitive" nature by "civilization" was played by towns. They were the most conspicuous sign of the advance of "civilization"'.⁴⁹ Pawson argues of New Zealand colonial towns that they were 'long promoted, and understood, as a vanguard of colonisation in "new" lands', standing 'on the edge of "civilization"' and driving modernisation by providing 'capital, military and cultural power, information, infrastructure, and onward connection to a wider world'.⁵⁰ Towns and cities were 'cultural centers in the wilderness', 'centre[s] of progress' that 'radiated – or ought to radiate – moral, intellectual, and religious influence' out into nature.⁵¹ Even post-war, 'internationally, the city was being lauded as the crucible of modernism'.⁵² A British scholar summed this up somberly: 'No city, no civilization'.⁵³

If built environment was the purest product and site of human civilization, then within the nature/culture divide it became the antithesis of wilderness, the site of purest nature. Hamer observed that in American and New Zealand 'One of the most dramatic features of the town on the frontier was its setting, the contrast between it as a would-be outpost of civilization and its primitive wilderness surroundings'.⁵⁴ This attitude is still present in the scholarly debate today, with cities

⁴⁷ Graeme Davison, 'The European City in Australia', *Journal of Urban History*, vol. 27, no. 6, 2001, p.779; Nat Gould, *Town and Bush: Stray Notes on Australia* (London, 1896), quoted in Davison, 'The European City in Australia', p.779.

⁴⁸ Bain Attwood, *The Making of the Aborigines* (Sydney: Allen and Unwin, 1989), p.2.

⁴⁹ David Hamer, *New Towns in the New World: Images and Perceptions of the Nineteenth-Century Urban Frontier* (New York: Columbia University Press, 1990), p.204.

⁵⁰ Eric Pawson, 'On the Edge: Making Urban Places', in Eric Pawson and Tom Brooking (eds.), *Environmental Histories of New Zealand* (Melbourne: Oxford University Press, 2002), p.201.

⁵¹ Hamer, p.207, 210; Pawson, 'On the Edge', p.202.

⁵² Pawson, 'On the Edge', p.204.

⁵³ Brian Robson, 'No City, No Civilization', *Transactions of the Institute of British Geographers*, vol. 19, no. 2, 1994, p.141.

⁵⁴ Hamer, p.184.

still 'typically portrayed ... as social artifacts, in opposition to their rural or natural surroundings'.⁵⁵

This thesis supports these observations by studying buildings in what was often considered the world's greatest wilderness. Antarctic built environment inherited a tradition of constructing the city as the product and site of civilization, and was all the more impressive by continuing this role in the world's ultimate wilderness.

As Massey and Cronon remind us, though, attitudes to nature are by no means monolithic – a variety of cultural approaches co-exist and jostle. Any major narrative, tradition, or set of interrelationships used to interpret an environment, 'natural' or built, is constantly challenged by ambivalences, contradictions, and counternarratives. For example, without disrupting the distinction between nature and culture, there has long been a strain of Western thought valorising the simple and virtuous natural world over the chaotic and immoral city. The Romantic movement rose in the nineteenth century and tapped into this counternarrative, singing a song of the natural world as sublime and beautiful. This significant cultural strain is still recognisable in much of the environmental preservationist movement today. Another example of this sort of ambivalence or ambiguity is the long-standing metaphor of the city as an organic object or natural system such as a body or organism,⁵⁶ or the note of command to stewardship of nature, as well as domination, in the Bible.⁵⁷ These sorts of contradictions emerged time and again in the built environments of Antarctica, and will be heard as a periodic refrain throughout this thesis.

The historiography of Antarctica is, in comparison with other parts of the historical discipline, rather underdeveloped. The vast majority of historical studies

⁵⁵ McNeur, p.640.

⁵⁶ Davison, 'The City as Natural System', p.349.

⁵⁷ Paul Simpson-Housley and Jamie S. Scott, 'Poles Apart? The Terra Nova and Fram Antarctic Expeditions and Judeo-Christian Attitudes Towards Nature', *Transactions of the Institute of British Geographers*, vol. 18, no. 3, 1993, pp.395-400.

of Antarctica focus on the Heroic Age, and most are interested in a limited range of actors – Scott, Amundsen, Shackleton, and, to a lesser extent, Mawson. There are many general surveys of human Antarctic history, but these tend towards the narrative and descriptive, aimed at popular audiences, with little in the way of analysis.⁵⁸ Such histories also tend to privilege as the ‘main’ action stories of trekking, sledging, and camping, such as Scott’s march on the Pole or Mawson’s lonely trudge back to Commonwealth Bay, in contrast to this research’s focus on the built environment. Additionally, the relationships of New Zealand and Australia with Antarctica are largely unexamined by those countries’ general historians.⁵⁹ Between them New Zealand and Australia officially consider over half the continent to be within their sovereign borders, and they both have significant histories of involvement in its exploration and administration. It seems bizarre that professional, analytical general histories of New Zealand and Australia do not consider the political, economic, or cultural ramifications of this past.⁶⁰

There are a number of studies, however, that are more directly relevant to this thesis. First and foremost, these studies – not all of them environmental histories – show that the Antarctic environment is as culturally constructed as any other. Snow, ice, mountains, blizzards, and penguins make up one part of the place, but it cannot be understood as a whole without looking also at the narratives and social relationships with which human cultures interpret the physical parts of the environment. Valuable research, such as that by William Fox or Francis Spufford,

⁵⁸ The histories of New Zealand’s involvement with Antarctica, by Leslie Quatermain and David Harrowfield are good examples. See: L. B. Quatermain, *New Zealand and the Antarctic* (Wellington: Government Printer, 1971); L. B. Quatermain, *South to the Pole: The Early History of the Ross Sea Sector* (Oxford: Oxford University Press, 1967); David L. Harrowfield, *Call of the Ice: Fifty Years of New Zealand in Antarctica* (Auckland: David Bateman, 2007).

⁵⁹ There are some high quality focused studies though, such as Malcolm Templeton, *A Wise Adventure: New Zealand and Antarctica 1920-1960* (Wellington, Victoria University Press), 2000.

⁶⁰ ‘Surprisingly’, notes British historian Klaus Dodds, ‘a great deal of the literature concerned with New Zealand’s post-war cultural, economic and political development has little to note on the Antarctic dimension’. See Klaus Dodds, ‘The Great Trek: New Zealand and the British/Commonwealth 1955-58 Trans-Antarctic Expedition’, *The Journal of Imperial and Commonwealth History*, vol. 33, no. 1, 2005, p.95.

has explored how ideas about Antarctica were built up, developed, and used in art and literature. They advanced the case for fewer 'technical' histories of the poles and their exploration, with their individual focuses and plodding chronology, proposing instead more 'imaginative' histories.⁶¹ Such approaches have studied both the way Antarctica is represented by those who have never travelled there, such as novelists, and how expeditioners' consumption of those cultural products have affected their experience of the place. Historian Brigid Hains, for example, has described how many Heroic Age expeditioners travelled to Antarctica with the rich baggage of an 'education in adventure, exploration and romance' through the 'imaginative world' of romantic adventure fiction and travelogues.⁶² Australian historian and geographer Christy Collis has made similar arguments, writing for example that in Antarctica 'Territorial law ... makes space, and does not simply govern it'.⁶³ Even today, scientists working on the Antarctic plateau, writes environmental historian Stephen Pyne, 'can make sense of the place only by bringing with them learning acquired elsewhere, a lifeline of comparisons, stories, data, and ideas from beyond the horizon of ice'.⁶⁴ Rather than a simple, reductive landscape that holds little meaning or information,⁶⁵ imaginative studies reveal a variety of Antarcticas. 'Antarctica is too often represented as a homogenous wilderness,' summarises Collis, calling this a 'simplistic vision' that obscures the reality of a 'complex cultural space'.⁶⁶

Building on this, another theme in the literature argues that humans travel to and survive in Antarctica *because* of their culture. Pyne writes that expeditioners inhabit Antarctica 'not by virtue of evolved biological adaptations but by means of

⁶¹ Francis Spufford, *I May Be Some Time: Ice and the English Imagination* (London: Faber and Faber, 1995), pp. 6-7. See also William L. Fox, *Terra Antarctica: Looking into the Emptiest Continent* (San Antonio: Trinity University Press, 2005).

⁶² Brigid Hains, *The Ice and the Inland: Mawson, Flynn, and the Myth of the Frontier* (Melbourne: Melbourne University Press, 2002), p.10.

⁶³ Christy Collis, 'The Proclamation Island Moment: Making Antarctica Australian', *Law Text Culture*, vol. 8, 2004, p.49.

⁶⁴ Stephen Pyne, 'The End of the World', *Environmental History*, vol. 12, no. 3, 2007, p.650.

⁶⁵ As argued by Pyne. See, particularly, Pyne, *The Ice*.

⁶⁶ Collis, p.40.

cultural and technological inventions'. It is the 'extension, with modifications, of a human society developed elsewhere' that allows survival, rather than any 'onsite adaptation'.⁶⁷ Likewise the cultural imperatives of scientific investigation and political exploration and occupation caused the bases to be established in the first place. In a less material sense, stories and narratives are integral to surviving the extreme southern environment for Griffiths, an Australian environmental historian. Griffiths argues that such stories are not just powerful, but necessary for human life in such an environment. In Antarctica, he maintains, 'the fundamentals of existence are exposed. To survive, you need food, you need warmth, and you need stories'.⁶⁸

Considering environmental history's preoccupation with wilderness, it should be no surprise that much of the literature deals with Antarctica largely in such terms. This harsh, inhospitable, distant, and unpopulated part of the globe was easily cast as the world's greatest and, as the twentieth century advanced, perhaps its last wilderness. Such analysis invokes the divide between nature and culture, humanity's 'battle' with the elements, and, for countries with claims over part of the continent, questions of frontier. Hains has examined Australia's relationships with Australian Antarctic Territory (alongside the other great desert over which it claims sovereignty, the outback) and its Australian explorers. She argues that these two permanent frontiers, and the way that Australians thought of their civilization's relationships with them, were important aspects of Australians' stories about themselves as vigorous and destined for great things. 'The Antarctic frontier, like the outback,' she writes, 'was a place of anxiety and adventure: an arena of masculine heroism, yet also a place to be tamed, domesticated, known and possessed'. This would 'bring the arbitrary forces of nature under the control of the orderly powers of science and technology'. In this context, the 'triumphal technology' of, for example, the Antarctic bases, 'defeating the isolation, cold, darkness', represented

⁶⁷ Pyne, *The Ice*, p.137.

⁶⁸ Griffiths, *Slicing the Silence*, p. 4.

not only a 'victory in the "battle with the elements"' but with 'the elements within – the unreliable biology of the human self'.⁶⁹

Another area of fairly well-developed Antarctic historiography useful for this research is the approach to Antarctic history as imperialism and the shift into a more modern geopolitics. Antarctica in the Heroic Age, the argument goes, was the last great moment of imperial exploration and conquest for the West. Griffiths says that Australia and Antarctica 'were the two Great South Lands of European voyaging and exploration'.⁷⁰ Hains' thesis is centrally about imperialism and frontier, but she also points out, for example, that for Mawson Antarctica was 'a potential colony, not merely a stage for imperial adventure'.⁷¹ For architectural historian Lorens Holm, the Heroic Age was 'a great adventure', marking 'the last gasp of European expansionist exploration'.⁷² Antarctica was, of course, quite an unusual setting for these imperial performances. It 'resisted the traditional mechanisms of occupation – control over native peoples, agricultural settlements by immigrants, and even meaningful economic outposts that required at least a modicum of administrative machinery', as Pyne argues.⁷³ The lack of indigenous people, the connections with science, and the lack of immediate resource extraction were significant, and in some ways seemed to allow imperial masculinity to rampage guilt-free. Holm proposes that 'It was the good fight: conquest without the subjugation of indigenous peoples, exploration without exploitation of the environment, its drives untainted by the lure of economic gain, development, new markets'.⁷⁴ Imperial attitudes still underpinned Antarctic efforts after the Second World War, argue scholars such as Collis and Klaus Dodds.⁷⁵

⁶⁹ Hains, pp.3,5,47,57,76

⁷⁰ Griffiths, *Slicing the Silence*, p.3.

⁷¹ Hains, p.43.

⁷² Lorens Holm, 'The Primitive Hut: Fantasies of Survival in an All-White World', in Jo Odgers, Flora Samuel, and Adam Sharr (eds.), *Primitive: Original Matters in Architecture* (London and New York: Routledge, 2006), p.43.

⁷³ Pyne, *The Ice*, p.330.

⁷⁴ Holm, 'The Primitive Hut', p.43.

⁷⁵ See Collis, 'The Proclamation Island Moment'; Christy Collis and Quentin Stevens, 'Cold Colonies: Antarctic Spatialities at Mawson and McMurdo Stations', *Cultural Geographies*, vol. 14, 2007, pp. 234-254; and Dodds, 'The Great Trek'.

Dodds for example writes that Scott Base ‘consolidated a distinctly colonial appropriation of the Ross Dependency’.⁷⁶ Through the period under study in this research, of course, this situation changed as old-style imperialism became unacceptable and empires were broken up. Pyne explains that

By the time effective occupation of Antarctica was possible, largely in the form of permanent scientific bases, international circumstances had profoundly changed: Western civilization was rapidly divesting itself of former colonies, the concept of sovereignty over *terra nullius* was eroding, ... and the whole superstructure of Western law was challenged by alternative legal orders that desired new political and economic institutions.⁷⁷

This thesis advances two arguments. They are deeply entwined, so discussing them separately is artificial, but necessary. Chapters one and two address the first of these two arguments. Chapter one treats the Heroic Age bases of Mawson and Scott, and chapter two looks at the post-war period’s Mawson Station and Scott Base.

These first two chapters explore expeditioners’ attitudes to Antarctic built environment and argue, firstly, that they considered Antarctic built environments to be embattled, modern sanctuaries. The huts were refuges for the men from the harsh Antarctic environment, places of warmth, light, and companionship. They also seemed impressively modern, places built and comfortably furnished with progressive modern technology, from electric power to wireless communication to advanced scientific instruments. As the latter indicate, they were modern too in that scientific investigation was one of their major reasons for existence. The Antarctic environment was isolated and extreme, however, so the expeditioners felt that their modern sanctuaries were embattled by threats. Snow, hurricanes, blizzards, or fire, for example, could all damage the built environment and threaten the expeditioners’ comfort, even their survival.

⁷⁶ Dodds, ‘The Great Trek’, p.110.

⁷⁷ Pyne, *The Ice*, pp.330, 332.

The chapters continue this argument by demonstrating that Antarctic built environment had plasticity. By the turn of the twentieth century, long-established ideas about built environment conceived of it as stable, durable, and impenetrable.⁷⁸ Chapters one and two argue that the experience of erecting and occupying buildings in the extreme environment of Antarctica demonstrated to the expeditioners that built environment was actually malleable and permeable, able to be reshaped and penetrated, by both human and environmental forces – it had plasticity. Structures were built, renovated, extended, subdivided, moved, demolished, and rebuilt. They were also warped, degraded, knocked over, undermined, and penetrated by the elements. Culturally, their purposes, characters, and associations shifted and changed: scientific huts became sleeping huts, sleeping huts became administrative buildings, and renovations made dark, shunned bedrooms light-filled and sought-after. The chapters demonstrate that, as has been argued of cities more widely, a base was best seen as ‘a provisional state of matter’, ‘its image at any given time ... merely a cross-section through a continuous stream’.⁷⁹

The thesis’ second argument is advanced in chapter three, developing another way in which the bases can be understood. Antarctic built environment allowed the expeditioners to survive, apparently overcoming the extreme southern environment; but, more potently, it also allowed them to create civilization in the wilderness. This civilization was created in several ways. First, as will have been argued in the first two chapters, the bases were technologically advanced. Technology evoked progress and civilization, while more prosaically the light and heating systems, for example,

⁷⁸ See, for example: Vitruvius, *On Architecture*, trans. Richard Schofield (London: Penguin, 2009); Joseph Rykwert, *On Adam’s House in Paradise: The Idea of the Primitive Hut in Architectural History*, 2d ed. (Cambridge, Mass. and London: MIT Press, 1981); Hamer, *New Towns in the New World*; Mari Hvattum, ‘Origins Redefined: A Tale of Pigs and Primitive Huts’, in Jo Odgers, Flora Samuel, and Adam Sharr (eds.), *Primitive: Original Matters in Architecture* (London and New York: Routledge, 2006), pp.33-42.

⁷⁹ James Corner, ‘Terra Fluxus’, in Charles Waldheim (ed.), *The Landscape Urbanism Reader* (New York: Princeton Architectural Press, 2006), pp.29-30; Hans Blumenfeld, ‘Continuity and Change in Urban Form’, in Larry S. Bourne (ed.), *Internal Structure of the City: Readings on Urban Form, Growth, and Policy*, 2d ed. (New York and Oxford: Oxford University Press, 1982), pp.50-51.

allowing the expeditioners to live in (comparatively) civilized comfort. Second, civilized behaviour and rituals were established and expected among the men. Third, the expeditioners identified their bases with towns, cities, and other urban forms. Fourth, and significantly, Antarctic built environment seemed to import and create two major barometers of civilization – science and geopolitics – across much larger areas of the continent (and surrounding ocean and islands) than just the local sites of the specific bases. Finally, it seemed at the end of the period under study that a new model of civilization, more rational and peaceful than that elsewhere, was emerging from the Antarctic stations.

This thesis, then, foregrounds the blizzard cities of Antarctica. While others treat them as a backdrop, or necessary prelude to the main drama, this research moves in almost directly the opposite direction, providing an alternative route to studying the human experience of Antarctica. Where so much of the literature has, figuratively if not literally, begun at the hut and then followed explorers out into the open depths of the Antarctic sledging expedition, this research begins with an undeveloped site and, having built a base, heads resolutely inwards.⁸⁰ The overwhelming human experience of Antarctica was (and remains) that of life on base: long winters were spent almost entirely inside; long periods during sledging season were spent hanging around the base preparing; and many of the expeditioners, such as meteorologists, cooks, and carpenters, were base-bound entirely. This research turns away from the isolated tent, arguing that the boisterous mess hall is more important.

⁸⁰ Griffiths, Hains, Collis, and Fox have written small amounts about Antarctic bases, but their work runs along different trajectories and does not place the idea of built environment in the center, with the bases as the main point of study.

Chapter One

This chapter is concerned with the Heroic Age of Antarctic exploration and begins the first argument advanced in this thesis. The chapter focuses on the built environments created by Captain Robert Falcon Scott's 1910-1912 British Antarctic Expedition (better known as the *Terra Nova* Expedition) at Cape Evans, Ross Island, and Sir Douglas Mawson's 1911-1914 Australasian Antarctic Expedition at Commonwealth Bay. After sketching out the bases' preparation and construction, it argues that the expeditioners perceived the bases as modern, embattled sanctuaries. It continues by arguing that the bases demonstrated plasticity, challenging the expeditioners' expectation that built environment should be static, durable, and impenetrable.

Cape Evans

Robert Falcon Scott's *Terra Nova* expedition of 1910 to 1912 is perhaps the most well-known Antarctic expedition and, combined with Roald Amundsen's *Fram* expedition of the same time, certainly the most debated and reinterpreted. William Fox has thus called Scott's hut at Cape Evans 'a mythical touchstone for everyone in the Antarctic'.¹ Scott, an officer in the Royal Navy, had led an earlier expedition (the 1901-1904 *Discovery* expedition), achieving the polar plateau for the first time, but

¹ William L. Fox, *Terra Antarctica: Looking Into the Empty Continent* (San Antonio: Trinity University Press, 2005), p.2.

failing to reach the geographic South Pole. A decade later Scott was back with a larger and more elaborate expedition, determined to this time reach the pole, but also to conduct an ambitious scientific programme. The most well-known event of the expedition, and that which raised Scott and his companions to godhead in the British Empire's eyes, was the attempt on the pole that became a race when Amundsen, a Norwegian explorer, announced his intention to be the first to reach the pole, and sailed south. On 14 December 1911 Amundsen and his party became the first humans to stand at the South Pole. Scott and his men arrived only a month later. On the return journey, Scott, Edgar Evans, Titus Oates, Henry Bowers, and Edward Wilson all perished, due to a combination of exhaustion, exposure, and malnourishment.

A year previously, though, Scott was just arriving at Ross Island and trying to choose a site for his base. He knew the McMurdo Sound area from his earlier *Discovery* expedition, and his primary concern was to 'choose a place that would not be easily cut off from the Barrier', the Ross Ice Shelf, which he would cross to reach the Antarctic plateau and the pole.² Scott settled on a cape that he named Cape Evans, after his 'excellent' second-in-command, Edward 'Teddy' Evans (of no relation to the Evans who perished on return from the Pole), located two bays north of his previous expedition's base at Hut Point. The cape was made of rough black volcanic rock with a coarse black sand beach, the hut site three or four metres higher up the foreshore, which then rose up to 'numerous small hills behind' that made it 'an extraordinarily sheltered spot'. 'This spot seems to have all the local advantages ... for a winter station', Scott proclaimed. 'As for our wider surroundings,' he wrote, 'it would be difficult to describe their beauty in sufficiently glowing terms'.³ The assistant zoologist, Apsley Cherry-Garrard, was not quite so enthralled: 'we had no illusions about Cape Evans ... It is uninteresting, as only a low-lying spit of black

² Robert Falcon Scott, *Journals: Captain Scott's Last Expedition*, ed. Max Jones (Oxford: Oxford University Press, 2005), p. 70.

³ Scott, pp.70, 96.

lava covered for the most part with snow, and swept constantly by high winds and drift, can be uninteresting'.⁴

The site chosen, construction began. Living in a tent, the men rose at five and started work at six or seven o'clock every morning and sometimes worked till one o'clock in the morning, 'too tired to take off our clothes'.⁵ Within a day of landing the hut's framework had sprouted, and it continued to grow quickly. After five days Scott boasted: 'all agree that it should be the most perfectly comfortable habitation'.⁶ The timber hut's frame was filled in with a floor of 'matchboarding', planks cut with a tongue along one edge and a groove along the other, each one thus fitting easily into the next. Over this was placed a layer of 'our excellent quilted seaweed insulation', dry seaweed in a quilt of sacking (see Illustration 1). There was then a

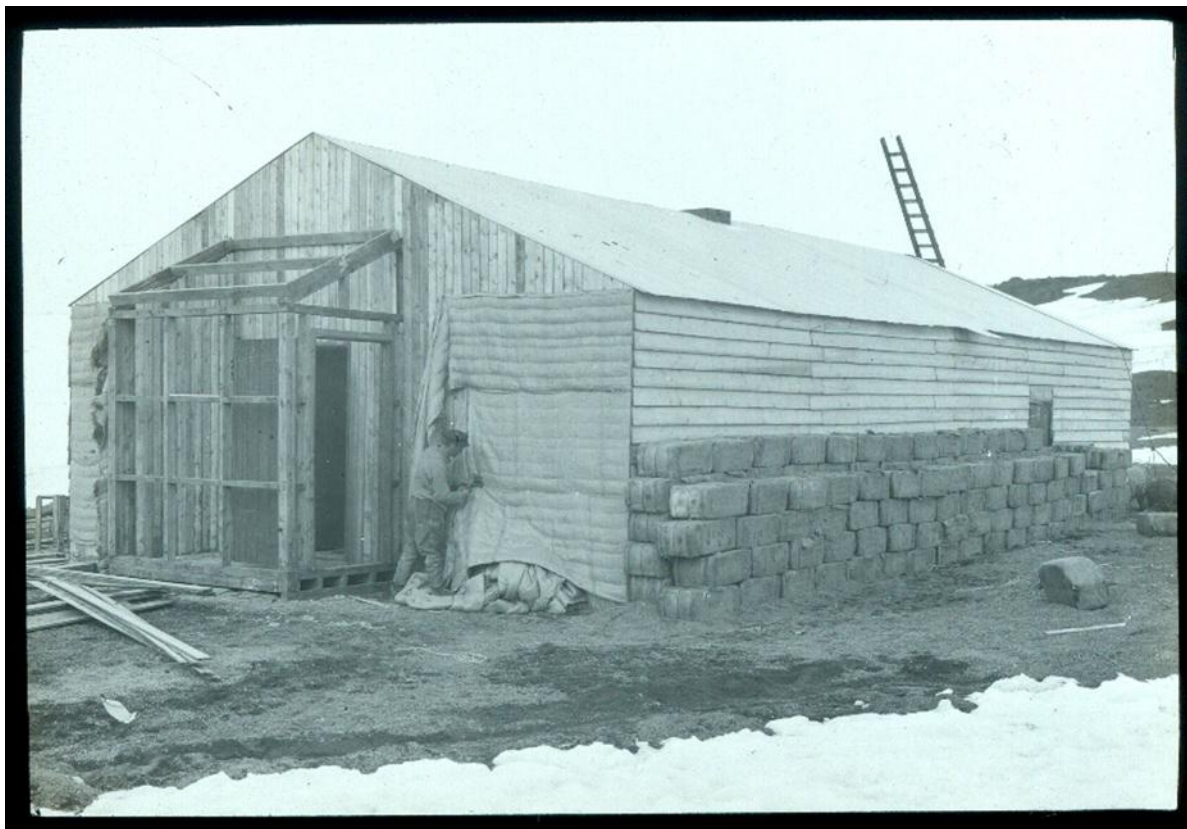


Illustration 1. A layer of quilted sacking filled with dried seaweed acted as insulation between the interior and exterior wall claddings (Herbert Ponting, Cape Evans, 1911, personal collection of Julian Evans).

⁴ Apsley Cherry-Garrard, *The Worst Journey in the World*, new ed. (London: Chatto and Windus, 1965) p. 181.

⁵ Scott, p. 73; Cherry-Garrard, pp. 87, 104.

⁶ Scott, p. 84.

layer of felt, a second layer of boarding, and then finally linoleum. Atop this the walls rose: two layers of matchboarding on either side of the frame, with a layer of seaweed quilt insulation between each. Finally the roof was laid over the top, a single layer of matchboarding on the inside and on the outside a layer of matchboarding, then a two-ply layer of 'ruberoid', a waterproof roofing material,

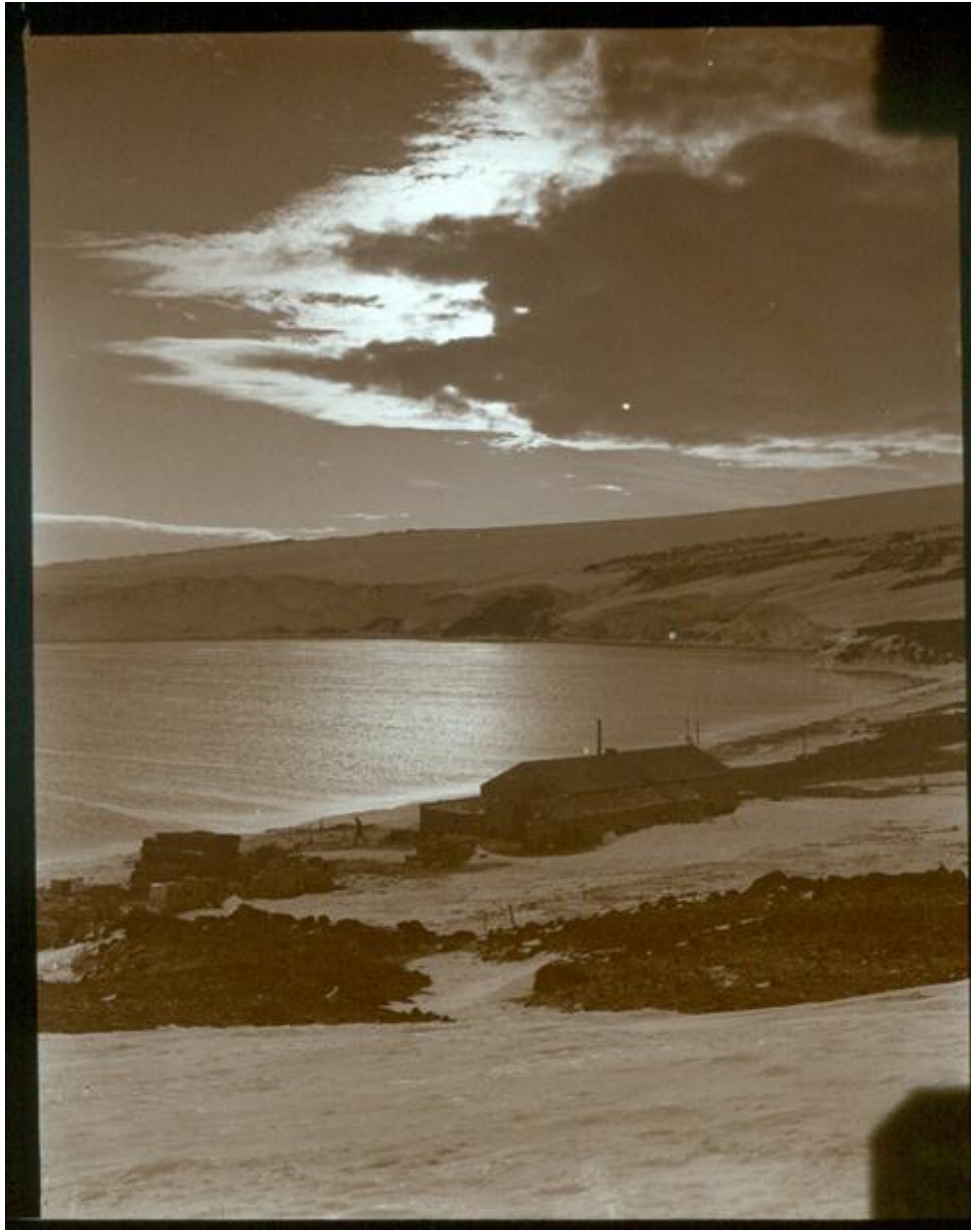


Illustration 2. The view north from Wind Vane Hill overlooking the completed Terra Nova hut at Cape Evans (Herbert Ponting, Cape Evans, no date, personal collection of Julian Evans).

then a layer of seaweed quilt, a second layer of matchboarding, and finally a three-ply layer of ruberoid. The beach's coarse sand was piled around the base of the hut,

and bales of the compressed hay used to feed the horses were piled around the south and east sides, from which the wind generally blew, to act as further insulation. A stable was built along the north side of the hut, formed between the wall of the hut and a high, thick wall of forage bales. The stable was 'roofed with rafters and tarpaulin, as we cannot find enough boarding'. So long as too much snow did not collect on its roof, Scott expected that the stable 'should do excellently well'.⁷

A blizzard on the sixth day forced the men to focus on the hut's interior, at which point only the floor linoleum and some odd jobs needed completing.⁸ For the next few days, while the carpenter built interior features such as the photographic dark room, scientific stations, and other compartments, several expeditioners began tunnelling into a nearby ice-bank at two points, creating tunnels with caves at their ends, one for a larder and one for a magnetic laboratory.⁹

After two weeks at Cape Evans the cooking range and stove were installed and chimneys were burrowing up through the roof to flower in the open air. The outer porch and the interior were almost complete, and the carpenters were busy with 'odd jobs and ... the many small fitting that different people require', sculpting and fine-tuning the hut to the expedition's needs.¹⁰

By 19 January 1911, Scott was prepared to declare the building no longer a hut but 'really a house of considerable size', fifteen by eight metres and almost three metres 'to the eaves'.¹¹ He felt it 'a first-rate building'.¹² As well as the stable a couple of glorified lean-tos were built along other walls as storerooms and scientific workspaces.¹³ Electric wires ran overhead from the hut up to meteorological instruments on Wind Vane Hill next door.¹⁴

⁷ Scott, pp.79-85.

⁸ Scott, p. 86.

⁹ Ibid, pp. 87-8.

¹⁰ Ibid, p. 89.

¹¹ Ibid, p. 96; Cherry-Garrard, p. 93.

¹² Scott, p. 86.

¹³ Ibid, pp. 97-8.

¹⁴ Ibid, p. 165.

The men began living in the hut on 18 January. Entering the outermost door, the expeditioners found themselves in a storeroom which, followed to the left, led to the stable.¹⁵ Ahead of the outermost door, though, they stepped into a small porch (in which was housed the acetylene generator), and then through another door into the hut proper. To the immediate right was the kitchen area and some bunks, and to the left more bunks. This was the men's quarters, 'or mess deck', divided from the officers' by a 'bulkhead' of supply cases that ran across the middle



Illustration 3. *In the first year at Cape Evans, the hut was fairly cramped. Apsley Cherry-Garrard is at far left (Herbert Ponting, Cape Evans, no date, personal collection of Julian Evans).*

of the hut.¹⁶ Beyond the bulkhead were the officers' (including the scientific staff's) bunks, and several desk and scientific workspaces. Directly opposite the entry at the

¹⁵ Cherry-Garrard, p. 94.

¹⁶ Cherry-Garrard, pp. 93-4.

very end of the hut were another fireplace and the photographic darkroom. To the left of these a small nook, sectioned off by more cases, contained the bunks and desks of Scott, his second in command Evans, and Wilson, the chief scientist. It was fairly cramped in the first year, but in the second, with a much smaller party, the men 'had a good deal more room than we needed' (see Illustration 3).¹⁷

Commonwealth Bay

As Scott and his companions were trudging dispiritedly away from the South Pole, Douglas Mawson was establishing his own base across the continent. Mawson first mooted the concept of the Australasian Antarctic Expedition (AAE) in January 1911, and within eleven months the expedition had departed on the *Aurora*, leaving Hobart in December 1911 and arriving in Antarctica in January 1912.¹⁸ The ship dropped eighteen men to establish the main base at Commonwealth Bay (as they named it), then steamed west to deposit eight men, the Western Party, on the Shackleton Ice Shelf to establish a smaller base. A third, smaller base of five men had been established at Macquarie Island en route to Antarctica, primarily as a wireless message relay point for the main base and meteorological station. Over the following autumn and winter the men at Commonwealth Bay conducted scientific experiments and took observations, prepared supplies and equipment for the sledging expeditions, and undertook some short field trips to lay depots for those longer journeys. The longest of the explorative sledging expeditions, and the event which made Mawson and the AAE legendary, was the eastern journey undertaken by Mawson, Belgrave Ninnis and Xavier Mertz. 480 kilometres from the main base, Ninnis and the strongest sledge dogs fell to their death down a crevasse, taking with them the sledge carrying the main tent and most of the food. Mertz died a week

¹⁷ Ibid, pp. 193, 443.

¹⁸ 'Draft Guide including index to correspondents', no date, MLMSSS 171, Mitchell Library, State Library of New South Wales (ML).

later, probably poisoned by eating the remaining sledge dogs, as he and Mawson trudged back to the hut. Mawson struggled on in extreme suffering, but managed to stagger back into base three weeks later. In his absence the *Aurora* had returned to retrieve the expedition, but had departed that very morning, leaving six expeditioners to search for the missing men. Bad weather prevented the *Aurora's* return, so Mawson and his companions spent another winter at Commonwealth Bay, being finally, and gratefully, collected in December 1913.

The expeditioners were excited by the setting, however, when they first arrived at what came to be called Cape Denison in Commonwealth Bay. There was an 'excellent little' harbour, just the right size for the whaleboats used to ship stores from the *Aurora* (imaginatively named 'Boat Harbour'), near an area of exposed rock that seemed almost to beg for the erection of a hut.¹⁹ The backdrop to this happy scene was appropriately dramatic, passing quickly up slopes and cliffs to the polar plateau. Charles Laseron, the expedition's assistant biologist, wrote that 'the whole land is one sheet of unbroken white, scored with innumerable crevasses and sastrugi' (solid waves in the ice's surface created by the wind).²⁰ Scientifically the site presented great opportunities. The exposed rock of the area allowed for enthusiastic geologists to ply their trade, and the proximity to the shoreline gave the biologists many opportunities to dredge the seafloor for strange creatures. There were several Adelie penguin rookeries nearby, and 'Weddell seals are also very abundant around the shore'.²¹ Meteorologically, however, the expeditioners quickly found their choice of location was not as perfect as first thought – after a series of pummelling hurricanes and blizzards, they realised they had settled in the middle of a permanent anticyclone. By this time the base had been constructed however, and it was too late to reconsider.

¹⁹ Charles Laseron, diary, 13 January 1912, Papers of Charles Laseron, MLMSS 385, ML.

²⁰ Ibid, 13 January 1912.

²¹ These animals also provided a ready source of meat for the dogs (Laseron, 13 January 1912).

That construction had begun the night that the *Aurora* left Commonwealth Bay: while most of the expeditioners were in their sleeping bags, Mawson began enthusiastically detonating explosives, preparing holes for the hut's foundations.²² The expeditioners worked fourteen to sixteen hours a day, slept for eight or nine, and lived in a temporary shelter built mostly of snow, supply cases, and a sail from the ship.²³ Laseron wrote: 'we have done three things, worked, eaten & slept, but chiefly the former'.²⁴

'A start has been made on the hut,' the electrician and wireless radio operator Walter Hannam wrote in his diary, '& they are having a pretty stiff time as the rock is mighty hard & the drills are very blunt.' He expected 'it will take a fortnight at least to erect & finish the hut,' and he was not wrong.²⁵ Despite being prefabricated, the hut took time to construct. After a week the living hut's foundations had been dug, the floor laid down, the walls erected and the roof arranged on top. Within a couple of weeks it was fully completed inside and out, and the framework of a second smaller hut had been erected adjoining it, ready for floor, walls, and roof. This smaller hut had been brought in case a suitable place for a third shore party was found on the voyage but, as this did not happen, the building was combined with the living hut. In the second half of March a 'hangar' for the plane (which never functioned, even when an attempt was made to convert it into a tractor sledge) was built along another wall of the main hut, mostly out of supply cases and roofed with a ship sail.²⁶ Over the following weeks the interiors of the now unified main hut were completed with partitions erected, furniture built, and lighting and heating installed. The building was cramped. 'Taken in all,' Laseron later wrote, 'if the desire had come to swing the proverbial cat, it would have been hard on the cat' (see

²² Archibald McLean, diary, 16 January 1912, Papers of Archibald McClean, MLMSS 382/2, ML.

²³ George Hudson & Son Ltd. to Douglas Mawson, 16 November 1911, 'Australasian Antarctic Expedition - Records, 1 Dec. 1910 - 1 Dec. 1915', MLMSS 171/18, ML.

²⁴ Laseron, 31 January 1912.

²⁵ Walter Hannam, diary, 21 January 1912, Papers of Walter Hannam, MLMSS 384, ML.

²⁶ McLean, 16 January 1912, 31 January 1912, 18 March, 4 April 1912.

Illustration 4).²⁷ A couple of other, much smaller huts, one for meteorological and one for magnetic observations, were also built at a distance from the main hut in the following weeks and months.

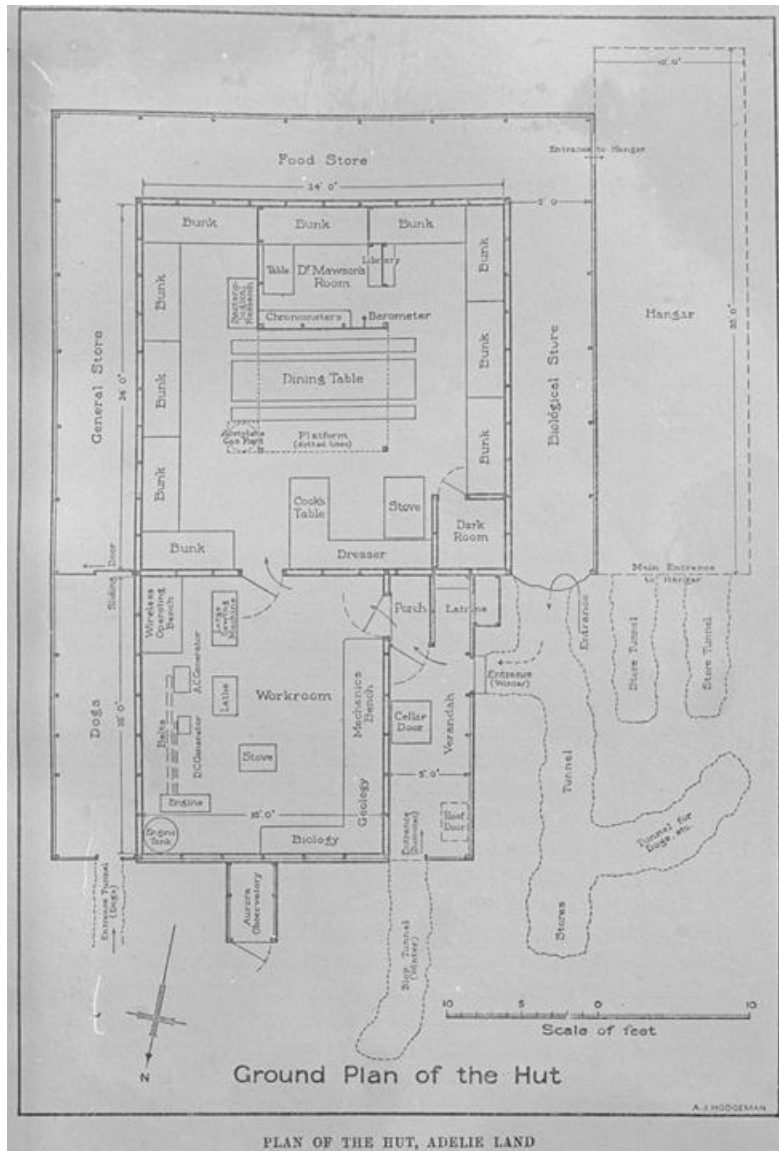


Illustration 4. A floor plan of the AAE hut at Commonwealth Bay, showing the close quarters in which the men lived – and the snow tunnels dug during the winter (Alfred Hodgeman, no other information, 10000A5, Australian Antarctic Division Collection, © Commonwealth of Australia).

The foundations of the main hut were wooden posts sunk into holes in the rock created with dynamite, drills, and spades.²⁸ They were then strengthened with tons of rocks and boulders carried from around the area, before the rest of the

²⁷ Laserson, *South With Mawson*, p.43.

²⁸ McLean, 16 January 1912, 3 February 1912, McLean diary.

structure was erected. Like Scott's hut, the floor, walls and ceiling were made of tongue-and-groove timber, so that one piece slotted into the next. Saennegrass, a dried plant, was used as an insulating layer in the walls. Coal briquettes burned in the stove heated the building, and it was lit by small acetylene lamps, a large acetylene burner suspended in the middle of the living hut over the table, hurricane lamps, and (generally only after the main light was extinguished at night) candles.

A striking element of the built environment at Commonwealth Bay were the tall, spindly wireless masts that rose above the huts – although, as will be seen, they rather rose, and fell, and continued to rise and fall until 1913. Wireless communication was a new technology to Antarctica (and fairly new to the world in general), and Commonwealth Bay's high winds only made the erection and maintenance of the masts more difficult. 'We are getting increasingly desperate now in our attempts to get the wireless masts up,' wrote Lason, 'and advantage is taken of anything under 50 miles an hour to go out & battle with the wind'. The masts were up to 35 metres tall, and secured by stays, ropes, and wires 'made fast round huge rocks, or buried in the ice & loaded with stones'. '[T]he storm they will have to bear will be something enormous,' observed Lason, and he was not mistaken.²⁹

Sanctuary

These bases were more than tongue-and-groove boards enclosing stoves and acetylene generators, though. For its occupants, and for its architects and masterminds, Antarctic built environment was a modern, embattled sanctuary.

The huts at Cape Evans and Commonwealth Bay were sanctuaries for the men who lived and worked in them. They provided safety and refuge from the punishing elements, small warm spaces of human culture in the wilderness. This

²⁹ Lason, 26 April 1912.

sense of sanctuary was incredibly strong among the expeditioners, and was created in a variety of ways.

A necessary foundation for a sense of sanctuary, of course, was a hut that really could protect the men. Tryggve Gran noted during a blizzard at Cape Evans that 'the hut was snug, unmoved by the clamour of the wind outside'.³⁰ Laseron wrote in his diary after the first winter at Commonwealth Bay: 'It is indeed a mercy that we have had a comfortable warm hut, strongly built, otherwise we must have suffered considerably'.³¹ Listening to a blizzard outside the hut, Hannam noted that 'There is not a tremor in the hut'.³² Mawson powerfully invoked the sense of a deep, protected sanctuary in his later descriptions of the hut at Commonwealth Bay:

To penetrate to the inside hut, the stranger steps through a hole in the snow to the veranda, then by way of a vestibule with an inner and outer door he invades the privacy of the work-room, from which passes by a third door into the *sanctum sanctorum*.

In a particularly overblown mood he wrote: 'From the crude and naked elements of that primitive and desolate land, whose ice bosom knows but the throb of the surging blizzard gusts, we ever sought the cheery shelter of our cave-hut'.³³

Archibald McLean, one of the AAE's doctors, wrote that 'The wind whistles in gusts over our snug home,' concluding that 'with our verandah built-in all around, our rock foundation and the protection from rocks and cases at the back, we feel pretty safe'.³⁴

Beyond simply strong shelters, though, the huts came to be viewed as palaces of comfort, even luxury, by the expeditioners. Emerging from winter at Commonwealth Bay, Laseron wrote that 'as it is, we have suffered no hardship, nor

³⁰ Gran, Tryggve, *The Norwegian With Scott: Tryggve Gran's Antarctic Diary 1910-1913*, ed. Geoffrey Hattersley-Smith, trans. Ellen Johanne McGhie (London: National Maritime Museum, 1984), p.46.

³¹ Laseron, 8 September 1912.

³² Hannam, 7 March 1912.

³³ Douglas Mawson, *The Home of the Blizzard*, 6th ed. (London: Hodder and Stoughton, 1938), pp. 78, 103.

³⁴ McLean, 9 March 1912, 23 March 1912.

have we suffered from cold'.³⁵ 'The hut is becoming the most comfortable dwelling-place imaginable' wrote Scott of the hut at Cape Evans. 'We have made unto ourselves a truly seductive home', he continued, 'within the walls of which peace, quiet, and comfort reign supreme'.³⁶ 'In comfort once more,' sighed Scott's chief scientist, Edward Wilson, on returning to Cape Evans.³⁷ Scott's second-in-command, Edward Evans, wrote that 'certainly no crew space was ever provided on a Polar Expedition that gave such comfortable and cosy housing room'.³⁸ This sense of luxury was accentuated after returning from harsh conditions outside: 'The hut is a warm, cosy old spot after the snowy hurricane outside,' wrote McLean at Commonwealth Bay.³⁹ After three months away from Cape Evans Scott recorded that

it was wonderful to enter the precincts of our warm, dry Cape Evans home. The interior seemed palatial ... and the comfort luxurious. It was very good to eat in civilized fashion, to enjoy the first bath for three months, and have contact with clean, dry clothing.⁴⁰

Evans insisted that 'the food you shuffled down from the tin plate and the cocoa you lapped from the blue and white mug had not its equal at the Carlton, the Ritz, or the Berkeley'.⁴¹

The provision of light was, in many ways, a very simple way of creating sanctuary, but it was also incredibly potent. The metaphorical sense of a light burning in the darkness of the wilderness was made literal in the permanent night of an Antarctic winter. The feeling that light corresponded with indoor safety, compared to outdoor wilderness, was palpable when McLean wrote: 'The gale sweeps by in furious gusts, while everyone is reading by our bright acetylene lights.'

³⁵ Laseyron, 8 September 1912.

³⁶ Scott, p. 96.

³⁷ Edward Wilson, *Diary of the Terra Nova Expedition to the Antarctic 1910-1912* (London: Blandford Press, 1972), p.125.

³⁸ Edward Evans, *South with Scott* (London: W. Collins and Sons, 1921), p.103.

³⁹ McLean, 16 March 1912.

⁴⁰ Scott p. 166.

⁴¹ Evans, p.108.

One appreciates the cheery light in Antarctica'.⁴² Returning to the hut after a long absence, Scott found 'the light resplendent'.⁴³

A social atmosphere of fellowship and intense good cheer housed within the snug hut was an integral part of the creation of the buildings as sanctuaries. Gathering for food was a reliable occasion for good cheer. 'Our meals are now rather jolly affairs,' wrote Laseron, '[Frank] Hurley being the life & soul of the party. He acts the giddy goat better than anyone I know. Walter Hannam lays down the law on every conceivable subject, whether he knows anything about it or not.'⁴⁴ Scott was delighted with the way his expeditioners worked together at Cape Evans, and the way such camaraderie contributed to the creation of the sanctuary: 'It is fine to see the way everyone sets to work to put things straight; in a year or two the hut will become the most comfortable of houses'.⁴⁵ 'We are doing famously,' reported Gran, 'and the spirit of comradeship is ideal'.⁴⁶ The pursuit of science, as a shared endeavour, was also part of creating a strong feeling of community on the bases. Cherry-Garrard believed that without the scientific ideals of Scott's expedition 'the spirit which certainly existed in our small community would have been impossible'.⁴⁷

The creation of a sense of familiarity, ownership, and 'home' in the bases contributed to the feeling of sanctuary. Even within a few days of arriving at Commonwealth Bay, a few nights' spent ashore made 'Our cove [seem] quite homely' to McLean. He continued that 'the inside of the hut with its many shelves and bunks and the later influx of cooking utensils, chairs, instruments, books, etc., bears quite a homely appearance' (see Illustration 5).⁴⁸ Whenever away from the hut,

⁴² McLean, 8 April 1912.

⁴³ Scott, p. 166.

⁴⁴ Laseron, 16 February 1912.

⁴⁵ Scott, pp. 92-3.

⁴⁶ Gran, p.116.

⁴⁷ Cherry-Garrard, p. 226.

⁴⁸ McLean, 16 January 1912.

whether for a short walk or a long sledging expedition, the men always wrote that they returned 'home'.⁴⁹ An increasing familiarity with the local area strengthened this. McLean wrote that the 'path across to the Magnetic Hut, tip-toeing the rocks and copper wires, across an ice-flat and over several ice-slopes becomes more familiar'.⁵⁰ Personalisation of spaces was a good way of creating a sense of home. At Cape Evans, Scott noted happily that some of the men sleeping in the same area 'have already made their dormitory very habitable', while three others had 'made their space part dormitory and part workshop'.⁵¹ Hand-making furniture to fit particular personal spaces was common, the furniture in McLean's work area for example being built by Mawson.⁵²



Illustration 5. The interior of the Commonwealth Bay hut on a winter afternoon (Frank Hurley, Commonwealth Bay, no date, 727A3, Australian Antarctic Division Collection).

⁴⁹ Ibid, 8 March 1912.

⁵⁰ Ibid, 26 March 1912.

⁵¹ Scott, p. 92.

⁵² McLean, 13 February 1912.

The flip side of this sense of sanctuary, an ambivalence in the expeditioners' culture, was the occasional feeling that the huts were in fact prisons, and the elements the men's jailors. Bad weather could trap the men inside, sometimes for days at a time. With a break in the weather the men at Commonwealth Bay would pour out of the hut. 'We had been practically "cooped up" inside for some days,' wrote McLean, 'and enjoyed the cheerful respite of strenuous toil'.⁵³ With the blizzard's return McLean wrote that 'We philosophically expect another week cooped up in the hut', sounding more moody than philosophical.⁵⁴ His companion Hannam was also dour, ruminating as a blizzard began that it would last four days, after which they would get 'half an hour of calm' before another four-day blizzard started. Two months later he wrote that 'it feels pretty miserable to be cooped up'.⁵⁵ The length of the expedition could also turn the huts into prisons: 'A month today and our imprisonment in the hut at Cape Evans will be ended' sighed Gran happily in 1912.⁵⁶ Another ambivalence in the sanctuary narrative was that many of the men had travelled south with the intention of having an adventure, and bases that were *too* comfortable or secure seemed to dent the intrepidity of the expedition. As Brigid Hains or Francis Spufford have argued, the expeditioners were men (mostly young) whose 'imaginative worlds' were informed by a combination of fictional tales, the accounts of real explorers, and the beliefs of Western (and in the case of most of these expeditioners, Edwardian British) culture. Adventure and daring were glorified, as was a man testing himself against the elements of nature. Too strong a sanctuary undermined any sense of adventure or testing.

⁵³ McLean, 9 March 1912.

⁵⁴ McLean, 15 March 1912.

⁵⁵ Hannam, 15 March 1912, 2 May 1912.

⁵⁶ Gran, p.209.

Modern sanctuary

As well as being sanctuaries, the expeditioners of the *Terra Nova* and Australian Antarctic Expeditions considered their built environments to be technologically modern. They were members of a culture confident in its own progress and rapid technological development. Scott and Mawson took cutting-edge technologies south with them, such as wireless communication and motorised sledges, as well as technologies that had been around for a few years but had not yet been used in Antarctica, such as several building materials. Laserson characterised the period as having one foot firmly in the modern period,

when sail had given place to steam, when man learned how to preserve foods, when medical knowledge had removed the fear of scurvy, and when

innumerable amenities were available which were denied to the pioneers.⁵⁷

Expeditioners were proud to deploy such technologies in Antarctica. They allowed the men to survive year-round in Antarctica, which would have been a much more marginal proposition a few decades earlier. They made the built environment more comfortable, with everything from more effective heating systems to gramophones. The bases also housed advanced scientific instruments and experiments. Even if particular technologies did not function, or functioned patchily, the men still felt they were a significant part of the ongoing march of progress.

The bases were made significantly more resilient and comfortable by modern technology. Hains writes that ‘the AAE hut was so highly modernised ... that they were insulated from the full rigours of the environment’.⁵⁸ Some of the building materials were cutting-edge. The roof of the hut at Cape Evans had five layers of ‘ruberoid’, a patented waterproof roofing material of felt infused with bitumen,

⁵⁷ Charles Laserson, *South with Mawson: Reminiscences of the Australasian Antarctic Expedition, 1911-1914*, 2d ed. (Sydney: Angus and Robertson, 1957), p. 2.

⁵⁸ Brigid Hains, *The Ice and the Inland: Mawson, Flynn, and the Myth of the Frontier* (Melbourne: Melbourne University Press, 2002), p.26.

produced by the Ruberoid Company only since 1906.⁵⁹ The heating and ventilation system, too, was innovative. The chimney pipes, fitted with dampers, ran from the stove and the fire at opposite ends of the hut through its before entering the same vent, so that 'Little heat was lost'.⁶⁰ There were air inlets at key points along the pipes which could be opened and closed to adjust the ventilation, and its strength, as desired.⁶¹ Scott was intensely proud of his advanced hut, 'the finest that has ever been erected in the Polar regions,' writing that 'Such a noble dwelling transcends the word "hut," and we pause to give it a more fitting title only from lack of the appropriate suggestion'⁶². A gramophone was played many times a day, 'and its value may be imagined', wrote Cherry-Garrard.⁶³ Wilson, returning to Cape Evans after a three month sledging journey, wrote that

The hut is a very different thing now to what it was when we left it in January. Acetylene gas jets everywhere, stoves, ... clocks, telephones, electric gadgets, and scientific apparatus everywhere, all in full working order.⁶⁴

As Wilson noted another expeditioner, conducting experiments at a fairly distant hole in the sea ice, 'connected himself with the hut by telephone' – a telephone line was even run from Cape Evans to the hut from Scott's first expedition at Hut Point, twenty kilometres away (see Illustration 6).⁶⁵ One of the most valued pieces of gadgetry was created on the spot by no less than the cook: a clockwork addition to the stove that let the cook, at a glance, know the vagaries of the recent temperature changes within in the oven, and to ring a small bell when a chosen temperature was reached, allowing him to control 'the rising of his excellent bread'.⁶⁶

⁵⁹ Scott, p. 84. and editor's note p.479.

⁶⁰ Cherry-Garrard, pp. 93.

⁶¹ Ibid, p. 94.

⁶² Scott, p. 96.

⁶³ Cherry-Garrard, p. 198.

⁶⁴ Wilson, p.125.

⁶⁵ Cherry-Garrard, p. 192; Scott, p. 255; Evans, p.111.

⁶⁶ Scott, p. 175; Cherry-Garrard, p. 181.



Illustration 6. *The telephone at Cape Evans (Herbert Ponting, Cape Evans, no date, personal collection of Julian Evans).*

Light, the artificial provision of which was a great feat of modernity, also made the huts more comfortable. Urban gas lamps in the nineteenth century were ‘symbols of progress’, and many writers used ‘The image of towns as points of light amid darkness’.⁶⁷ Acetylene lighting had been developed in the 1890s and was used both at Commonwealth Bay and Cape Evans (see Illustration 7).⁶⁸ Small portable acetylene lamps were used, but larger lights were installed in the centre of the hut over the main table, powered by acetylene generators.⁶⁹ At Commonwealth Bay there was even some electric light when the wireless engine was being used: McLean recorded that in March 1912 ‘The dynamo manufactured lights for today’. He was impressed, noting that ‘it was a brilliant illumination’.⁷⁰ Hannam reported great

⁶⁷ David Hamer, *New Towns in the New World: Images and Perceptions of the Nineteenth-Century Urban Frontier* (New York: Columbia University Press, 1990), p.186.

⁶⁸ Peter C. Baldwin, ‘In the Heart of Darkness: Blackouts and the Social Geography of Lighting in the Gaslight Era’, *Journal of Urban History*, vol. 30, no. 5, 2004, p.750.

⁶⁹ McLean, 20 April 1912.

⁷⁰ McLean, 27 March 1912.

cheers going up when he first got the dynamo working, and again two days later when the light was first turned on.⁷¹ Even Mawson, in his short, clipped diary entries, made note of occasions when electric light was provided.⁷² He was proud of the many sources of light available on his expedition: 'We are very well off for light – what with electric light, acetylene, kerosene, and candles – we should not suffer

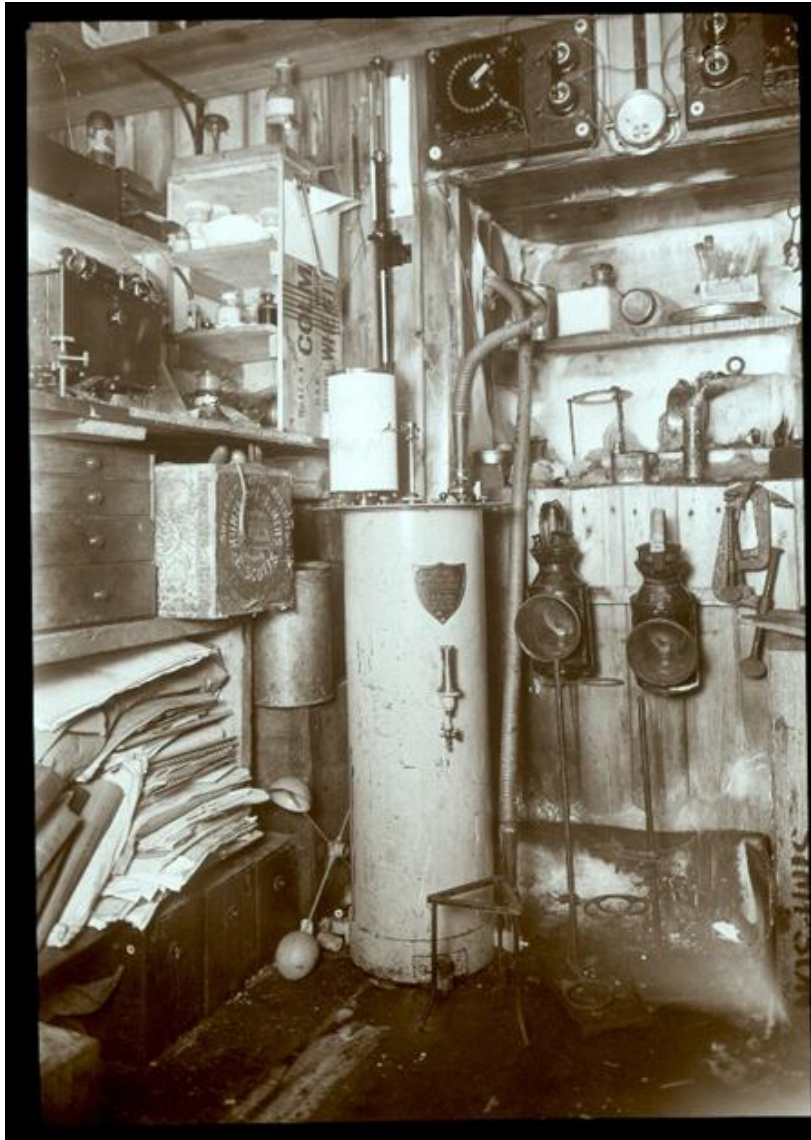


Illustration 7. The acetylene plant at Cape Evans, with portable acetylene lamps hanging to its right (Herbert Ponting, no date, Cape Evans, personal collection of Julian Evans).

from darkness during the winter'.⁷³ The enthusiasm did not wear off – McLean was moved enough to note again in his diary a month later that 'The wireless engine was

⁷¹ Hannam, 20 March 1912, 22 March 1912.

⁷² See, for example, Mawson, *Mawson's Antarctic Diaries*, pp.68-69.

set running, and electric light cheered us up at tea-time'⁷⁴, and another month later that 'Tonight ... the hut looks very cheery in the bright acetylene'.⁷⁵

At Commonwealth Bay, the pioneering technology that caused the most excitement, received the most attention, and was the most physically obvious, was wireless communication (or simply 'wireless'). The ability to communicate with the rest of the world had a major impact on Antarctic bases, and bristling aerials and masts were (and remain) a significant and characteristic part of Antarctic built environment (see Illustration 8). Lurching back into base from weeks of staggering among crevasses after the death of his sledging companions, Mawson wrote that 'what appealed to me as much as anything was the erection of a wireless mast 120 ft



Illustration 8. A view of Mawson's base at Commonwealth Bay showing the wireless masts at left and right dominating the skyline (Commonwealth Bay, no other information, PXE725-753, Mitchell Library).

⁷³ Mawson, *Mawson's Antarctic Diaries*, pp.78-79.

⁷⁴ McLean, 11 April 1912.

⁷⁵ Ibid, 15 May 1913.

high'.⁷⁶ 'If they work,' wrote Laseron, 'it is a feather on the cap of everybody'.⁷⁷ McLean wrote proudly that the wireless operator 'can now send [signals] 1,000 miles'.⁷⁸ 'The wireless proved a success and a boon throughout the year,' Mawson later trumpeted.⁷⁹

The modern built environment also housed advanced scientific instruments and experiments, made possible or spurred on only through recent scientific advances. Cherry-Garrard described the *Terra Nova* as being stuffed full of 'the necessities of modern scientific exploration'.⁸⁰ A great deal of work was put into the structures to house, for example, the magnetic observation equipment at Commonwealth Bay. To reduce artificial variations in the readings from other magnetic effects or sudden temperature changes, the hut was constructed only with copper wire and nails and was heavily insulated.⁸¹ An 'amazed' Cherry-Garrard wrote that 'at Cape Evans there had been running for more than three months a scientific station, which rivalled in thoroughness and exactitude any other such station in the world' (see Illustration 9).⁸²

There were ambivalences in this attitude, though. As with sanctuary, too much comforting modernity harmed the expeditioners' sense of adventure. Wireless, for example, decreased Antarctica's perceived remoteness and isolation. Tom Griffiths writes that 'Mawson's publisher had warned him that frequent communication might diminish the romance of exploration'.⁸³

⁷⁶ Mawson, *Mawson's Antarctic Diaries*, p.171.

⁷⁷ Laseron, diary, 27 April 1912.

⁷⁸ McLean, 20 September 1912.

⁷⁹ Douglas Mawson, 'Australasian Antarctic Expedition, 1911-1914', *The Geographical Journal*, vol. 44, no. 3, 1914, p.280.

⁸⁰ Cherry-Garrard, p. 46.

⁸¹ McLean, 21 February 1912, 9 March 1912.

⁸² Cherry-Garrard, p.181.

⁸³ Tom Griffiths, *Slicing the Silence: Voyaging to Antarctica*, (Cambridge, Mass. and London: Harvard University Press, 2007), p.123.



Illustration
9. *The huts housed instruments of ground-breaking science (Herbert Ponting, Cape Evans, no date, personal collection of Julian Evans).*

Embattled, modern sanctuary

The huts at Cape Evans and Commonwealth Bay may have been sanctuaries for the expeditioners, enhanced by modern technology, but the men were also constantly aware that something could easily go wrong. Accidents inside the huts, or damage wrought by the harsh environment, could rapidly undo the expeditions' hard work creating these safe places. Feeling that their hard-won sanctuaries were constantly embattled by threats, the expeditioners did not become complacent. 'Mawson and the AAE expeditioners', says Hains, 'were acutely conscious of the power of natural forces in the landscape. Outside their cosy huts ... nature was a

relentless presence ... Their hold on the continent was fragile indeed'.⁸⁴ The major threats to this fragile toehold were wind, snow, and fire.

Wind was a threat to the Heroic Age huts, especially at Commonwealth Bay. Exposed to intensely strong winds which often blew for several days at a time, it really is incredible that the huts, especially Mawson's, did not suffer more damage than they did. 'We again congratulated ourselves on having [so] staunch a hut,' wrote Mawson in his diary. He continued:

There is no exaggeration in stating that probably every other hut that has previously been erected in the Antarctic would have been carried away bodily long ere this. ... Imagine a hut with all in it suddenly blown away bodily into the sea.⁸⁵

Wind could damage the built environment in several ways. It could, of course, simply blow structures over, such as the magnetograph hut's framework or the wireless masts at Commonwealth Bay.⁸⁶ Mawson's men struggled for months to erect the masts, finally succeeding after seven.⁸⁷ The biggest mast lasted two or three weeks before being destroyed during a hurricane, the top shorn completely off and the remainder split down the middle.⁸⁸ 'With all the timbers broken up thus has gone our last hope of wireless communication,' Mawson wrote in his diary. He bemoaned the trouble: 'It has been a long and steady job all the winter, the operation being conducted under the most adverse circumstances – and to end like this!'.⁸⁹ The expeditioners were unable to re-erect the mast until the relief ship arrived the next year with more supplies. Wind could also propel grit, pebbles, stones, and sea spray against the structures, doing either immediate damage in the case of stones or pebbles, or gradual in the case of salty sea spray or grit. 'From 3 A.M. to 4 A.M. the wind was so strong that there was a continuous rattle of sand and stones up against

⁸⁴ Hains, p.32.

⁸⁵ Mawson, *Mawson's Antarctic Diaries*, pp.121-122.

⁸⁶ Mawson, *Home of the Blizzard*, p. 82.

⁸⁷ Laserson, *South with Mawson*, pp. 63-4.

⁸⁸ Mawson, *Home of the Blizzard*, p. 116.

⁸⁹ Mawson, *Mawson's Antarctic Diaries*, p.122.

the wall of the hut' wrote Cherry-Garrard.⁹⁰ Even snow could do damage in this way, which amazed Mawson. 'The abrasion effects produced by the impact of the snow particles was astonishing,' he wrote, continuing that 'Pillars of ice were cut through in a few days, rope was frayed, wood etched and metal polished'.⁹¹

Even without specific damage, however, the wind could be disruptive and disturbing. On a particularly 'turbulent' day at Cape Evans Cherry-Garrard wrote: 'It is very hard to settle down to do anything, read or write, with such a turmoil outside, the hut shaking until we begin to wonder how long it will stand such winds. ... [A]t times it seems that something must go'.⁹² 'A frightful wind was blowing this morning,' McLean wrote in his diary, 'wrenching and jarring the hut timbers, seeming to stretch and rend them and then allow them almost to recover, only to re-double in violence'.⁹³ Mawson personified the wind's attacks on the hut at Commonwealth Bay even more explicitly:

Having failed to demolish us by dogged persistence, the hurricane tried new tactics on the evening of May 24, in the form of a terrific series of Herculean gusts ... At 11.30 p.m. the situation was cheerfully discussed, though everyone was tuned up to a nervous pitch as the hut creaked and shuddered under successive blows.⁹⁴

Great gusts could create huge and sudden changes in air pressure. During hurricanes at Commonwealth Bay, the expeditioners became used to watching their hut's ceiling bend and stretch, warped by the pressure changes between the hut's interior and the outside atmosphere.⁹⁵

Additional environmental threats were snow, the ocean, and simply the cold. Snow drifts could block entry or exit from buildings, and the huge weight of snow when deposited on roofs could be crushing. The AAE eventually had to dig tunnels

⁹⁰ Cherry-Garrard, pp. 438-9.

⁹¹ Mawson, *Home of the Blizzard*, p. 98.

⁹² Cherry-Garrard, p. 445.

⁹³ McLean, 5 July 1913.

⁹⁴ Mawson, *Home of the Blizzard*, pp. 105-6.

⁹⁵ Laseyron, *South with Mawson*, p. 71.

through the snow to get in and out of their hut, and Scott noted that his men would have to ensure that snow did not build up on the roof of the stable, or it would collapse.⁹⁶ The ocean threatened the hut at Cape Evans. It was built a few metres above the shoreline, which at the time Scott believed would be far enough from the water, even if there was a large ocean swell. On his way back to Cape Evans after several weeks of sledging, Scott was intensely anxious as there had been a strong swell, casting doubt on the safety of the hut. Happily his concern was misplaced and the hut was perfectly safe.⁹⁷ Low temperatures could also damage the bases. Having accidentally, and easily, broken a piece of equipment made of metal at Commonwealth Bay, Hannam wrote ruefully that 'it is marvellous the effect that cold has on steel making it as brittle as glass'.⁹⁸

Probably the greatest hazard faced by Antarctic built environment, however, was fire. The men at Commonwealth Bay were 'very nervous of fire', wrote Charles Lason, 'for a fire would have been disastrous'.⁹⁹ The structures were built almost entirely of wood, and in the incredibly dry Antarctic atmosphere the timber (and most materials and objects) quickly became dry and flammable. The hut at Cape Evans, furthermore, was stuffed full of dried seaweed and sacking, and was surrounded by compressed forage for the horses. If there were a fire, then it would be difficult to extinguish as there was little liquid water available. Finally, if the worst occurred and the huts were entirely destroyed, any survivors would then find themselves without shelter, supplies, or equipment – an almost hopeless situation.

Fire could be started in many ways, but the greatest risks came from the heating and lighting systems – the stove, lamps, and acetylene generator. The stove at Cape Evans threatened to set the roof alight in 1913, the chimney overheating against the wooden ceiling and sprays of sparks being shot up through the ducts. Another crisis was narrowly averted when a lamp being worked on exploded,

⁹⁶ Scott, pp. 84-5.

⁹⁷ Ibid, p. 164; Cherry-Garrard, p. 94.

⁹⁸ Hannam, 13 March 1912.

⁹⁹ Lason, *South with Mawson*, p. 62.

splashing globs of burning oil over various parts of the hut. The men, luckily, were able to smother them before they caught hold.¹⁰⁰ At Commonwealth Bay there was one expeditioner who was especially scared of a fire starting, wrote Laseron, and who in particular 'had a deep-rooted distrust of the acetylene generator, which he was sure was always on the point of blowing up'.¹⁰¹

The sense of being embattled was in some ways welcomed by the expeditioners. Threats and hardships contributed to a feeling of adventure, and helped counteract the undermining influence of sanctuary and modern technology.

Plasticity

The expeditioners' culture had other expectations of built environment, though, that were challenged by their experience of the extreme Antarctic environment. Western culture expected that built environment should be stable, durable, and impenetrable. Once constructed it should not move, it should last, and it should not allow its borders to be transgressed by the elements. This attitude has a long pedigree, stretching back at least to ancient Rome, and is evident in many places, from colonial Australians' and New Zealanders' pride in stalwart masonry buildings and their disregard for more temporary indigenous habitats, to the children's tale of the three little pigs (only in the house built of staunch stone were the pigs safe).¹⁰² The Antarctic environment, however, challenged this expectation and revealed a much greater degree of plasticity in the bases than the expeditioners anticipated. Plasticity was revealed in a number of different ways, but primarily

¹⁰⁰ Cherry-Garrard, pp. 462-3.

¹⁰¹ Laseron, *South with Mawson*, p. 62.

¹⁰² See, for example: Vitruvius, *On Architecture*, trans. Richard Schofield (London: Penguin, 2009); Hamer; Deirdre Brown, *Maori Architecture: From Fale to Wharenuī And Beyond* (Auckland: Raupo, 2009); Mari Hvattum, 'Origins Redefined: A Tale of Pigs and Primitive Huts', in Jo Odgers, Flora Samuel, and Adam Sharr (eds.), *Primitive: Original Matters in Architecture* (London and New York: Routledge, 2006), pp.33-42.

through change in form and function, permeability, and the need for constant maintenance.



Illustration 10. The smaller hut is constructed alongside the main living hut (Frank Hurley, Commonwealth Bay, no date, 726D3, Australian Antarctic Division Collection).

Plasticity of the Antarctic built environment in the Heroic Age is visible in the way in which buildings changed their form and function from those originally intended. Even the sites of the bases themselves were far from certain until the expeditions arrived. Having arrived at Ross Island, Scott recorded that ‘it was evident that we had a considerable choice of wintering spots’.¹⁰³ Commonwealth Bay was barely on the map at all when the AAE steamed into harbour. Having prepared to establish three bases, Mawson ‘decided to attempt only two bases, amalgamating the smallest of the subsidiary bases with the main base’.¹⁰⁴ The third hut, as has been described, was constructed alongside and sewn into the living hut at

¹⁰³ Scott, p.70.

¹⁰⁴ Mawson, ‘Australasian Antarctic Expedition’, p.264.

Commonwealth Bay, creating a whole new space used for cooking, the wireless, and a general work-room (see Illustration 10).¹⁰⁵ Many impromptu additions were made to the hut at Cape Evans as it was built 'so that on all sides the main building has thrown out limbs'.¹⁰⁶ A storeroom was built along the south side of the building and 'brought ... across the porch on the windward side, connecting the roofing with that of the porch', which also further insulated that end of the hut, making 'the greatest difference to those who dwell near the door'.¹⁰⁷ This adaptive shifting and remoulding continued throughout the bases' occupations. The stable at Cape Evans was not built for several months, and was not much more than an elaborate lean-to.¹⁰⁸ In the second winter at Commonwealth Bay the men were still re-sculpting their built environment: two men made 'the North-West Passage', 'an annexe between the outside verandah and store to save us the trouble of going round' outside during blizzards.¹⁰⁹

Jury rigging and re-purposing was common on early Antarctic bases, and was an expression of their plasticity. The North-West Passage was lined on the outside with mattresses, no longer required as the party was much smaller in 1913.¹¹⁰ Scott's men raided his old hut at Hut Point for materials, loading 'some asbestos sheeting from the old magnetic hut on our sledges for Simpsons' hut'.¹¹¹ Commonwealth Bay's hangar was built with empty cases and 'a roof of thick timber' which had been 'part of the air-tractor's case'.¹¹² A plate was installed in the hut's chimney after several months, reducing the draught and so lowering fuel consumption.¹¹³ Various

¹⁰⁵ Mawson, *Home of the Blizzard*, p. 78.

¹⁰⁶ Scott, p. 98.

¹⁰⁷ *Ibid*, p. 97.

¹⁰⁸ Cherry-Garrard, p. 219.

¹⁰⁹ McLean, 22 February 1913, 23 February 1913.

¹¹⁰ *Ibid*, 23 February 1913.

¹¹¹ Scott, p. 92.

¹¹² Mawson, *Home of the Blizzard*, pp. 85-6.

¹¹³ Mawson, *Mawson's Antarctic Diaries*, p.82.

extra walls were built, usually of packing cases, to act as windbreaks and snow collectors.¹¹⁴

The interiors of buildings change in form and function throughout their use as well. At the beginning of their second winter at Commonwealth Bay, when the party was much smaller, McLean built a partition to separate sleeping spaces and provide more privacy.¹¹⁵ At Cape Evans Bowers began building cubicles for the men, but when it became apparent they wouldn't fit Scott 'instructed him to build a bulkhead of cases which shuts off the officers' space from the men's, I am quite sure to the satisfaction of both'.¹¹⁶ Such changes could be very transitory. For a theatrical performance at Commonwealth Bay, 'Part of the Hut was curtained off as a combined green-room and dressing room; the kitchen was the stage ... while the audience crowded on a form behind the dining table'.¹¹⁷

Permeability

It was, of course, necessary for buildings to have openings, cracks in its shell, such as doors, windows, chimneys, and ventilation. However, the Antarctic built environment's plasticity meant it was also permeable in ways undesired by the expeditioners. The most common expression of this permeability was the penetration of drifting snow particles, or 'drift'. Drift was powder-fine, and strong winds allowed it to blast through the tiniest crack in a building's shell. 'It snowed and blizzarded heavily last night. The store is full – the snow is most insidious', Mawson wrote in his diary.¹¹⁸ He complained a couple of days later that 'The roof should have been double [layered], the only way to make a tight roof unless metal-

¹¹⁴ Ibid, p.86.

¹¹⁵ McLean, 15 March 1913.

¹¹⁶ Scott, p. 92.

¹¹⁷ Mawson, *Home of the Blizzard*, p. 137.

¹¹⁸ Mawson, *Mawson's Antarctic Diaries*, p.89.

sheathed'.¹¹⁹ Laseron remembered that on the first night the men slept in the hut at Commonwealth Bay 'it snowed hard, and Murphy, whose bunk was nearest the door, woke to find himself covered with a thick mantle of white'. Hannam recorded that 'Heavy snow fell during the night & a lot drifted in hut through openings which have not been boarded up yet'. Another expeditioner cheekily instructed the hapless Murphy 'to get up & get the snow cleared up & they finished rest of night on the floor'.¹²⁰ Laseron concluded: 'In the high winds it was indeed hard to keep the snow out. Though the walls of the hut were double, with a layer of malthoid between, the wind found almost imperceptible cracks and forced the fine drift through'.¹²¹

Even if it was not carrying snow, cold wind was an unwelcome guest in the huts. According to McLean 'we are unduly sensitive to draughts in the hut'. Laseron wrote that 'the cold air found its way in, in spite of our attempts to close the slightest crevice'.¹²² After a few weeks in the hut one man 'discovered several cracks between the boards where a candle could be blown out' by the wind blowing in. These were pasted 'over with black paper, so that tonight [the corner] is in half-mourning'.¹²³

Having erected a structure, then, the first thing the men set about doing was attempting to make it airtight and snow-proof. Mawson wrote:

An officer of public health, unacquainted with the climate of Adelie Land would be inclined to regard the absence of more adequate ventilation as a serious omission. it would enlighten him to know that much of our spare time, for a month after the completion of the building, was spent in plugging off samples of the blizzards without, which found their way through most unexpected places, urged by a wind pressure of many pounds to the square foot.¹²⁴

¹¹⁹ Ibid, p.89.

¹²⁰ Hannam, 28 January 1912.

¹²¹ Laseron, *South with Mawson*, p. 47.

¹²² Ibid, p. 58.

¹²³ McLean, 21 February 1912.

¹²⁴ Mawson, *Home of the Blizzard*, p. 78.

We did inside work, lining and patching and generally making things airtight,’ explained McLean at Commonwealth Bay.¹²⁵ Several days later he spent ‘All day ... calking the roof of the main hut – sitting with paint brushes, paste and black paper’ attempting to seal the inside of the ceiling.¹²⁶ Laseron wrote that ‘Much of our leisure was spent at this time in pasting newspaper, nailing slats, or otherwise repairing the weak places above our bunks’.¹²⁷ Huge amounts of work were put into trying to seal the AAE’s magnetic hut to protect the sensitive instruments from temperature changes. ‘The Magnetic Hut people are still inserting small “gadgets” to make things perfectly airtight,’ recorded McLean.¹²⁸ For the main hut, at least, becoming covered with a thick layer of snow drift stopped many of the draughts.¹²⁹ ‘Even then,’ remembered Laseron, ‘some careless soul on entering would leave the door open, to be greeted with a chorus: “One – Two – Three – CLOSE THAT DOOR”’.¹³⁰ The three doors between the interior of the living hut at Commonwealth Bay and the outside world ‘were fitted with springs to keep them shut’.¹³¹ These efforts certainly had an effect, but throughout their time in Antarctica the expeditioners were continually discovering and attempting to fill new gaps.

Sometimes these attempts to seal the cocoon of the hut were too successful, resulting in hot, soupy interior atmospheres. ‘The problem of ventilation in polar regions still remains to be solved,’ reckoned Cherry-Garrard.¹³² While clearing windows of ice at Commonwealth Bay in spring 1912, ‘A hole was accidentally made in the last window, and in consequence our close atmosphere has been certainly fresher and more agreeable’.¹³³ There were other, less accidental, ventilation systems used. The spring-loaded doors at Commonwealth Bay could be propped open and a

¹²⁵ McLean, 5 February 1912.

¹²⁶ McLean, 11 February 1912.

¹²⁷ Laseron, *South with Mawson*, p. 47.

¹²⁸ McLean, 22 March 1912.

¹²⁹ Mawson, *Home of the Blizzard*, p. 84.

¹³⁰ Laseron, *South with Mawson*, p. 58.

¹³¹ Mawson, *Home of the Blizzard*, p. 78.

¹³² Cherry-Garrard, p. 46.

¹³³ McLean, 8 August 1912.

vent in the stove flue opened, creating an immediate flow of air right through the base.¹³⁴ The chimney pipe system at Cape Evans had several vents which could be opened and closed to control ventilation.

Interestingly, sources from the hut at Cape Evans do not record nearly as many problems with permeability. It may be that, with so many different layers of flooring, walls, and roofing, the hut really was quite well sealed, that the winds at Cape Evans were not strong enough to force drift into the building, or that the snow was not fine enough. Alternatively, the diarists may not have considered it worth recording or examples may have been edited out.

Impermanence

Once erected, the Heroic Age bases did not simply stand stalwart. The built environment may have held its shape after force had stopped being applied to its materials, but that shape was still subject to entropy. The bases at Commonwealth Bay and Cape Evans were far from permanent and required constant maintenance (this, of course, contributed to the expeditioner's sense of the bases as embattled).

One of the more common maintenance tasks was digging the base out of snow drifts. 'The drifting snow closes us in each day while the blizzard sweeps ferociously down from the hills, and it takes some hours to "dig out" our verandah and front entrance', wrote McLean soon after arriving at Commonwealth Bay. In 1913 he was still going: 'Shovelled some snow out of the verandah,' he wrote.¹³⁵ 'Frequent shovelling was necessary to maintain freedom of exit,' wrote Mawson. Eventually it reached the point where, for the night watchman to 'dig his way to the entrance, reach the instruments adjacent to the Hut and to return occupied a whole hour; a performance which had to be repeated at regular intervals'.¹³⁶ During

¹³⁴ Mawson, *Home of the Blizzard*, p. 78.

¹³⁵ McLean, 7 March 1912, 4 March 1913.

¹³⁶ Mawson, *Home of the Blizzard*, p. 101.

blizzards at Cape Evans 'no one went outside more than was necessary, if only because one was obliged to dig the accumulated drift from the door before it was possible to proceed'.¹³⁷ Snow would also cake on top of the chimney at Commonwealth Bay, stopping it from drawing air properly.¹³⁸

Some changes in the buildings were sudden and dramatic. Mawson recorded in his diary in September 1912 that one of the small scientific huts had been 'mauled by the wind'.¹³⁹ The wireless aerial masts were constantly being fixed or even re-erected. In August 1912 a 'spasm of energy after lunch' allowed the men to put up several aerial wires between the masts in high winds, 'only to see – about ten minutes later – one of the blocks break loose and carry down one end of the aerial'.¹⁴⁰ 'Phosphor-bronze wire stays, each with a breaking strength of one ton' were used to secure wind screens around scientific instruments, but 'Strong as these wires were, several breakages had to be replaced during the year' – at one point, four times in one afternoon.¹⁴¹ In 1913 several dog pups 'broke through a small hole in the sacking round the entrance and invaded the store', where they were found 'busy on the mutton'.¹⁴² If it wasn't being blown over, the wireless aerial was often being twisted by the wind and required constant straightening.¹⁴³

There was, of course, also more slow-paced wear-and-tear on the buildings that undermined any expectation of constant durability or permanence. Individual building materials or components, for example, shifted and warped. 'To add to our troubles,' wrote Mawson, 'the boards were all badly warped from being continually wet with sea-water on the voyage'.¹⁴⁴ Materials continued to change after use. Mawson wrote on Midwinter's Day 1912 that 'The wood of the ceiling has shrunk and a fall of snow takes place at several spots in the Hut, partly direct, partly [due

¹³⁷ Cherry-Garrard, p. 197.

¹³⁸ Mawson, *Mawson's Antarctic Diaries*, p.61.

¹³⁹ Mawson, *Mawson's Antarctic Diaries*, p.112.

¹⁴⁰ McLean, 11 August 1912.

¹⁴¹ Mawson, *Home of the Blizzard*, pp. 74-5; Mawson, *Mawson's Antarctic Diaries*, p.113.

¹⁴² McLean, 17 March 1913.

¹⁴³ Mawson, *Mawson's Antarctic Diaries*, p.184.

¹⁴⁴ Mawson, *Home of the Blizzard*, p. 73.

to] the chill of the Hut moist air'.¹⁴⁵ The following year, a great deal of work was done over a couple of weeks to patch up the hut's deteriorating roof. McLean noted that he 'helped Hodgeman patch the roof yesterday on the western side of the hut', and a week later he returned to assisting with work on the roof, patching it and 'nailing with cleats rolls of black paper to keep out drift snow and incidentally to make the hut snugger'.¹⁴⁶ If it was not doing direct damage, the wind could also cause objects to rub against one another, wearing things down over time. A rope of one of the wireless masts at Commonwealth Bay, 'from hitting continually on the upper part of the mast in the terrific wind, frayed through and carried away'.¹⁴⁷

This chapter has begun the first argument advanced in this thesis. Having described the bases of Mawson and Scott at Commonwealth Bay and Cape Evans, it has argued that the expeditioners considered their bases to be modern, embattled sanctuaries. They were technologically advanced, protective refuges from the harsh elements of the Antarctic environment. Made comfortable with heat and light, filled with good company and the implements of progressive science, they became homes for the expeditioners. There were, nonetheless, threats to these sanctuaries, such as hurricanes, blizzards, and fire, that left the expeditioners feeling embattled.

Such attitudes toward Antarctic built environment contained ambivalences and contradictions, though. Many of the expeditioners had signed up with the AAE or *Terra Nova* expedition for an adventure, to test themselves against the elements of the great southern wilderness. Comfortable and secure bases dented the feeling that a man was being daring and intrepid – great Antarctic deeds did not seem to square with freshly-baked bread or jaunty gramophone records. The threat of fire and the difficulties of blizzards were thus, in some ways, welcomed by the expeditioners.

¹⁴⁵ Mawson, *Mawson's Antarctic Diaries*, p.94.

¹⁴⁶ McLean, 13 February 1913, 20 February 1913, 21 February 1913.

¹⁴⁷ Ibid, 17 August 1912.

The chapter then argued that the physical experiences of the extreme Antarctic environment showed the built environment to have plasticity, a discovery that challenged the expeditioners' attitude that built environment was stable, durable, and impenetrable. Changing shapes and functions for buildings (and parts of buildings), fingers of drift wriggling through invisible gaps in the walls, and the constant re-sculpting effort of maintenance undermined any feeling that the built environment was static or permanent.

By 1914, though, the AAE and the *Terra Nova* expedition were over. Mawson was knighted and Scott's memory was lionized. The bases at Commonwealth Bay and Cape Evans sat dark, cold, and empty, having performed the roles for which they had been constructed. The buildings would continue to be visited, and at times temporarily used, over the coming decades, eventually even being restored to an image of their first occupation. It was almost another fifty years, though, before Australians and New Zealanders returned to build in Antarctica. The built environments they created were strikingly different to those of their forebears – but in many ways, they were also strikingly similar.

Chapter Two

This chapter continues the first argument advanced in this thesis by moving forty years ahead to a different set of Mawsons and Scotts – Australia’s Mawson Station and New Zealand’s Scott Base, founded in 1954 and 1957 respectively. Similarly to the first, Chapter Two describes the circumstances of the bases’ construction. It then argues that, despite some differences, the Antarctic expeditioners of the post-war period were very similar to their Heroic Age forebears, still perceiving their built environments as modern, embattled sanctuaries. They also still found trouble with their conception of buildings as durable, impenetrable structures, discovering the plasticity of their built environment when constructed in the harsh Antarctic environment.

Mawson Station

On a cold February evening in 1954 a group of men gathered in the wind on a rocky beach in front a small caravan with a mast rigged to its side. A man with slicked back hair and a projecting goatee nodded at an expeditioner. The expeditioner tugged a cord that ran to the flag strapped to the mast – with no effect. He pulled again, again with no result. He gave a third, stronger pull, and the mast toppled to the ground. The assembled group cackled, but the goateed man was unamused. Eventually the Australian flag was unfurled and the expeditioners self-consciously sang ‘God Save the Queen’ before retiring to dinner then further ship

unloading and hut construction.¹ Australia had formally founded its first station on the Antarctic continent, and named it “Mawson”.

Unsurprisingly, the story of Mawson Station’s genesis begins long before that windy February evening. Phillip Law, the goateed man and Director of the Australian Department of External Affairs’ Antarctic Division, had been driving the Australian government towards a continental base for several years with the zeal of a dedicated scientist and patriot who believed that Antarctic science was of huge importance to humanity, and that the Antarctic continent was of huge importance to Australia. Other parts of the External Affairs Department were less worried about science and more concerned with shoring up Australia’s claim to the massive Australian Antarctic Territory (almost half of the continent) and advised that a claim based on geographical proximity and historical exploration needed strengthening through occupation to be even halfway legitimate.

With a sympathetic Minister in R. G. Casey, Law and his Australian Antarctic Division (AAD) had secured funding for an expedition to establish a permanent base on the Antarctic mainland. After years of logistical planning, the expedition left Hobart in December 1953 on the M.V. Kista Dan. At Horseshoe Harbour on the Antarctic continent in February 1954 it disgorged men, tractors, amphibious vehicles, trailers, sleds, caravans, fuel drums, and crate upon crate of supplies. The site, a horseshoe-shaped area of rare exposed bedrock, surrounded by icy pebble beaches, ice cliffs, distant mountain ranges, and fronting a steep rise of blue glacial ice up to the Antarctic plateau, was chosen for its exposed rock, flatness, the accessibility provided by the deep harbour, the relative shelter, and the access it provided to the plateau.²

¹ Fred Elliot, diary, 13 February 1954, Papers of Fred Elliott, MS 9442-1, National Library of Australia (NLA).

² ‘New Base selected’, *The Age*, 8 February 1954, Papers of Robert Summers, MS 9165, NLA; ‘Mawson Station, Antarctica’, no other information, Papers of Louis Macey, MLMSS 5343/3(4), Mitchell Library, State Library of New South Wales (ML).

The men worked over twelve hours a day for almost two weeks to unload the *Kista Dan*, erect three prefabricated huts, and stock them with furniture, supplies, scientific equipment, heating systems and so on, before the ship's departure.³ For the following twelve months, the fifteen men of Mawson Station continued to construct buildings – to a total of nineteen – while taking scientific readings and conducting some exploratory field trips. Seventy-foot radio masts were erected to allow wireless communication with Australia and with field parties.⁴ In February 1955 the ship reappeared at Mawson with a whole new load of cargo and expeditioners. After another few weeks of frenzied activity the ship steamed north, leaving behind a new party and ten new huts. This party continued as the first had, erecting new buildings and embellishing existing ones, conducting scientific investigations, taking observations, and exploring the neighbourhood. By 1956 there were twenty-six huts, including a physics hut, magnetic observatory, three meteorological huts, at least two more sleeping huts, a surgery, more stores, a vehicle garage, an aircraft hangar, a seismic laboratory, a biology hut, and administrative buildings.⁵ This pattern of annual change-overs, with a burst of construction during the short overlap while the ship (and sometimes ships) bobbed in the harbour followed by a slower, steady erection of further structures during the rest of the summer, and beginning again with the next spring, continued for several years.

While some buildings were constructed onsite from scratch, such as the vehicle garage built between August 1955 and January 1956, the huts were generally prefabricated and erected onsite.⁶ Most were well-designed, such as the large hut erected in 1954 for radio, meteorology, and surveying staff, designed by Explastics Ltd of Melbourne, a company specialising in building refrigeration units, in collaboration with AAD. It was designed so that six men could erect it in three days.

³ Phillip Law and John Bechervaise, *ANARE: Australia's Antarctic Outposts* (Melbourne: Oxford University Press, 1957), p. 56.

⁴ 'Mawson Station, Antarctica', no other information, Macey papers.

⁵ Law and Bechervaise, p.56.

⁶ John Bechervaise, diary, Papers of John Bechervaise, MS 7972-6, NLA.

Floor, wall, and ceiling sections, made of timber frames covered with aluminium, fitted neatly into one another and were bolted together with long bolts that ran horizontally through the length of the wall. Gaskets of rubber between the sections, compressed by the force of the bolts, sealed the gaps. Double-glazed windows, linoleum floors, heavy refrigerator-style doors, and thick wire cables tying the buildings down completed the ensemble (see Illustration 11).⁷ The experimental stores huts taken on the first expedition – seven by three-and-a-half metre timber-framed structures of water-resistant plywood and aluminium foil with refrigerator-style doors – broke down into thirty-two pieces and could be erected within a day, or even less. Their success allowed similar larger huts to be erected in further years.⁸



Illustration 11. *With multiple buildings erected close together, the spaces between them became obstacle courses of guy-wires (Robert Wyers, Mawson Station, no date, 3981D4, Australian Antarctic Division Collection © Commonwealth of Australia).*

⁷ Elliott, 18 February 1954, MS9442-1; Phillip Law, diary, 18 February 1955, Papers of Phillip Law, MS 9458-Acc06/158-2/009, NLA; Law and Bechervaise, *ANARE*, p. 60.

⁸ 'To set up Australia's first permanent Antarctic station, these men will spend a year in that bleak land', no other information, Summers papers.

Some of the huts, however, were quite badly conceived, such as the Physics Hut erected in 1955. To start with, it was a very large structure. To make things even more complex, the long, heavy beams put down on the rock to act as the foundation needed to be attached to the bedrock with screws drilled down into the rock, but the beams needed to remain perfectly parallel to one another. The walls and roof then, it seemed, needed to be erected almost simultaneously in order to fit together. All of this was quite a task on uneven rock beside a frozen, hurricane-prone Antarctic harbour.⁹ After many days of struggle the expeditioners were eventually able to devise a method of coercing the hut into shape.

The early huts, such as the main living hut erected for the 1955-1956 party, were a 'quite traditional type of polar hut' according to one station leader, John Bechervaise: 'galley at one end, [sleeping] cubicles on both sides, stove with ice-drum, books in shelves, small meteorological office and cold-porch'.¹⁰ Later buildings, such as the sleeping hut 'Ross', were finer. Bechervaise wrote that Ross was 'really a most luxurious structure with fine appointments – well built bunks, tables, wardrobe space, etc'. Six to seven men were 'separately housed in brightly painted cubicles' with a window at bunk level and a small writing desk. Power was supplied, at first, by two fifteen kilovolt-ampere diesel generators, although this energy base expanded as the base did. The base was thus lit electrically, but the main heating method was still the burning of coal briquettes in stoves. Warm air was then circulated within buildings through ducts.¹¹

⁹ Law, 16 February 1955.

¹⁰ Bechervaise, 2 March 1955, MS 7972-6.

¹¹ Law and Bechervaise, *ANARE*, pp.62-3.



Illustration 12. The 'silver village', looking north (Kevin Felton, Mawson Station, no date, 2263A5, Australian Antarctic Division Collection © Commonwealth of Australia).

From 1954, then, there grew and expanded on the exposed rock of Horseshoe Harbour a cluttered collection of small metallic structures, festooned with a tangle of guy wires and tall aerials. 'On this minute but stable rock,' wrote Bechervaise in 1955, 'backed by a continent of ice that would fill the Atlantic Ocean, lay my silver village gleaming under the aurora' (see Illustrations 12 and 13).¹²

Scott Base

New Zealand's Scott Base was built three years after Mawson, in 1957. Its first purpose was to play a role in the Commonwealth Trans-Antarctic Expedition (TAE), which sought (and managed) to cross the continent from the Weddell Sea to the Ross by land. A New Zealand expedition, led by Sir Edmund Hillary only four years after his conquest of Everest, travelled to the Ross Sea to lay depots for the main

¹² Bechervaise, 28 February 1955, MS 7972-6.

expedition, led by Vivian Fuchs, as it crawled closer to the end of its journey (Hillary ended up thrilling half the Western world – and outraging the other half – by continuing to the South Pole after laying its last depot, beating Fuchs there and becoming the first to reach the South Pole by land since Scott). The expedition, in contrast to that to establish Mawson, was in large part publicly funded through fundraising and donation-giving, and was masterminded by the Ross Sea Committee, a body composed of both private individuals and government officials.

After its use for a year by the TAE, the New Zealand Government and Department of Scientific and Industrial Research (DSIR) took over operation of the base for the International Geophysical Year (IGY) of 1958-1959. The government and IGY officials thus also had input into Scott Base's design and early operation. Similarly to Mawson Station, the New Zealand government was interested in Scott Base primarily as a means of reinforcing its claim over the Ross Dependency by demonstrating occupation.

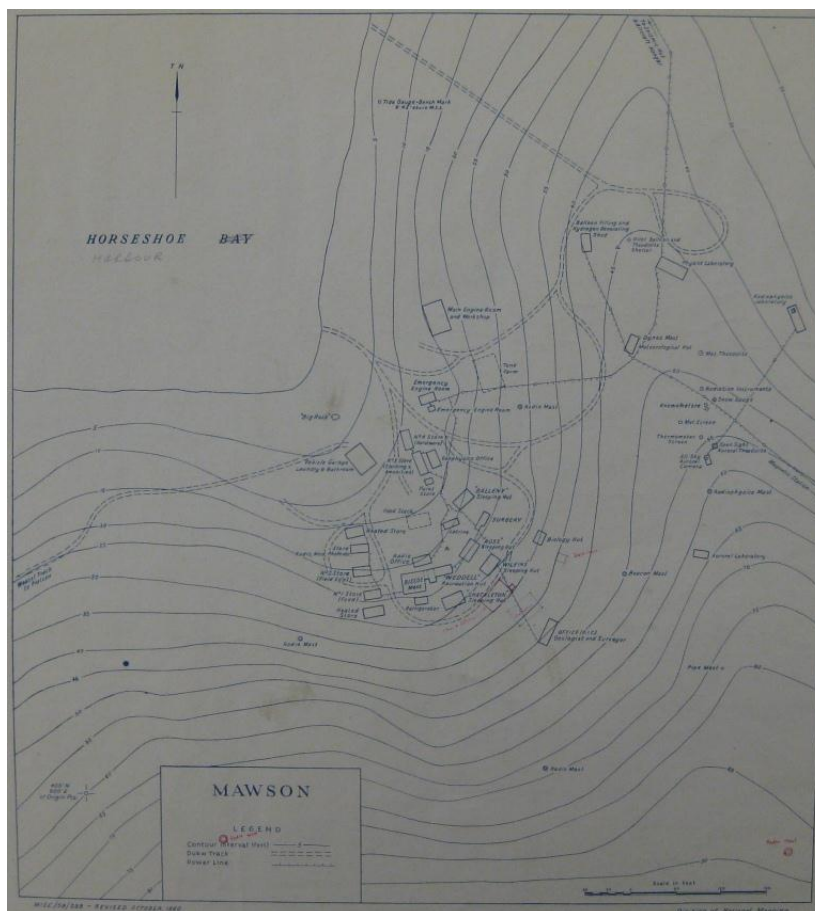


Illustration 13. By 1959, Mawson Station was a sizeable jumble of small buildings (Division of National Mapping, 'Mawson, February 1959', 1960, 5-3-8, SCAR Special Map Collection, National Library of Australia).

Scott Base's intended site had been Butter Point, on the western side of McMurdo Sound. When the expedition arrived, however, they found the site blocked by thirty kilometres of heavily crevassed sea ice, and inaccessible to the ship and the mounds of supplies.¹³ After some hasty reconnaissance (and some help from local Americans in the form of a helicopter), Hillary chose Pram Point, on the south end of Hut Peninsula and less than five kilometres from the United States' massive McMurdo Station, for Scott Base's new site.

Pram Point was – and more or less remains – 'a series of beach terraces of loose basalt lava'.¹⁴ Nearby the permanent Ross Ice Shelf met the seasonally melting sea ice. Across McMurdo Sound were the Royal Society Ranges, and just off the point the sea ice crumpled up in pressure ridges as it met Ross Island, 'spray[ing] blue ice perhaps 20ft high in arrested motion'.¹⁵ Behind the base, the massive active volcano Mount Erebus sent wisps of steam into the air. The site met all of the expedition's criteria for its base site and was trumpeted as 'as near perfect for a base as one can hope for in the Antarctic': it was easily accessed by sea, provided exposed bedrock on which to build, was large enough for all the buildings plus expansion, provided a patch of level snow suitable for an aircraft landing strip, was suitable for scientific work and gave direct vehicle access to the Ross Ice Shelf and, thence, the plateau.¹⁶

The base was officially named in January 1957 by the Administrator of the Ross Dependency, and, in a conscious evocation of New Zealand's connections with the past of that peninsula and island, the New Zealand flag was flown from the 'chipped, weather-bleached' mast that Scott had erected over his first expedition's

¹³ 'Anxious Hours for Hillary While Making Key Decision', no further information, R20284354-C747382-CAHU-CH89-Box6-c, Archives New Zealand (ANZ).

¹⁴ 'Scott Base Site Suitable But Not Sultry', *The Dominion*, 15 February 1957, R20084351-CAHU-CH89-Box6-i, ANZ.

¹⁵ 'A Snug Base For The Winter', *The Weekly News*, 6 March 1957, R20084351-CAHU-CH89-Box6-i, ANZ.

¹⁶ G. Lee Martin, 'Preparing For Winter Storms', 1 February, no further information, R20284354-C747382-CAHU-CH89-Box6-c, ANZ ; 'Anxious Hours for Hillary While Making Key Decision'.

hut in 1901, five kilometres away.¹⁷ The base was erected quickly, in about four weeks, partially because it had been trialled at Rongotai in Wellington and carefully labelled and packed. The 'first shell of a hut was up in three days, and completed in seven'.¹⁸ A team of six Army and Navy personnel constructed the base thirty metres from the shoreline, overseen by a foreman and an architectural draughtsman, both from the Ministry of Works, working twelve to fourteen hours a day, seven days a week.¹⁹ They built foundations, erected the buildings, and installed power, heating and other 'domestic systems'.²⁰ The construction team all then returned to New Zealand, leaving twenty-three expeditioners for the winter.²¹ It had been less than a year since the project had first been 'placed on the drawing-board'.²²

Scott Base, in its early years, was a small huddle of six main huts, '[lemon] and red buildings, tipped with the silver of ventilation and chimney outlets, [standing] square and flat-topped on their rock foundations'.²³ The huts were based on those used at Mawson Station, the Australians having shared the plans with DSIR and the Ministry of Works architect who designed Scott Base (the architect, Frank Ponder, later recalled that the committee in charge treated the planning of Scott Base 'rather like building a shed at the bottom of the garden').²⁴ They were, then, a similar prefabricated design of timber panels, insulated and covered with aluminium sheeting, slotted together and tied down with wire guys. These six huts were

¹⁷ 'N.Z. Flag Flies From Scott's Mast', no further information, R20284354-C747382-CAHU-CH89-Box6-c, ANZ; 'Naming of N.Z.'s First Antarctic Base', no further information, R20084344-C747382-CAHU-CH-89-Box6-b, ANZ.

¹⁸ 'Tribute to Scott Base Builders', *The Evening Post*, 22 March 1957, R20084351-CAHU-CH89-Box6-i, ANZ.

¹⁹ Martin, 'Preparing For Winter Storms'; 'Scott Base Site Suitable But Not Sultry'.

²⁰ 'Chairman Praises Work Done At Scott Base', *The Dominion*, 22 March 1957, R20084351-CAHU-CH89-Box6-i, ANZ.

²¹ 'Breakfast Without "The Black Hills of Dakota"', *The Dominion*, 25 February 1957, R20084351-CAHU-CH89-Box6-i, ANZ.

²² 'Chairman Praises Work Done At Scott Base'.

²³ 'A Snug Base For The Winter'.

²⁴ Scott Base Building Committee, meeting minutes, 21 February 1956, R425930-C732452-CAYP-CH949-3460-Box19-c-1, ANZ; W. Frank Ponder, *A Man From the Ministry: Tales of a New Zealand Architect* (Christchurch: Caxton Press, 1996), p.97.



Illustration 14. *The covered way at Scott Base allowed movement between huts without going outside (Scott Base, 1960, no other information, BSE3, © Antarctica NZ Pictorial Collection).*

connected by a 'covered way', a 'stout' arching passageway of corrugated iron that connected the buildings together, allowing movement between them without needing to go outside (see Illustration 14).²⁵ Some smaller, primarily scientific, huts, supply dumps, and several tall, spindly aeries were scattered over the black terraces behind the main buildings to complete the effect. The perky yellow-and-red colour scheme protected the surfaces and made the base visible from a distance.²⁶ It was seen as compressed and orderly, being called 'well-found, neat, complete' and 'a model of compactness' (see Illustrations 15 and 16).²⁷

²⁵ 'A Snug Base For The Winter'.

²⁶ A. S. Helm to Manager, Lewis Berger & Sons N.Z. Ltd, 24 August 1956, R20084297-C747528-CAHU-CH89-Box1-t-1/5/9/1, ANZ.

²⁷ 'A Snug Base For The Winter'.

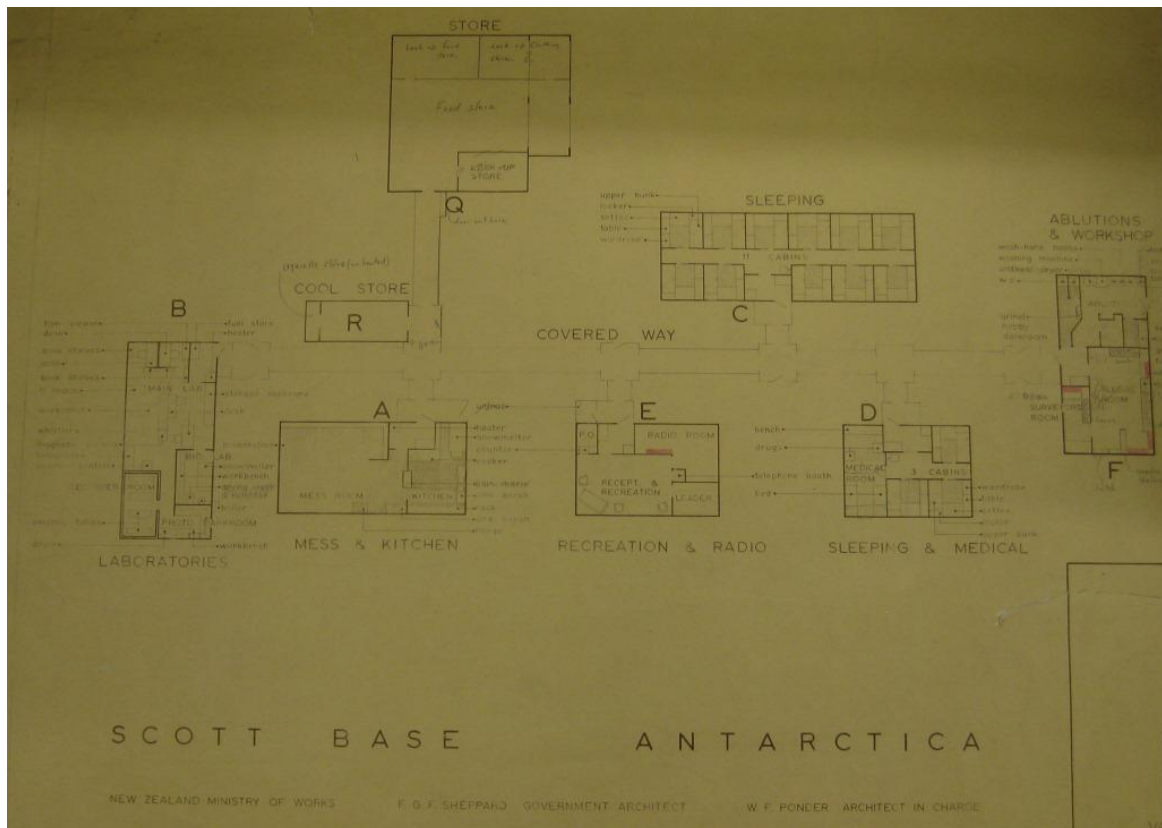


Illustration 15. Scott Base planned to be, and was considered, very orderly, especially compared to more cluttered sites such as Mawson Station. To the right of F Hut were K and N huts, for generators and workshops, and vehicles, respectively (Ministry of Works, 'Scott Base, Antarctica', no date, R4915319-C676441-CAYP-CH947-3384-Folder9, Archives New Zealand).

There was a great deal of pride in Scott Base, in no small part due to the amount of praise it received from other expeditions. The director of the United States' IGY Antarctic programme told New Zealand newspapers that he was 'greatly impressed by the design, arrangement and quality of the buildings,' expecting it to be 'one of the most comfortable bases in Antarctica'. 'Some of the arrangements,' he added magnanimously, 'are superior to our own'.²⁸

²⁸ "Would Have Been At Sea" – Fortunate Change in N.Z. Base in Antarctica', *The Evening Post*, 18 February 1957, R20084351-CAHU-CH89-Box6-i, ANZ.



Illustration 16. The ‘tidy’, ‘compact’, and extremely bright Scott Base, looking south to Mount Discovery (Scott Base, 1961, no other information, BSA11, © Antarctica NZ Pictorial Collection).

Scott Base and its resident New Zealanders enjoyed great comfort in finding themselves so close to McMurdo Station, ‘the larger, far more elaborate American base’.²⁹ Without the Americans’ assistance – in even finding a new site for the base once Butter Point had been found unsuitable, for example – it is questionable whether Scott Base would have been so successful. McMurdo provided the New Zealanders with assistance that in a variety of ways simplified their logistical and built environment needs. Scott Base’s hospital was downsized to free up a quiet study space, partly because it could rely on McMurdo’s hospital for serious cases, and they thanked McMurdo in 1961 for ‘your very nice gesture in supplying a length of rope for our Ski Tow’.³⁰ Scott Base reciprocated – the New Zealanders offered to take care of the Americans’ vehicles over the winter of 1961 – but without the close

²⁹ ‘A Snug Base For The Winter’.

³⁰ Scott Base to Wellington, no further information, R241412-C746357-CAHU-CH20-Box1-c, ANZ; Scott Base to ‘Chief Schmidt’, McMurdo Station, 20 December 1961, R241412-C746357-CAHU-CH20-Box1-c, ANZ.

presence of such an enormous, well-resourced station, it may not have been as successful or comfortable as it was.

These post-war Antarctic built environments of Scott Base and Mawson Station clearly had many differences with the Heroic Age bases at Commonwealth Bay and Cape Evans, not least their size, permanence, and technological sophistication. But they were also remarkably similar to those earlier wooden buildings, similarities that perhaps ran deeper than their differences: the expeditioners still considered them modern, embattled sanctuaries, and they were still challenged by the built environment's plasticity.

Sanctuary

As in the Heroic Age, the individual huts, and the wider bases in general, were sanctuaries for the men, refuges from the wind, the sun, the snow, and the cold. 'Always [the ice cap] is thrusting outwards,' wrote Bechervaise in 1955, 'forcing great bergs seaward, bergs a thousand times as large as Mawson ... yet our tiny settlement and foothold is secure.' Isolation, of course, was a significant part of the feeling of oasis: 'The lonely Iles de Kerguelen are [our] nearest neighbours, a thousand miles away beyond the stormy latitudes,' wrote Bechervaise.³¹ The sense of sanctuary was created in multiple ways, but primarily – and just as in the Heroic Age – through a sense of the bases as safe and impervious, as comfortable and luxurious, as places of good companionship, and as home.

The sense of safety was created through the built environment's successes in protecting the expeditioners from the elements. A New Zealand newspaper reported in 1957 that although the outside temperature had fallen to minus sixty-seven degrees Celsius, 'Inside the specially constructed building all were fit, well and

³¹ Bechervaise, 10 March 1955, 9 April 1955, MS 7972-6.

warm, and the construction was withstanding the extreme temperatures well'.³²

Blizzards brought this feeling home most clearly. Bechervaise wrote in April 1955:

The station lights are wavering in dense, furious drift, dimming and intensifying as the clouds skirl by. The air is all wind, howling in the aerals, continuous yet with a dozen compounded tonnes, and hurling snow in intermittent showers against the walls of the huts. Blizzards have been so rare since we arrived that shelter has a new, blessed hospitality.³³

Many of the men wrote about the experience of watching a blizzard outside through the windows of a hut, keenly aware of the cocoon in which they existed. Louis 'Lem' Macey looked out the Mawson radio room window at midday to see only 'a white blank with fleeting shadows as the intensity of the drift varies'.³⁴ Fred Elliott, a meteorologist at Mawson, wrote that 'The hut is shuddering in the wind, but its [sic] cosy inside'.³⁵ Finding oneself outside in a blizzard made the experience of coming indoors even more intense, recorded Bechervaise:

Nothing was visible until by slow trial and error one's hands found the lever-handle of a door and, pressing it loose, one's body, lathered in snow, followed its uncertainty into the light amidst a cloud of drift. The door is slammed and made fast; there is a hard-breathing sanctuary.³⁶

At Scott Base, too, 'The buildings stood intact during the recent hurricanes' and 'Sir Edmund feels that they are now ready to face the worst that may befall'.³⁷ 'The temperature outside is minus five degrees fahrenheit with poor visibility and a 20-knot wind,' reported a newspaper, 'But inside the base it is bright and cheerful'.³⁸ A

³² '90 Below at N.Z. Scott Base', *Evening Post*, 31 July 1957, R20124806-C305534-AAQB-W3950-889-Box528-24/4374/4, ANZ.

³³ Bechervaise, 14 April 1955, MS 7972-6.

³⁴ Louis Macey, diary, 18 June 1954, Papers of Louis Macey, MLMSS 5343/1, ML.

³⁵ Elliott, 17 March 1955, MS 9442-2, NLA.

³⁶ Bechervaise, 2 May 1955, MS7972-6.

³⁷ 'Scott Base Busy In Spite of Lack of Light', *The Dominion*, 24 May 1957, R20084351-CAHU-CH89-Box6-i, ANZ.

³⁸ 'N.Z. Expedition Party Snug at Scott Base', 28 February, no other information, R20284354-C747382-CAHU-CH89-Box6-c, ANZ.

wireless signal in 1960 assured DSIR that the 'Base itself remains snug enough – so snug that sometimes hardest work of day is leaving bed to start day's work, as blizzards roar around huts'.³⁹

Not only were they safe, the bases were comfortable and even luxurious – even more so than in the Heroic Age. The new sleeping hut built at Mawson in 1955 was considered by Bechervaise to be 'the last word in sleeping comfort':

In each cubicle a fine, simple bunk lies over a cupboard, a writing-table and a space for hanging clothes. Brightly painted, floors warm with yellow linoleum, doors hung with heavy folk-weave, the little rooms are most appealing and comfortable. They ... are the sort of thing a boy might dream about.⁴⁰

The carpenter constructing a second sleeping hut was 'determined that the cubicles there will be at least the equal in comfort and convenience of those in Ross', and when completed Bechervaise declared it the man's 'magnum opus'.⁴¹ A newspaper reported that 'All the members of the New Zealand Antarctic party are together in the comfort and warmth' of Scott Base, and internal renovations at the base turned 'tiny single bunkrooms into fabulous bedrooms each containing one bunk and a settee' of which 'even the US people are envious'.⁴² A journalist who spent the winter of 1957 at Scott Base reported that 'Despite the very low temperatures during the past week or so the comfort of the base has not been impaired in the least', concluding: 'It is most unlikely that any Antarctic party has ever been as comfortably housed as the New Zealand Party at Scott Base'.⁴³

As at Commonwealth Bay and Cape Evans, an atmosphere of companionship and good cheer was an important ingredient in the bases feeling like sanctuaries. There were regular parties at Mawson Station and Scott Base, often raucous affairs

³⁹ Scott Base to L. B. Quatermain, no. 248, 13 September 1960, R241411-C746357-CAHU-CH20-Box1-b.

⁴⁰ Bechervaise, 7 March 1955, MS 7972-6.

⁴¹ Ibid, 21 March 1955, 13 April 1955.

⁴² 'N.Z. Expedition Party Snug at Scott Base'; Deverall to Quatermain, no. 121, 25 May 1961, R241413-C746357-CAHU-CH20-Box1-d.

⁴³ Bob Miller to DSIR, 14 April 1957, R18662576-C582821-AADL-W1516-564-Box470-c-2/20/8/1, ANZ.

lubricated with alcohol (see Illustration 17). 'Outside was the endless howling wind and the nadir blackness of midwinter. What a background for a cheerful party!' wrote Bechervaise after one such 'ding', as he called them.⁴⁴ Expeditioners with



Illustration 17. Waiters at Scott Base's 1957 Midwinter Party (Scott Base, 1957, no other information, BSE122, © Antarctica NZ Pictorial Collection).

musical talents would strike up live performances, Elliott describing a night with one man 'at the piano and the Mawson Band in attendance' as 'a happy night'.⁴⁵ Scott Base's leader reported to DSIR that there was 'much laughter' on base, and DSIR in turn promised prospective expeditioners 'good companionship'.⁴⁶ 'We are a happy team and every evening the Mess echoes with laughter', wrote the base's leader in 1960.⁴⁷ There certainly were conflicts, though – men at Mawson and Scott

⁴⁴ Bechervaise, 19 June 1955.

⁴⁵ Elliot, 22 February 1956, MS9442-4.

⁴⁶ Leader, Scott Base to Wellington, no. 100, 1 April 1960, R241411-C746357-CAHU-CH20-Box1-b; DSIR, 'Conditions of Employment and General Information for Appointees', R241413-C746357-CAHU-CH20-Box1-d.

⁴⁷ 'Family News-letter No. 1', 9 May 1960, R425939-C732452-CAYP-CH949-3460-Box19-l.

Base were more likely to record arguments and personality clashes than their Heroic Age colleagues, and there existed a bigger bureaucracy to deal with (and leave records of) conflict.⁴⁸ A radio technician returned to New Zealand after three months at Scott Base in 1959, for example, with complaints that morale 'at times was very low and there has been a great lot of discontent by all' due to a lack of cooperation between the incoming and outgoing expedition staff. 'It is possible', he wrote, 'that Scott Base has never been happy, even if it has it is in the opinion of many that it is not now'.⁴⁹

Another powerful force in the creation of these sanctuaries was the sense of home that developed for expeditioners. Before he had even reached Horseshoe Harbour to build Mawson, Robert Summers, the doctor on the first Mawson expedition, wrote repeatedly with anticipation of 'our new home'.⁵⁰ Arriving back at base after days or even weeks out on a field trip reinforced this feeling for men. Macey at Mawson for instance wrote that a returning field party 'were pleased to arrive home! – Yes they were pleased'.⁵¹

Part of this sense of home was created through the personalisation of the bases, and the consequent creation of a feeling of ownership and house pride, similar to the Heroic Age. Expeditioners made custom-designed furniture for their quarters or work areas, such as bookshelves, workbenches, drawers, and even whole new bunks.⁵² Summers put vast amounts of work into the interior of the surgery, making furniture and cutting the linoleum for the floor himself.⁵³ The following year's doctor, Bob Allison, was very proud of the new surgery, which he had constructed

⁴⁸ Summers, 30 June 1954.

⁴⁹ It may be pertinent that this expeditioner was returned to New Zealand as DSIR did not consider him 'temperamentally suited to spend the winter at Scott Base'. B. Duncan, DSIR to Director General, Post and Telegraph Department, 10 March 1959; and P. W. H. Le Quesne, 'Special Report on Scott Base McMurdo Sound, Antarctica 1959, as requested by Mr Clarkson', 19 March 1959, both in R4414884-C316145-AAMF-W3118-Box7-1963/967/3, ANZ.

⁵⁰ Summers, 29 April 1954.

⁵¹ Macey, 18 June 1954.

⁵² Elliott, 22 August 1955, MS9442-3.

⁵³ Summers, 21 April 1954, 25 April 1954, 30 May 1954.

almost single-handedly.⁵⁴ Elliott wrote excitedly of a new stove that the engineer had installed in his sleeping hut: 'It's painted red and silver & looks very swank'.⁵⁵

Painting walls was another way of achieving this personalisation, with sometimes a lot of effort going into mixing limited paint colours to try and achieve a particular shade:

Most of the day we have been trying to work out a colour scheme for the [Meteorological Hut]. Unfortunately we have only pink & light blue paint & don't like either. I tried mixing marker dye with pink and started using that. The effect was a bit nerve shattering to start with but its dried a pinky orange colour. Its a bit strong for the whole room so now we have to devise another colour. I made a brown by mixing the pink & blue & adding ink powder but it doesn't fit the other colour.⁵⁶

Painting was enjoyed at Scott Base too, 'where latent talent, or frustrated, artistic talent is running mildly riot'. The New Zealanders though had plenty of colours to choose from, and 'So each wall, in the latest accepted approach to the art, is a of a different hue'.⁵⁷

As was the case decades earlier, however, sometimes this safe shelter could become oppressive: 'The blizzard continues,' wrote Elliott, 'but I'm hoping it stops tonight so we can come up for air'.⁵⁸ A five-day blizzard 'confined' the New Zealanders to Scott Base until 'a lull on Saturday evening permitted a general exodus from the huts'.⁵⁹

⁵⁴ Bechervaise, 9 March 1955, 29 March 1955.

⁵⁵ Elliott, 7 June 1955, MS9442-2.

⁵⁶ Elliott, 10 October 1955, MS9442-3.

⁵⁷ 'A Snug Base For The Winter'.

⁵⁸ Elliott, 20 June 1958, MS9442-6.

⁵⁹ 'Blizzard Hits Antarctic Base', *Bolton Evening News*, 17 June 1957, R20084343-C747382-CAHU-CH89-Box6-a-10/5/1, ANZ.

Modern sanctuary

These sanctuaries were no primitive shacks. As Stephen Pyne has argued, the expeditioners belonged to a culture in the grip of, or who saw themselves in the grip of, the modern world. They were 'remote sensors and probes' of technological, technocratic, scientific cultures. They inhabited Antarctica 'not by virtue of evolved biological adaptations but by means of cultural and technological inventions'.⁶⁰ New advances in technology meant that the expeditioners of Mawson Station and Scott Base thought their built environments as cutting-edge as had the men at Cape Evans and Commonwealth Bay.

The expeditioners were proud of the modern technology on their bases. AAD boasted that a new sleeping hut at Mawson was 'typical of the modern approach to living conditions at an Antarctic base'.⁶¹ In 1960 DSIR assured men thinking of applying to winter over at Scott Base that they 'Under modern conditions ... living quarters are warm and comfortable'.⁶² Shortly before the first Mawson expedition departed, Law told a journalist that 'the aim has been to use modern techniques and mechanical equipment wherever possible to relieve the physical strain on the small team'.⁶³ New Zealand felt this pride especially, newspapers breathlessly reporting the 'high praise' of renowned polar explorers such as the Frenchman Paul-Emile Victor. 'New Zealand's Antarctic base was one of the finest polar bases he had seen in 25 years of polar exploration,' *The Dominion* proclaimed, quoting him saying that:

'Solutions have been found to the problems of living in the Antarctic with "a new eye", so to speak.' Mr. M. Victor said the New Zealand buildings looked long-lasting. "One can say they will still be there in 50 years' time at any rate'.

⁶⁰ Stephen Pyne, *The Ice: A Journey to Antarctica* (Seattle and London: University of Washington Press, 1986), p.137.

⁶¹ Law and Bechervaise, *ANARE*, p. 63.

⁶² DSIR, 'Conditions of Employment and General Information for Appointees'.

⁶³ 'Antarctic base next year - Nine men will be well equipped', *The Age*, 1 August 1953, Summers papers, NLA.

Victor's opinion was even more valuable as he himself was 'the modern type of scientist-explorer'.⁶⁴ Wireless communication was generally far more reliable and far less exciting than in the Heroic Age, but another New Zealand newspaper still printed a picture during Scott Base's first month of existence of 'a radio operator ... at work with some of the modern equipment installed in the Expedition's radio room'⁶⁵, and the journalist who wintered over in 1957 wrote that the radio was 'unquestionably ... a great success'.⁶⁶

The buildings themselves were often examples of modern technology. While the construction method of prefabricated buildings was used in the Heroic Age, the type of prefabrication available in the post-war period was found to be much advanced. Antarctic planners believed

they have come close to the ideal by prefabricating insulated hut section which simply bolt together like gargantuan packing cases. There is no structural difference between floors, walls or ceilings. Considerable ingenuity has been shown settling on the internal arrangements and details of these huts (see Illustration 18).⁶⁷

Such advances also allowed the buildings to be erected quickly: 'The race against the coming Antarctic storms is being won by the New Zealanders', declared a journalist as Scott Base was built in 1957.⁶⁸ Scott Base's architect wrote that, in designing the huts, he 'made enquiries into the latest materials and techniques used in coolroom construction'.⁶⁹ New, synthetic materials were another source of interest and pride. Often in their diaries expeditioners would mention materials such as insulwool,

⁶⁴ 'Studies of a Noted Explorer – High Praise Given N.Z's Polar Base', *The Dominion*, 19 February 1957, R20084351-CAHU-CH89-Box6-i, ANZ.

⁶⁵ 13 March 1957, no further information, R20084351-CAHU-CH89-Box6-i, ANZ.

⁶⁶ Bob Miller to DSIR, 12 July 1957, R18662576-C582821-AADL-W1516-564-Box470-c-2/20/8/1, ANZ.

⁶⁷ Osmar White, 'Camping in nature's deep freeze - Experts plan family budget on polar ice', no further information, Elliott papers, MS 9442-7.

⁶⁸ G. Lee Martin, 'Preparing For Winter Storms – Scott Base Praised By Polar Veterans', 1 February, no further information, R20284354-C747382-CAHU-CH89-Box6-c, ANZ.

⁶⁹ W. Frank Ponder, *A Man From the Ministry: Tales of a New Zealand Architect* (Christchurch: Caxton Press, 1996), p.98.

rubazote, vulcatex, sylglass, and pyrotenax, then pause to describe what they actually were.⁷⁰ Even cement was ‘a material symbolically linked with progress, modernization and globalization’.⁷¹

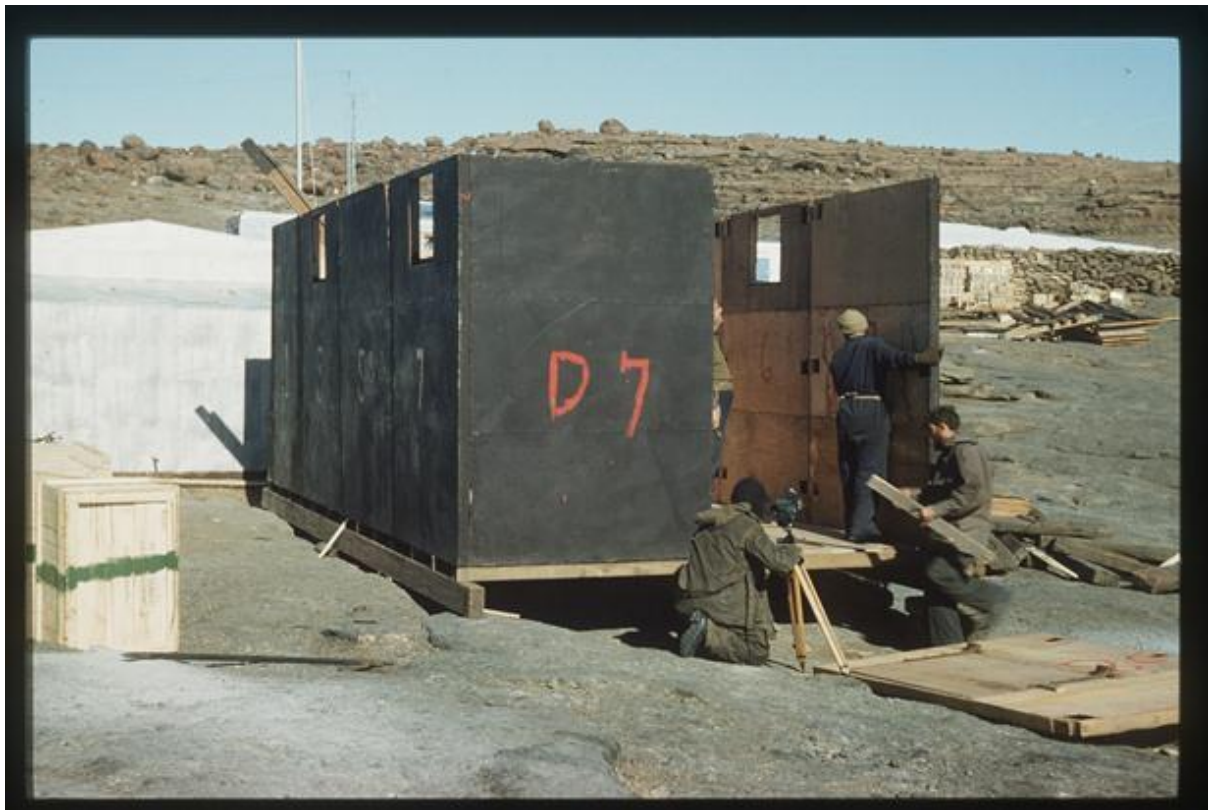


Illustration 18. *The erection of a stores huts at Mawson Station, showing the various prefabricated panels being slotted together (Phillip Law, Mawson Station, no date, 3979A1, Australian Antarctic Division Collection © Commonwealth of Australia).*

One of the clearest examples of technological progress in constructing safe, comfortable, and modern Antarctic built environment at Mawson and Scott Base was in the provision of electric power. Electric power was a symbol of modernism, and the bases relied on it to a much greater extent than during the Heroic Age (see

⁷⁰ Bechervaise, 15 April 1955; A. Hallam, ‘Visit to Scott base: Antarctica: October 1961, Report on Maintenance, Etc. of Buildings’, 1 November 1961, R425929-C732452-CAYP-CH949-3460-Box19-b, ANZ.

⁷¹ Felipe Hernández and Lea Knudsen Allen, ‘Post-colonizing the Primitive’, in Jo Odgers, Flora Samuel, and Adam Sharr (eds.), *Primitive: Original Matters in Architecture* (London and New York: Routledge, 2006), p.83.

Illustration 19).⁷² Both Summers and Macey record there being loud cheers when the diesel generator was first started up at Mawson in 1954 – it was an event of great



Illustration 19. *A proud Mawson engineer with one of the base's impressively powerful diesel generators (Peter King, Mawson Station, no date, 2350B1, Australian Antarctic Division Collection © Commonwealth of Australia).*

significance.⁷³ This was most visible, almost by definition, in the provision of electric light, especially during the constant darkness of winter (see Illustration 20).

Expeditioners took great delight in buildings being lit: 'Peter & I then put the power line to the balloon hut so now the hut is illuminated in all its glory on top of the hill. It looks quite impressive at night with the big red door lit up by the outside light', wrote Elliott.⁷⁴ Electric power allowed for the presence and operation of modern

⁷² Graeme Gooday, *Domesticating Electricity: Technology, Uncertainty, and Gender, 1880-1914* (London: Pickering and Chatto, 2008), p.15.

⁷³ Summers, 18 April 1954; Macey, 18 April 1954.

⁷⁴ Elliott, 30 May 1955, MS 9442-2.



Illustration 20. Mawson Station at night, brilliantly lit (Geoffrey Newton, Mawson Station, no date, 4609A6, Australian Antarctic Division © Commonwealth of Australia).

appliances – especially in the domestic realm. The small ‘Hoover’ washing machine installed early at Mawson was much admired and adored by the expeditioners.⁷⁵ New devices were also useful in construction: similar regard was given to the cement mixer, especially during jobs such as the pouring of the truly massive concrete piers for the Physics Hut at Mawson: ‘We were grateful for the last minute [addition] of the cement mixer [to the expedition] just before we left as we poured almost two cubic yards in three hours’.⁷⁶

Heating systems were modern, too. While generally still based on coke- and briquette-fired stoves, new systems of fans and ducts designed by Bechervaise were used to distribute the heat throughout the huts.⁷⁷ Some even more advanced ideas were mooted: in 1957 another expeditioner intended to ‘install a solar-radiation

⁷⁵ Ibid, 9 March 1955.

⁷⁶ Elliott, 25 March 1955, MS8442-2, 9 January 1956, MS 9442-4.

⁷⁷ Law and Bechervaise, *ANARE*, p.63.

heating system to collect heat from the sun's rays during the day, and dispel it inside the huts at night'.⁷⁸

Expeditioners compared their built environment to others, especially those of the big players in Antarctica at the time: the USA and the USSR. After a visit to the USSR's major station at the time, Mirny, Elliott noted slightly sniffily that in comparison to Mawson it was 'like a slum as no attempt has been made to keep it tidy' (although he acknowledged the strength of its science and the fact that the station was in change-over). He continued:

In some ways the living conditions are very primitive ... Their houses are a queer mixture. Lights fittings, furniture etc were designed in one of their first plans and has not altered one bit. It is like walking back thirty years at least to walk into their rooms. Their clothing is heavy with padded coats and few lined jackets & pants etc but I think ours is much better as it is lighter. I could go on for pages.⁷⁹

After a seminar and slide show at Scott Base of a fellow expeditioner's time with the British programme, at that time called the Falkland Islands Dependency Survey,

To a man the audience agreed ... that compared with the two years [and] consecutive winters [that] FIDS men spend in [the] Antarctic the one winter in our more elaborate bases here is a piece of cake.⁸⁰

Not only was the built environment made up by modern technology, it also housed and protected incredible new machines on the forefront of science: technology that captured and counted tiny particles from space, measured the direction and fluctuation of the earth's magnetic field, examined and unravelled the secrets of the swirling atmosphere, and even attempted to comprehend the billowing, diaphanous sheets of the aurora. An Australian magazine bragged that

⁷⁸ David Webb, 'He takes plants to bare Antarctica', 2 December 1957, p. 29, Elliott papers, MS 9442-7.

⁷⁹ Elliott, 1 and 2 February 1958, MS 9442-5.

⁸⁰ Deverall to Quartermain, no. 121, 25 May 1961, R241413-C746357-CAHU-CH20-Box1-d.

Mawson 'is the most comprehensive scientific observatory in Antarctica today'.⁸¹ Bechervaise was particularly taken with the two enormous cosmic-ray telescopes, the physicist's 'great robots', automatically 'slowly turning on their great concrete bases' to capture and count particles. 'Eternally the rows of neon tubes flash the arrival of mesons from outer space,' Bechervaise breathed, 'thousands of random winkings' being translated into 'a beautifully made trace-drawing'.⁸²

Along with these perceptions of their bases, however, the men of Scott Base and Mawson Station shared the ambivalences of the Heroic Age. They had often travelled to Antarctica for an adventure, and so too much safety and comfort from a modern sanctuary could be unwelcome. Bechervaise wondered one night whether he was 'almost too well insulated from the black and windy night'.⁸³

Embattled, modern sanctuary

Just as during the Heroic Age, though, these modern sanctuaries did not seem indestructible. On a field trip, Bechervaise looked back at Mawson Station from a distance, noting that it 'became what it is, a small toe of rock peeping from beneath the vast skirt of the dome'.⁸⁴ Expeditioners felt their built environment to be embattled, and the threats had not changed since the 1910s either – they were primarily wind, snow, and fire. Such hazards ranged from those that could injure to the potentially lethal, either through direct harm or the destruction of the built environment's protection. Expeditioners were always aware that their modern sanctuaries were embattled by a variety of forces, and did not become complacent.

⁸¹ 'Mawson Station, Antarctica'.

⁸² Bechervaise, 9 April 1955, 30 May 1955, MS 7972-6.

⁸³ Bechervaise, 18 April 1955, MS7972-6. This sentiment became even stronger in the 1970s and 1980s, when a massive Australian building programme created huge and very comfortable living and recreation facilities. One of the main criticisms of this programme from visitors and occupants was that the bases were now *too* comfortable. See Griffiths, *Slicing the Silence*.

⁸⁴ Bechervaise, 3 April 1955, MS7972-6.

Wind, especially at Mawson, could be enormously strong and hurricane-force wind storms could last for several days. The most obvious way the expeditioners dealt with this was with tying-down guy wires strapped to buildings as soon as they were erected. Expeditioners at Scott Base were explicitly instructed that buildings must not be left half-erected or not tied-down, as they would easily be blown away.⁸⁵ Indeed, a half-constructed hut at Mawson left overnight lost large amounts of timber, distributed 'over the Norwegian sector'.⁸⁶ Even when completed 'A good many huts sway pretty violently in high winds', wrote Bechervaise, complaining that 'There was too much movement in the hut for me to sleep late this Sabbath'.⁸⁷ In 1958, sustained winds at Mawson took down power lines, aerials, 'and the odd chimney', even blowing the massive Physics Hut a metre off its foundations. Little could be done on an isolated Antarctic station to correct such serious damage.⁸⁸

Snow could be a hazard to the built environment by infiltrating and burying structures. Snow crept inside buildings and blocked access or melted, causing water damage. Large dumps and drifts of snow externally could also block access (or egress), block ventilation, or apply massive weight to the structures. Another management technique was the positioning of buildings in the predominant wind direction such that doors and important walkways were scoured by the wind and left free of drifts.

The greatest danger to Antarctic built environment – as it was in the Heroic Age, and as it remains today – was fire. Despite great technological advances since the AAE and *Terra Nova* expedition, the problems were the same. With a large number of stoves and heaters scattered around a station, burning constantly, and the addition of complex electrical systems, a fire could start with little provocation. Once started, the aridity of the Antarctic atmosphere, and of materials present in

⁸⁵ 'Buildings for Scott Base, Antarctica: Proposed Building Programme to be carried out by Erection Team', 7 November 1956, p.3, R425930-C732452-CAYP-CH949-3460-Box19-c-1, ANZ.

⁸⁶ Bechervaise, 1 June 1955, 6 January 1956, MS 7972-6.

⁸⁷ Bechervaise, 15 March 1959, MS 7972-8.

⁸⁸ Elliott, 4 July 1958, 8 September 1958, MS 9442-6.

Antarctica for any length of time, meant that a small fire could spread into a conflagration quickly and with little warning. Fighting such a fire was also difficult, as large supplies of liquid water were scarce. Finally, even if such a fire did not take a life directly, its quick and final destruction of the built environment could have serious consequences for an expedition's survival.

A major part of Mawson and Scott Base's built environments, then, was a fire alarm and fighting system. Thought was given to fire escapes, although in some cases not till months after structures were occupied. 'Our sleeping hut isn't a dark cavern now as Alf put a door & window at the other end of the passage,' wrote Elliott at Mawson in 1955. 'It's an emergency door in case of fire and we hope won't have to be used. Before today a fire down my end would trap the chaps up the other end'.⁸⁹ At the four-day training for the 1960-1961 Scott Base staff, the whole afternoon of the second day was given over to firefighting.⁹⁰ In 1956 DSIR filled an entire file with documents related to fire, and its 1960 Operations Manual for Scott Base covered several pages with subsections on fire, fire procedure, fire-fighting and fire precautions.⁹¹ Scott Base had a dedicated fire officer who gave 'Periodic pep talks on fire precaution and fire drill', and there was considerable attention given to the types and positions of fire extinguishers.⁹² When told by DSIR that there were no further extinguishers being sent to Scott Base until the Ministry of Works had completed tests to ascertain which would be the most effective, the base's leader signalled Wellington: 'fires warned not to occur pending [Ministry of Works] report'.⁹³ Such matters were, however, taken with great seriousness. Later that month an official visited the station and, on his return, wrote an appalled letter to

⁸⁹ Elliott, 14 December 1955, MS 9442-3.

⁹⁰ '1960/61 Party Training Schedule', R241413-C746357-CAHU-CH20-Box1-d, ANZ.

⁹¹ R425932-C732452-CAYP-CH949-3460-Box19-e; DSIR 'Draft Operations Manual', 30 August 1960, R425930-C732452-CAYP-CH949-3460-Box19-c-1 (1956-1960) ANZ.

⁹² Bob Miller to DSIR, 8 July 1957, R18662576-C582821-AADL-W1516-564-Box470-c-2/20/8/1, ANZ.

⁹³ Leader, Scott Base to Wellington, no. 79, 1 March, R241411-C746357-CAHU-CH20-Box1-b, ANZ.

DSIR complaining that various fire safety measures were not being maintained.⁹⁴ Scott Base's leader responded furiously, writing that he 'strongly resent[ed]' the official's comments which were 'inaccurate and uninformed', concluding that he would 'decline [to] comply [with the] requirement to assure [the Ministry of Works] I am carrying out my duties [as] leader'.⁹⁵

Such precautions were not always successful, however. In an extremely dramatic example, a fire at Mawson in 1958, started by smouldering dust from a generator landing in oil that had accumulated under the floor over several years, destroyed a huge, almost-completed structure being built for the diesel generators and associated workshops (see Illustration 21). Expeditioners battled the



Illustration 21. *The powerhouse fire at Mawson Station. Within a few hours the entire building had been destroyed (Graham Budd, Mawson Station, 1958, 3365B4, Australian Antarctic Division Collection © Commonwealth of Australia).*

⁹⁴ Markham, DSIR to Leader, Scott Base, no. 77, 24 March, R241411-C746357-CAHU-CH20-Box1-b, ANZ.

⁹⁵ Leader, Scott Base to Wellington, no. 95, 24 March, R241411-C746357-CAHU-CH20-Box1-b, ANZ.

conflagration for three hours before giving up. The structure was being built around the old powerhouse, in which the generators were still working, and so the fire destroyed these as well (although one generator was saved). No-one was injured, but the loss of the main generators meant that the base had much less energy for the rest of the year than required, and the new powerhouse had to be started again.⁹⁶

The base's spatial layout took account of the danger as well. Good Antarctic base design positioned a building containing stores, a power generator, and other necessities well away from the rest of the base, in the event of the station being consumed by fire. 'Fire is a major hazard of polar establishments,' noted a newspaper report prior to the construction of Mawson, 'so an emergency generator, to be housed in a separate building, will be taken along in addition to the two 15 K.V.A. generators'.⁹⁷ At Mawson the basic supplies of clothing, food, and fuel kept at a distance from the main base could have supported the expeditioners for two years.⁹⁸

As in the Heroic Age though, this sense of being embattled was in some ways welcomed. The threats of fire or blisteringly strong hurricanes reminded the expeditioners that they were in a dangerous environment and that they were testing themselves against the elements of nature. As it had done for expeditioners five decades earlier, embattledness helped the men feel they were intrepid and adventurous, softening the comforts of the bases. Indeed, it was probably even *more* welcomed than it had been in the Heroic Age: ever more advanced technology had generally increased the built environment's potency as a sanctuary and decreased the severity of the threats, or at least of their consequences. And while the men at Cape Evans and Commonwealth Bay had operated in a culture informed by nineteenth-century stories of adventure, those at Scott Base and Mawson Station *also* had the written accounts of Scott, Mawson, and their companions, real stories of

⁹⁶ Bechervaise, 3 April 1959, MS 7972-8; Fire officer's report, 13 April 1959, Bechervaise papers, MS 9442-8; John Bechervaise, interviewed by Suzanne Lunney, 1976, 2803258, NLA.

⁹⁷ Russell Grant and Ronald McKie, no other information, 29 September 1953, Summers papers, NLA.

⁹⁸ Bechervaise, interviewed by Suzanne Lunney, 1976, 2803258, NLA.

Antarctic adventure, on which to base their expectations and on which to model themselves.

Plasticity

Four or five decades after the *Terra Nova* expedition and the AAE, Antarctic expeditioners, planners, and administrators still considered their built environments to be modern, embattled sanctuaries. Their culture also continued to expect that built environment should be stable, durable, and impenetrable – and the extreme Antarctic environment continued to challenge this notion. The built environment's plasticity was revealed, again, in three main ways at Mawson Station and Scott Base: changes in form and function of buildings, permeability, and the need for constant maintenance.

One of the clearest examples of plasticity was in buildings' changes in site, form, function, or most often a combination of all three. As in the Heroic Age, even the site of bases as a whole was plastic: Horseshoe Harbour had not even been discovered when the expedition to establish Mawson arrived, the plan being for the base to be established 'somewhere to the south of Heard Island', and Scott Base was built at Pram Point after the original site was found inaccessible.⁹⁹

Once the base was established, buildings were erected, taken down, re-erected, re-purposed, extended, and then taken to yet another site, far more-so than in the Heroic Age due to the number of buildings and longer occupation. Many buildings at Mawson were physically shifted and re-used, even between bases. A substantial number had been part of Australia's Heard Island station. When erecting the Meteorological Hut at Mawson, Elliott noted that the base's carpenter 'had put

⁹⁹ 'Antarctic base next year - Nine men will be well equipped', *The Age*, 1 August 1953, Summers papers.

the thing up at Heard originally so he knew what to do'.¹⁰⁰ Less positively, the balloon hut at Mawson was also ex-Heard, causing bitter complaints from Elliott:

It's going to be a big job snow proofing the place as its made of corrugated iron and worse still, its second hand & full of holes. Instead of spending over £4000 on a sleeping hut for six men one wonders why a new balloon hut couldn't have been provided instead of using one which wasn't snow-proof even at Heard.¹⁰¹

This material plasticity was often enforced by environmental or material factors. Buildings might be erected in different locations than planned because of the site's topography or prevailing wind direction, or building materials would require reshaping, either due to warping or human error. When laying the floor for the first main living hut at Mawson Station, Summers found (late at night at the end of a long day) that the final floorboard would not fit, requiring another half hour to work it into shape. 'All timbers shrink badly down here,' wrote Elliot. 'Flooring is especially noticeable. It's possible to see light through the joints of some of the flooring put down last year'.¹⁰² In 1958 a stores hut gave trouble: 'Half the roof bolts wouldn't fit and there are still things to be done on it. ... We had to cut panels out of the lining and realign the roof bolts so they would screw into the nuts inside'.¹⁰³

The interiors of the buildings could also change significantly in form and function. Bechervaise described interior renovations as 're-shaping'.¹⁰⁴ After several months of occupying the main living hut at Mawson, dividers were erected between the men's beds, physically but also culturally reshaping the space as one of compartmentalised privacy.¹⁰⁵ And when buildings were permanently re-purposed, their interiors could change dramatically. In Mawson's second year, most of the cubicle divisions were stripped out of the main living hut as the new sleeping hut

¹⁰⁰ Elliott, 21 February 1955, MS9442-2.

¹⁰¹ Ibid, 9 May 1955.

¹⁰² Elliott, 12 March 1955, MS 9442-2.

¹⁰³ Elliott, 22 February 1958, MS 9442-5.

¹⁰⁴ Bechervaise, 16 April 1955, MS 7972-6.

¹⁰⁵ Summers, 1 November 1954, 2 November 1954.

had been built. Some of the new space was used for storing alcohol, and the rest was added to the mess, enlarging it and making it more comfortable.¹⁰⁶ At Scott Base, as mentioned, much of the hospital was 'converted into a "quiet" room ... for study' and the lounge became a bar.¹⁰⁷

The functions and interiors of buildings could also change quite suddenly. A hut for seismic research was begun at Mawson Station in February 1955, but later that afternoon Law decided to turn it instead into another sleeping hut. The following year, a hut being built for radio operation was, in a similarly impromptu manner, completed as a hut for the officer in charge, the geologist, the surveyor, the Royal Australian Air Force and an aircraft radio beacon.¹⁰⁸ Scott Base received a long signal from DSIR in 1961 describing changed plans for renovations that were too have occurred over the winter.¹⁰⁹ It was commonplace for buildings to be used temporarily for different purposes during a period of construction. In the first year at Mawson, while the main living hut was being built, half the men lived in one of the stores huts and the other half in the workshop, while the surgery was used as the mess hall. The following year 'inmates' slept in the mess hall while a new sleeping hut was built.¹¹⁰

Permeability

Expeditioners at Scott Base and Mawson Station also found their built environments to be permeable. Their buildings were not hermetically-sealed shells that the Antarctic environment could not penetrate. Some punctures in the membrane, such as doors, windows, or ventilation systems, were anticipated, but the expeditioners' expectation that the membrane separating 'inside' from 'outside'

¹⁰⁶ Bechervaise, 14 April 1955, MS 7972-6.

¹⁰⁷ Meeting minutes, no other information, R241412-C746357-CAHU-CH20-Box1-c, ANZ.

¹⁰⁸ Law, 20 February 1955, MS 9458-Acc06/158-2/0010.

¹⁰⁹ Wellington to Scott Base, no. 79, 18 May, number 79, R241416-C746358-CAHU-CH20-Box2-a, ANZ.

¹¹⁰ Macey, 1 April 1954; Summers, 1 April 1954; Elliott, 7 March 1955, MS 9442-2; Bechervaise, 27 February 1955, MS 7972-6.

would otherwise remain firm was constantly trampled over, most commonly in the forms of snow, water, and wind. Interestingly, despite advances in building technology, later Antarctic built environment – and Mawson Station in particular – does not appear to have been any less permeable than its Heroic Age forebears.

Drifting snow was a particularly frequent trigger to this trampling of expectation. As it had in the 1910s, powder-fine drift, propelled by hurricane winds, would pour in through any tiny crevice in a building at Mawson, creating drifts inside structures (see Illustration 22). ‘Incredible accumulations of snow, queerly shaped, feet long, ran out from minute cracks through which one couldn’t see a gleam of light’, wrote Bechervaise after a blizzard.¹¹¹ A month later men from the newly-constructed sleeping hut

wriggled out of their parkas somewhat peaky-faced, having spent the night under attack from endless insidious streams of drift finding entry through the most minute crevices. Sometimes the snow sent a curving white tongue between a clock and a photograph; in places it filled boots; often it lay across the blankets over a man’s sleeping body...¹¹²

The next year, another sleeping hut’s interior was three feet (one metre) deep in snow.¹¹³ The wind that blew the snow in such torrents could compound the problem: ‘Once again the snow seeped in through cracks in the buildings although each time it happens the cracks are plugged. The trouble is that the wind vibrates the buildings, opening up the cracks again’.¹¹⁴ In Scott Base’s first year Sir Edmund Hillary wrote to the New Zealand Commissioner of Works noting among other things that snow could penetrate into the covered way connecting the base’s buildings through joints in the corrugated iron.¹¹⁵

¹¹¹ Bechervaise, 10 March 1955, MS 7972-6.

¹¹² Bechervaise, 15 April 1955, MS 7972-6.

¹¹³ Elliott, 7 May 1955, MS 9442-2.

¹¹⁴ Elliott, 26 May 1955, MS 9442-2, 26 May 1958, MS 9442-6.

¹¹⁵ Edmund Hillary to Commissioner of Works, 10 March 1957, R20124806-C305534-AAQB-W3950-889-Box528-24/4374-4, ANZ.



Illustration 22.
*The interior of
 Mawson Station's
 recreation hut
 after a blizzard
 (Ross Dunlop,
 Mawson Station,
 no date,
 Australian
 Antarctic Division
 © Commonwealth
 of Australia).*

Having erected the frame and shell of a building, the next step, as decades earlier, was the long job of crawling over the entire structure attempting to snow-proof it – one hut at Mawson took six days to be sealed.¹¹⁶ This first effort would then be followed by another round after the next blizzard revealed the minute chinks and breaches in the building's cocoon. Buildings were not static though, and after time new gaps would open: 'It's been so long since the last blizzard that new

¹¹⁶ Bechervaise, 1 June 1955, MS 7972-6; Macey, 25 February 1954.

cracks in some of the huts have let in drift', wrote Elliott.¹¹⁷ Despite technological advances, strategies for snow-proofing still generally came down to just filling gaps as they appeared. Substances such as vulcatex – 'a rubbery, grey caulking paste' – mixed with sawdust might be used, with larger holes first being 'plugged with hard-packed glass-wool'.¹¹⁸ Refrigerator-type doors might be installed to try and seal the openings tightly.¹¹⁹

Intentional openings such as doors and windows were often the weakest points, and the easiest method of entry for wind and drift: in 1954 a snowman was built in the porch of Mawson's main hut 'with snow that had been blown in through the "snow proof" door'.¹²⁰ And besides just making buildings uncomfortable, permeability sometimes even restricted access to them. Doors at Scott Base could not be closed after 'letting in considerable drift', and snow leaking around the door of a Mawson sleeping hut during the night prevented the nightwatchman from closing the door after visiting to stoke the fires. Several men had to get up to help close the door after him.¹²¹

Snow that got inside a hut could then very easily become water. Macey complained that they were 'none too comfortable' at Mawson as penetrating snow would quickly be melted by the heaters and 'the place becomes flooded'.¹²² Water could get inside huts in other ways, as well. In the spring and early summer, when the thaw set in, frozen condensation in the roof cavity would melt creating an indoor rain shower.¹²³ Scott Base, too, had problems with leaking ceilings. Melting snow, particularly during the summer, caused 'leaking roofs' which 'were a regular source of annoyance'. 'On one occasion,' the leader reported, 'when falling snow melted when coming in contact with the roof literally gallons of water came through from

¹¹⁷ Elliott, 11 September 1955, MS 9442-3.

¹¹⁸ Bechervaise, 15 April 1955, MS 7972-6.

¹¹⁹ Bechervaise, 3 May 1955, MS 7972-6.

¹²⁰ Summers, 10 October 1954.

¹²¹ Scott Base to Wellington, no. 182, 18 August 1961, R241416-C746358-CAHU-CH20-Box2-a, ANZ; Elliott, 8 May 1955, MS 9442-2.

¹²² Macey, 9 March 1954.

¹²³ Summers, 16 September 1954; Macey, 25 July 1954, 26 July 1954.

various places about the roof', causing problems with electrical systems.¹²⁴ There were more problems on the rare occasions that it rained, as the buildings were designed to deal with snowfall but not liquid water. Elliott recorded after 'two hours continuous rain this morning' that the 'buildings, which are designed for snow only, couldn't cope and the rain & water was merrily dripping through in many places'.¹²⁵

Permeability also worked in the other direction. It allowed heat to escape, and holes in the internal lining of an insulated wall allowed water vapour to condense on the internal face of exterior wall claddings, further damaging the building's structure through rust and erosion.¹²⁶

Impermanence

Finally, the built environments of Scott Base and Mawson Station were materially no more permanent or durable than those at Cape Evans or Commonwealth Bay. The built environment's plasticity thus meant that maintenance was a regular and important part of life at both bases as many things could, and did, go wrong.

The area of the base often required maintenance. 'Glaciers' of sewage, running frozen along the ground from waste outlets at Scott Base, were great sources of trouble for tractors pulling snow sledges, for example.¹²⁷ A common task was simply digging the base out of the snow dumped by a blizzard (see Illustration 23). Macey spent a long day in 1954 digging out a 'fair amount of snow' that was 'gathered again' in front of Mawson's main hut.¹²⁸ With American visitors due from McMurdo Station for the midwinter festivities, a Scott Base expeditioner 'took a shovel and cleared the covered way and entrances of drift', 'a thoughtful act that

¹²⁴ Scott Base to Wellington, no. 182, 18 August 1961.

¹²⁵ Elliott, 29 December 1955, MS 9442-3.

¹²⁶ Ponder, p.99; David Rooten, *The Design and Serviceability of Antarctic Stations*, unpublished Master of Philosophy thesis, University of Cambridge, 1987, pp.45-46.

¹²⁷ Scott Base to Wellington, no. 182, 18 August 1961.

¹²⁸ Macey, 13 July 1954.

doubtless saved some stumblings that evening after the solstice had been toasted and retoasted'.¹²⁹ Sometimes such drifts caused further problems. Macey helped another expeditioner with one of the stores hut's door, which had become blocked by snow leaking in behind it. The other expeditioner forced the door open enough for Macey to squeeze in and begin shovelling.¹³⁰ Huge amounts of thought were put into understanding how snow drifts built up over an obstacle during a blizzard. Bechervaise wrote several pages in one diary entry describing his observations. If the snow drifts were left uncontrolled, he concluded, 'the leeward and windward drifts will finally link up and bury the obstruction' – an obstruction, in this case, usually being a building.¹³¹



Illustration 23. *Snow drifts, as here at Scott Base, required shovelling (Scott Base, 1958, TAE908, © Antarctica NZ Pictorial Collection).*

¹²⁹ Scott Base to Wellington, no. 141, 4 July 1961, R241416-C746358-CAHU-CH20-Box2-a, ANZ.

¹³⁰ Macey, 18 June 1954.

¹³¹ Bechervaise, 22 April 1955, MS 7972-6.

The buildings' structures themselves required maintenance as well of course. Elliott and another expeditioner did a lot of work on the guy wires tying down Mawson's balloon-filling hut, as strong winds had bent some of the bolts, which needed straightening and the addition of more thread.¹³² Scott Base's chief scientist wrote in 1957 that the base's roofs, which were suffering from 'general sinking', 'probably require the most urgent attention', and DSIR's building committee was kept busy for years with ongoing maintenance issues.¹³³ In his letter to the Commissioner of Works Hillary concluded that 'There will be a good deal of work to do on the buildings next summer – repairing the winter damage ... and general maintenance'.¹³⁴ 'The N.Z. Party at Scott Base, McMurdo Sound, has had its share of maintenance troubles,' wrote the journalist wintering over, 'but fortunately it has also had just the men to deal with them' in two engineers dedicated solely to maintenance.¹³⁵ The rubber gaskets between the huts' prefabricated wall panels needed periodic patching, and the fixing up of Mawson's Physics Hut 'with large aluminium sheets' cured it of its 'raggedness'.¹³⁶ Individuals were generally in charge of maintaining their particular sphere of the built environment – the radio operators kept the aerial masts functioning and the meteorologists repainted the meteorological hut. Listing the work done during on particular day, Mawson's Officer in Charge noted that the surveyor was painting the surveying shed, the scientist working on magnetism 'made his doors close properly at the Magnetic Huts', and the doctor 'worked on his surgery'.¹³⁷

Infrastructure systems running through the buildings required maintenance as well. Drains at Scott Base would freeze up during southerly blizzards when snow

¹³² Elliott, 4 May 1955, MS 9442-2.

¹³³ 'Extracts from a personal letter from Dr. T. Hatherton', 16 October 1957, R425930-C732452-CAYP-CH949-3460-Box19-c-1; Scott Base to Wellington, no. 210, 2 September 1961, R241416-C746358-CAHU-CH20-Box2-a, ANZ; Scott Base Building Committee, meeting minutes, R425930-C732452-CAYP-CH949-3460-Box19-c-1 and C310118-AAQB-W4073-Box137-24/4373-4, ANZ.

¹³⁴ Edmund Hillary to Commissioner of Works.

¹³⁵ Bob Miller to DSIR, 3 July 1957, R18662576-C582821-AADL-W1516-564-Box470-c-2/20/8/1, ANZ.

¹³⁶ Elliott, 6 January 1956, MS 9442-4; Bechervaise, 15 March 1955, MS 7972-6.

¹³⁷ Bechervaise, 4 April 1955, MS 7972-6.

was blown up the outlets, or if it simply got too cold, and at Mawson Elliott designed a complex, and frustrating, process to unblock an iced-up sink outlet.¹³⁸ On another occasion Elliott pulled apart and rebuilt the heating stove in his hut as a loose part was 'liable to start the roof smouldering'.¹³⁹

Scott Base's funders, trusting in built environment's stability and durability, did not expect there to be such a high need for constant maintenance. In the 1960-1961 financial year they gave the base's planners and administrators at DSIR £1000 for building maintenance, but DSIR actually had to spend £1628. For the 1961-1962 year, DSIR requested £6900 for maintenance alone.¹⁴⁰

Scott Base and Mawson differed in their maintenance to the degree that it was directed by those back in New Zealand or Australia. Scott Base received many more edicts from New Zealand, and sought more advice from there first, than Mawson did from Australia. 'Please inform Collins,' Wellington signalled Scott Base in 1960, 'to fix locking clamps above hangar door to ensure tight joint against seal pad in centre'. 'Clamps,' it added helpfully, 'are in box in hangar'.¹⁴¹

Musing in his quarters one evening, Bechervaise clattered away at his typewriter. 'It is extraordinary,' he wrote,

that we can keep the ice and the cold and the loneliness [at] bay so easily. All around us is an intense cold that freezes the sea for nine months of the year, yet I sit behind a few inches of insulation, typing, reading, sipping sherry from Burnside. The sun only shines, at present, on the far side of the earth, so that at midday the moon and brighter stars are still visible, yet we have light and warmth on this desolate rock. To our south, starting three minutes away ... is the largest, deepest ice-sheet in the world, vaster than the whole of

¹³⁸ Scott Base to Wellington, no. 182, 18 August 1961, R241416-C746358-CAHU-CH20-Box2-a, ANZ; Elliott, 25 April 1955, MS 9442-2.

¹³⁹ Elliott, 25 April 1955, 11 May 1955, MS 9442-2.

¹⁴⁰ Wellington to Scott Base, no. 66, 11 April 1961, R241416-C746358-CAHU-CH20-Box2-a, ANZ.

¹⁴¹ Wellington to Scott Base, no. 60, 4 March 1960, R241411-C746357-CAHU-CH20-Box1-b, ANZ.

Europe, and we are the only inhabitants; to our north is the sea-ice extending an unknown distance to wayward open ocean and further north, more than a thousand miles, there is still the sub-antarctic loneliness of Kerguelen, beyond the apathy of deserted Heard Island, yet we may listen to the world and read Alice in Wonderland.¹⁴²

Bechervaise's words in many ways capture the mood of the first argument advanced in this thesis. This chapter, concluding that argument, has shown that the expeditioners of Mawson Station and Scott Base considered their built environments to be modern, embattled, sanctuaries. It has also shown that, challenging an older cultural tradition of buildings as stable, impenetrable fortresses, the extreme Antarctic environment revealed the built environment's plasticity.

There were differences between the Heroic Age and post-war Antarctic built environments, as emerged through the chapter. Technology had clearly advanced significantly. Electric power became a necessity rather than a luxury, as did wireless communication. Buildings were crafted of metals as often as wood, and tended towards several different structures rather than one main hut with a handful of much smaller peripheral structures. Mechanisation had advanced, with vehicles rumbling around the bases and hangars constructed to contain aircraft. The feeling of isolation had changed, as well. Where the men of the AAE, and to only a slightly lesser degree the *Terra Nova* expedition, had felt alone in the vast 'emptiness' of Antarctica, by 1961 there were multiple countries and multiple bases operating on the continent and the ocean around it, and far more communication with the world beyond. The bases by this time were also being built with the intention (or at least hope) of permanence, while the men of the Heroic Age had never expected their bases to last beyond the needs of the expeditions.

The similarities between the two periods are more striking than the differences, however. Technology may have advanced, but this kept well within the

¹⁴² Bechervaise, 27 June 1955, MS 7972-6.

narrative of modernity and progress told by all four expeditions. It was expected that such things would improve, and expeditioners at both times proudly felt that they were impressively empowered by the latest abilities their potent science and technology had provided. The buildings may have been constructed using tractors and new materials, but they were still primarily prefabricated. And while the sense of Antarctic isolation had diminished, it had by no means dissipated; there were simply more people enduring the harshness of the ice and wind. The narratives of modern, embattled sanctuaries, and the experience of the plasticity of the built environment altered little. Yes, the times they were a'changin', but the attitudes to Antarctic built environment did not seem to have changed very much at all.

Chapter Three

In his memoir of Scott's *Terra Nova* expedition, Apsley Cherry-Garrard wrote rather acidly:

I have met with amusement people who say, 'Oh, we had minus fifty temperatures in Canada; they didn't worry *me*,' or 'I've been down to minus sixty something in Siberia.' And then you find that they had nice dry clothing, a nice night's sleep in a nice aired bed, and had just walked out after lunch for a few minutes from a nice warm hut or an overheated train ... Well ! of course as an experience of cold this can only be compared to eating a vanilla ice with hot chocolate cream after an excellent dinner at Claridge's.¹

Cherry-Garrard wrote these words while recalling the trip for which he named his account of the expedition as a whole, *The Worst Journey in the World*: his winter journey with Edward Wilson and 'Birdie' Bowers from the hut at Cape Evans to Cape Crozier at the far eastern end of Ross Island. In complete darkness, fighting through blizzards and hurricanes, and suffering incredibly low temperatures for several weeks, the three men 'began to look upon minus fifties as a luxury which we did not often get'.² Had he been at Cape Evans, Cherry-Garrard may have felt more sympathetic to those hardy adventurers of Canada and Siberia. He and the other members of Scott's *Terra Nova* expedition had built at Cape Evans a secure, comfortable structure in which they could shelter from the harsh Antarctic

¹ Apsley Cherry-Garrard, *The Worst Journey in the World*, new ed. (London: Chatto and Windus, 1965), p. 243

² Cherry-Garrard, p. 243.

environment – which fundamentally allowed their presence in that environment in the first place. But such a ‘nice warm hut’ allowed more than simply survival. Erected as it was by a culture that considered itself civilized and equated civilization with cities, the hut at Cape Evans – and the other three sites under study – created civilization in the wilderness: the expeditioners’ very own Claridge’s.

This chapter develops a second approach to understanding Antarctic built environment between 1911 and 1961. Antarctic built environment allowed the expeditioners to survive, apparently overcoming the extreme southern environment. More potently, it also allowed them to create civilization, and it created that civilization in the very teeth of what seemed the greatest, most remote, and most inhuman wilderness. Thinking of his recent arrival back at the hut at Commonwealth Bay after weeks struggling through the snow and ice, much of it alone, malnourished and exhausted, Douglas Mawson wrote in his diary, ‘What a grand relief! To have reached civilization after what appeared utterly impossible’.³ For Mawson, in that place, the hut was civilization. On first approach the snow-cloaked timber frame of Scott’s hut at Cape Evans, or the clutter of dulled metallic boxes that made up Mawson Station, may have seemed poor representatives of a dignified human civilization, developed over thousands of years in other parts of the world. The bases, however, inherited and were infused with a long tradition in the expeditioners’ culture of seeing built environment, and towns and cities in particular, as both the product and the site of progress, science, technology, and, in general, civilization.

Antarctica, especially by the post-war period, was seen as the world’s last wilderness, and its greatest.⁴ As the Australian National Antarctic Expedition approached MacRobertson Land in January 1954 to establish Mawson Station, the newspapers were transfixed. ‘To set up Australia’s first permanent Antarctic station,’

³ Douglas Mawson, *Mawson’s Antarctic Diaries*, eds. Fred Jacka and Eleanor Jacka (Crows Nest: Allen and Unwin, 2008), p.172.

⁴ There is a European tradition of fear of ice in particular. See Mark Carey, ‘The History of Ice: How Glaciers Became an Endangered Species’, *Environmental History*, vol. 12, no. 3, 2007, pp.497-527.

one declared, 'these men will spend a year in that bleak land – Southward-ho to the Last Continent'. It continued that the men were

bound for MacRobertson Land, a bleak, bare, unfriendly region a long way from anywhere ... It is a land buried in snow and ice, whipped by vicious blizzards, shivering in temperatures which sometimes go as low as 90 degrees below zero (minus sixty-seven degrees Celsius).⁵

'We dwelt on the fringe of an unspanned continent,' Mawson had written four decades earlier, channelling the Romantics for all he was worth,

where the chill breath of a vast, polar wilderness, quickening to the rushing might of eternal blizzards, surged to the northern seas. We had discovered an accursed country. We had found the Home of the Blizzard.⁶

The creation of built environment and civilization, the ultimate expression of human culture, in the very home of the blizzard was thus all the more impressive.

Like the electricity that symbolised its technological advances, civilization thus hummed in the buildings of Antarctica. As diesel generators grumbled and throbbed, filling the bases' interiors with heat and light, so civilization was produced and surged through the corridors and rooms. Visible from afar across the snow, ice, or water, it glowed softly and invitingly from windows in the winter night and pushed paths and roads across a base and out into the snowfields. Immaterial but energetic as the radio waves with which the bases spoke to field parties, one another, and the rest of the world, civilization rippled from the bases out across the continent, broadcast across terrain that knew few human footprints – if any.

The expeditioners at the bases created this civilization in several ways. First, as has been argued in the first two chapters, the bases were technologically advanced. Such technology was produced by and symbolised civilization, but it also allowed the expeditioners to live in (comparatively) civilized comfort. Second,

⁵ 'To set up Australia's first permanent Antarctic station, these men will spend a year in that bleak land', no other information, Summers papers, National Library of Australia (NLA).

⁶ Douglas Mawson, *The Home of the Blizzard*, 6th ed. (London: Hodder and Stoughton, 1938), p. 100.

civilized behaviour and rituals were established and expected among the men, such as hospitality and sharing meals. Third, the expeditioners explicitly identified their bases with towns, cities, and other urban forms. Parts of bases were named after buildings, districts, or entire cities in other parts of the world. Fourth, Antarctic built environment, in the terms of Doreen Massey, was a site of scientific and political interrelationships on an international scale.⁷ States built and maintained the bases partly to undertake science, but also for political reasons: to reinforce claims over parts of the continent in line with international law. Of even deeper significance, the civilization created by these international interrelationships was not limited to the bases themselves but, in the form of legal claims and scientific description, was cast across the entire continent. Without actually occupying anything other than a toehold on the continent, built environment allowed varying forms of civilization to be applied to Antarctica as a whole. Finally, it seemed at the end of the period under study that a new model of civilization, more rational and peaceful than that elsewhere, was emerging from the Antarctic stations.

Technology

The technology of the built environments was key in creating civilization in Antarctica for the men. The expeditioners' pride in their technology has been discussed in the first two chapters and so will not be reconsidered extensively here. As those chapters showed, though, the expeditioners considered their bases to be impressively stocked with modern technology, and to be impressive examples of modern technology themselves.

The civilizing effects of technology were most evident in the comfort they created for the expeditioners. They were under no illusions about the benefits of being on base: heat, light, and the cook's ability to create large and varied meals

⁷ Doreen Massey, 'Places and Their Pasts', *History Workshop Journal*, No. 39, 1995; Doreen Massey, *For Space* (London, Thousand Oaks, and New Delhi: SAGE, 2005).

were deeply welcomed (see Illustration 24). On the first night of a sledging journey in 1912 Laseron and his party made slow progress. Having established a small

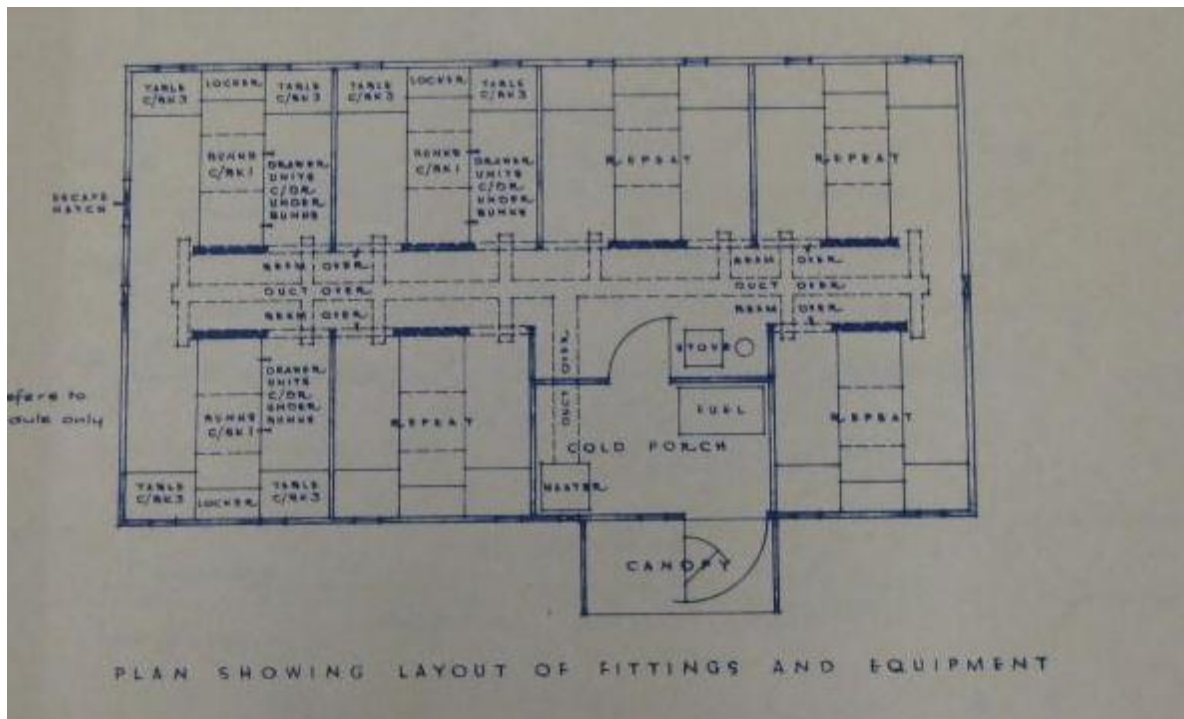


Illustration 24. Sleeping huts, such as this one erected at Scott Base, were warm and comfortable, with personal quarters warmed by the heating ducts visible running down the centre of the building and branching into each room (Ministry of Works, 'Scott Base Antarctica, Sleeping Hut ,C'', 1956, R4915319-C676441-CAYP-CH947-3384-Folder9, Archives New Zealand).

depot, a night in the hut rather than the wilderness was too enticing. 'Rather than camp, it seemed easier to return to the hut, so ... we set off down the hill, arriving in time for dinner and a comfortable bunk for the night'. Several months later, far out on the plateau and farewelling a sledging party that was continuing further while his returned to base, Charles Laseron was keenly aware of the disparity in their futures. 'It was a solemn moment,' he remembered, 'this parting in the wilderness. We were on our way back to the hut and comfort; the others had yet a long and arduous journey before them, which would test their endurance to the utmost'.⁸

⁸ Charles Laseron, *South with Mawson: Reminiscences of the Australasian Antarctic Expedition, 1911-1914*, 2d ed. (Sydney: Angus and Robertson, 1957), pp. 124, 132.

Returning from a sledging journey was often the moment when expeditioners appreciated its protection and comfort the most. Archibald McLean wrote affectionately of the hut at Commonwealth Bay and its clutter of human occupation:

It seemed years since we left the old hut, and its litter of boxes, bags and clothes of every description hanging from every available beam and hook – all in the musty glare of acetylene after the glare of sunshine – was a very homely sight to see ... It was quite luxurious to lounge round, smoke, yarn and take the world easily after those few strenuous days.⁹

Returning to the main base after months away sledging and camping rough in his old hut at Hut Point, Robert Falcon Scott wrote that

it was wonderful to enter the precincts of our warm, dry Cape Evans home. The interior seemed palatial, the light resplendent, and the comfort luxurious. It was very good to eat in civilized fashion, to enjoy the first bath for three months, and have contact with clean, dry clothing.¹⁰

Even Henry 'Birdie' Bowers, esteemed among his colleagues for his high tolerance for cold and his pleasure at being in the wilderness, wrote that on return to Cape Evans 'We ate heartily and had hot baths and generally civilized ourselves. I have since concluded that the hut is the finest place in the southern hemisphere'.¹¹

Additionally, technologies such as flight and wireless radio meant that the expeditioners did not feel so disconnected or distant from civilization. Radio, for example, kept them almost as up to date with news developments in the rest of the world as if they had been in Hobart or Christchurch, even as early as the time of the AAE. Having received a large number of signals the night before, it seemed to McLean 'quite like [having] a morning paper to hear the contents at breakfast time'.¹²

⁹ Archibald McLean, diary, 16 September 1912, Papers of Archibald McClean, MLMSS 382/2, Mitchell Library, State Library of New South Wales (ML).

¹⁰ Robert Falcon Scott, *Journals: Captain Scott's Last Expedition*, ed. Max Jones (Oxford: Oxford University Press, 2005), p. 166.

¹¹ Henry Bowers, no other information, quoted in Cherry-Garrard, p. 173.

¹² McLean, 9 March 1913.

Behaviour and ritual

As Massey argues, the identity of a place is built up by social interrelationships.¹³ An identity of civilization was created at the bases beginning from the most intimate relationships – those between the expeditioners themselves in the form of civilized behaviour and ritual. As Hazel Conway and Rowan Roenisch have argued, ‘Architecture provides the environment for our lives. Buildings are not just places of physical shelter, but places in which our social rituals are enacted’.¹⁴ Certain behaviours were considered appropriate or inappropriate, courteous or unwelcome, in the civilized built environment. The superintendent of New Zealand’s Antarctic division wrote to Scott Base’s leader in 1960, noting among other things that he regarded

as vital to the well-being and harmony of the base the maintenance of the “Antarctic spirit”. By this I mean the readiness to assist in any task, whatever the times or conditions; friendly cooperation in all things and a recognition that, because each man is dependent on the next, failure of one lets the whole side down. In a normal environment these may be regarded as platitudes but in Antarctica they are essential to living.¹⁵

Creating such civility in an environment such as Antarctica’s was not only a matter of principle, but also of survival.

One example of the breach of the ‘Antarctic spirit’ negatively illustrates its importance. The men of the *Terra Nova* expedition used as a staging post the hut erected by Scott at Hut Point on his first expedition a decade earlier. When Scott first returned to this hut with the *Terra Nova*, he was enraged to find that men from Ernest Shackleton’s *Nimrod* expedition a few years earlier had left it unusable for the

¹³ Doreen Massey, ‘Places and Their Pasts’, *History Workshop Journal*, No. 39, 1995, p.186.

¹⁴ Hazel Conway and Rowan Roenisch, *Understanding Architecture: An Introduction to Architecture and Architectural History*, 2d ed. (London and New York: Routledge, 2005), p.23.

¹⁵ G. W. Markham, DSIR, to Leader, Scott Base, 20 December 1960, R241413-C746357-CAHU-CH20-Box1-d, Archives New Zealand (ANZ).

next expedition. Shackleton's men had gained entrance by forcing their way in through a window, and then had left that window open, causing the hut to be filled with snow and ice. They had also left a mess of heaped equipment and refuse around the hut. 'There was something too depressing in finding the old hut in such a desolate condition,' he wrote in his diary.

To camp outside and feel that all the old comfort and cheer had departed, was dreadfully heartrending. I went to bed thoroughly depressed. It seems a fundamental expression of civilized human sentiment that men who come to places such as this should leave what comfort they can to welcome those who follow, and finding that such a simple duty had been neglected by our immediate predecessors oppressed me horribly.¹⁶

Scott's fury is even clearer in the original diary, compared to the words edited for publication:

It is difficult to conceive the absolutely selfish frame of mind that can perpetrate a deed like this ... To camp outside amidst confused debris ... and finding that such a simple duty had been barbarously neglected by our immediate predecessors disgusted me horribly. The names of some of the *Nimrod* sailors were actually written on the outer planking of the hut.¹⁷

Scott's use of the word 'barbarously' is telling.

Mawson was of similar mind to Scott in this regard. When leaving the base at Commonwealth Bay to return to Australia, the men 'battened down the windows of the hut, the chimney was stuffed with bagging, the veranda entrance closed with board[s] and, inside, an invitation was left for future visitors to occupy and make themselves at home'.¹⁸ Notorious for his lack of humour, this was probably Mawson's best effort at a little joke.

¹⁶ Scott, p. 91.

¹⁷ Ibid, p.459.

¹⁸ Mawson, *Home of the Blizzard*, p. 321.

A civilized built environment also demanded certain levels of hospitality. This was especially so during and after the International Geophysical Year and the signing of the Antarctic Treaty, when bases were expected to be open to all expeditioners, as a means of sharing science or so that states could inspect other state's bases to ensure, for example, the agreed upon demilitarisation. It was even more the case when, such as at Scott Base, two stations were close to one another and visitors could realistically be expected. Scott Base signalled Wellington in 1959 that there was 'no grog' on the station and requested an 'advance supply' on the next flight from New Zealand. The leader wrote tersely that the 'inability [to] return hospitality [is] embarrassing'.¹⁹

With increasingly reliable communication technology, other forms of civilized behaviour became expected between different nations' bases. Accidents or deaths resulted in a deluge of wireless messages of sympathy or condolence, and offers of help, from other Antarctic bases, while achievements or common events such as Midwinter required messages of congratulations and well-wishes. Mawson Station received many messages of sympathy and offers of help after its powerhouse burnt down in 1958, for example.²⁰

Other cultural rituals were imported as part of the built environment to create civilization in Antarctica. On Sundays men typically slept in and had either shorter work days, or no work at all. The seemingly simple act of building and installing the large communal table in the centre of the living hut at Commonwealth Bay, a place for the civilized sharing of food, conversation, and company, was celebrated with 'a sort of housewarming' and that evening the party had 'our first sit-down civilized meal' (the table is included in the hut's floor plan in Illustration 5).²¹ Expeditioners at Cape Evans sat down to eat together as well, although as a predominantly naval

¹⁹ Leader, Scott Base to Wellington, no. 259, 17 November 1959, R241410-C746357-CAHU-CH20-Box1-a, ANZ.

²⁰ John Bechervaise, 'Daybook 1959, Antarctica Wintering', Papers of John Bechervaise, MS 7972-8, NLA.

²¹ Charles Lason, diary, 31 January 1912, Papers of Charles Lason, MLMSS 385, ML.

expedition slightly different rules were observed, with the officers (and scientists) sitting at different table from the 'men'.²² At Scott Base and Mawson Station there was generally more than one table in the mess room, but expeditioners still ate at the same time. For special occasions such as Midwinter, Christmas, and birthdays, these events would become even more civilized and ritualised with speeches, gifts, and even specially-designed and printed menus outlining multi-course meals (see Illustrations 25 and 26). Walter Hannam the radio technician wrote at Commonwealth Bay that his birthday in 1912 was a 'Great day' with a speech from



Illustration 25. *The officers' table set, and the hut decorated, especially for Scott's birthday (Herbert Ponting, Cape Evans, 1911, personal collection of Julian Evans).*

²² William Lashly, *Under Scott's Command: Lashly's Antarctic Diaries*, ed. A. R. Ellis (London: Victor Gollancz, 1969), p.109.

Mawson and 'gifts from a few of the coves', including a signed photograph 'of the first [radio] mast erected in Antarctica' – the one he had been struggling with for months.²³ The table at Cape Evans' Midwinter dinner in 1911 was, according to Tryggve Gran, 'set so elegantly that it might have been done by the headwaiter in a celebrated restaurant' and was graced with a Christmas tree made of 'sticks for branches and coloured paper leaves' (see Illustration 27).²⁴ Such traditions continued at Mawson Station and Scott Base²⁵, and with easier travel to Antarctica even increased: in December 1961 DSIR sent two real Christmas trees to Scott Base – and a box of decorations.²⁶



Illustration 26. *A special event at Mawson Station called for formal dress on everybody's part (Robert Wyers, 3982A6, no date, Australian Antarctic Division © Commonwealth of Australia).*

²³ Walter Hannam, diary, 5 May 1912, Papers of Walter Hannam, MLMSS 384, ML.

²⁴ Edward Evans, *South with Scott* (London: W. Collins and Sons, 1921), p.113.

²⁵ Bob Miller to DSIR, 22 April 1957, R18662576-C582821-AADL-W1516-564-Box470-c-2/20/8/1, ANZ.

²⁶ Wellington to Scott Base, no. 33, 16 December 1961, R241417-C746358-CAHU-CH20-Box2-b, ANZ.



Illustration 27. *The 'Christmas Tree' at Cape Evans' 1911 Midwinter Dinner (Herbert Ponting, Cape Evans, 1911, personal collection of Julian Evans).*

Bases as cities

Another way of creating civilization at Antarctic bases was by identifying them with towns, cities, and other urban forms such as houses, streets, parks, and temples. This could be a specific comparison – to a particular city or building – or a general one, to the trope of cities. If behaviour and ritual were intimate interrelationships that constructed place primarily within the buildings, then the trope of the urban form was the expeditioners' way of connecting the wider base site to ideas of civilization.

Scott, for example, pondered on the designation of the hut at Cape Evans as a 'hut'. 'What shall we call it? "The word "hut" is misleading. Our residence is really a house of considerable size'.²⁷ The work area occupied by several scientists within the hut was named 'Hyde Park Corner' (and the doctor's desk there 'St George's Hospital').²⁸ Edward Evans described the corner of the hut in which he, Scott, and the chief scientist Edward Wilson slept as 'the Mayfair district: Wilson and I lived in Park Lane in those days, whilst Captain Scott occupied Grosvenor Street'.²⁹ When two particular expeditioners at Scott Base were on cooking duty they restyled the mess room the 'Barrier View Hotel (Claydon and Gerard Proprietors)'.³⁰ More expansively, Bechervaise wrote of a descent from the polar plateau towards Mawson: 'And so down again to the city from the wilderness – the little silver village that is a vast metropolis by any Antarctic standards!'³¹

Among the expeditioners this identification was often made in irony, the clearest example being the ongoing trope at Mawson Station of calling it 'Mawson City'. This began very early in the station's existence, when it was a small huddle of silver buildings. Calling it a city was an obvious piece of exaggeration, elevating it from a meagre collection of huts over 1500 kilometres from any populated land mass to the same level of size, development, and cultivation as Melbourne, New York, or London. Even New Zealand observers called it 'Mawson City'.³² Further urban language became attached to the place over time. Bechervaise called it 'the silver village',³³ and maintenance notices would be issued by the Mawson Metropolitan Board of Works or MMBW, an acronym familiar to some expeditioners as that of the Melbourne and Metropolitan Board of Works that appeared on everything in

²⁷ Scott, p. 96.

²⁸ McLean, 13 February 1912.

²⁹ Evans, p.103.

³⁰ Bob Miller to DSIR, 22 April 1957, R18662576-C582821-AADL-W1516-564-Box470-c-2/20/8/1, ANZ.

³¹ John Bechervaise, diary, 27 December 1955, Papers of John Bechervaise, MS 7972-6, NLA.

³² 'New Zealand Antarctic Society Antarctic News Bulletin', no.20, 1955, R2859070-C588242-ABLP-W4708-7213-Box62-29/7/-1, ANZ.

³³ Bechervaise, 28 February 1955, 10 March 1955, MS 7972-6.

Melbourne from documents to manhole covers.³⁴ A journalist who travelled to Mawson with the station's new staff picked up the trope and ran with it, transplanting as many urban words and ideas as he could, as well as emphasising the size of the base, especially in comparison to the natural environment. He wrote that

the new inhabitants can boast 'everything is up-to-date in Mawson City'. A tiny settlement of aluminium and plywood huts on a bare rock outcrop at the edge of a great iceshelf is better equipped and more snug than it has ever been. In the last fortnight it has visibly grown and its 'streets' are now lined with mountains of bagged and cased stores. Even its skyline of masts, aerals and power lines serving laboratories and radio installations has become more complicated.³⁵

Sometimes the station became even grander than a city: Bechervaise wrote that he sent one of the expeditioners to help at 'the other bounds of Empire' – a building on the edge of the station.³⁶

This identification could even reach back in time to the almost mythical foundations of Western civilization in Greece. An area of scientific buildings on a slightly higher ridge than the original buildings at Mawson Station was called the Acropolis, and the large physics building at the centre of it the Parthenon.³⁷ When the network of tunnels through the snow about the hut at Commonwealth Bay had been dug, Mawson wrote that 'the place became another Labyrinth of Minos'.³⁸

Such identifications as 'Mawson City' were in many ways amusing pieces of exaggeration, poking fun at the place's rugged functionality and its isolation, but the idea may have helped the expeditioners see the station as more durable and deeply-rooted in the face of the Antarctic wilderness' threat. And as Christy Collis and

³⁴ Thanks to Tom Griffiths for making this connection.

³⁵ Osmar White, 'Everything's up-to-date in Mawson City - The new boys take over', *The Herald*, 5 March 1958, Papers of Fred Elliott, MS 9442-7, NLA.

³⁶ Bechervaise, 30 March 1955, MS 7972-6.

³⁷ Ibid, 20 April 1955, 21 April 1955, 'Report for April 1955'.

³⁸ Mawson, *Home of the Blizzard*, p. 78.

Quentin Stevens argue, giving the names Market Square, Main Street and Coronation street 'to the (relatively) enclosed spaces between the Village's buildings' turned 'the harsh outside environment into a place of familiarity and settlement'.³⁹ Creating this sense of familiarity, this connection back to the center of empire and civilization, was by no means a new tactic. Derek Keene has written that, for example,

early British colonial port towns self-consciously emulated the commercial metropolis of their empire. Thus, at the peak of its late seventeenth-century prosperity, Port Royal in Jamaica had a Thames Street, a Lime Street, a Queen Street, a Broad Street, a Honey Lane, and an impressive St. Paul's church – all City of London names familiar to the merchants who traded there. The imposition and adoption of new place-names are widespread imperial phenomena.⁴⁰

Science and politics

Science and politics were deeply significant factors in the bases' creation of civilization in Antarctica. In the first place, they were the major reasons for the bases' existence at all. From a scientific point of view, they were established to allow scientists of all stripes to investigate the Antarctic. Whether supporting expeditions or housing stationary work, an Antarctic base allowed research that deepened knowledge of both Antarctica itself and phenomena in other parts of the world. Politically, the bases were built and maintained by states to build and maintain claims over parts of Antarctica, pursued in large part for geopolitical, economic, and strategic reasons. By letting expeditioners live in and explore an area, built environment allowed states to argue, in line with international law, that they had a

³⁹ Christy Collis and Quentin Stevens, 'Cold colonies: Antarctic spatialities at Mawson and McMurdo Stations', *Cultural Geographies*, vol. 14, 2007, p.243.

⁴⁰ Derek Keene, 'Cities and Empires', *Journal of Urban History*, vol. 32, no. 1, 2005, p.14.

legitimate claim over that area. Science and politics being considered powerful indicators of a civilized culture – indeed, science, cities, and imperialism were often seen to go hand-in-hand⁴¹ – the bases thus became manifestations of civilization in Antarctica. Even more significantly, as facilitators of scientific study and political territorial claims across huge parts (and, taken together, the entire) continent, the bases broadcast this civilization across Antarctica as a whole. As Massey might argue, civilization was created across the continent through scientific and political interrelationships at an international level, centred on and enabled by Antarctic bases.

Science was one of the main reasons – or was professed to be – for almost all twentieth century expeditions to Antarctica, one of the main activities they undertook once there, and was seen as an endeavour deeply indicative of civilization. ‘Antarcticans are the remote sensors and probes of a scientific civilization’, writes Stephen Pyne, echoing the testimony of Cherry-Garrard: ‘We travelled for Science,’ he wrote of the *Terra Nova* expedition and his companions on the winter journey to Cape Crozier in particular, ‘in order that the world may have a little more knowledge, that it may build on what it knows instead of on what it thinks’.⁴² Mawson wrote of the ‘contributions to knowledge ... carried back to civilization’ by nineteenth century Antarctic expeditioners, and noted approvingly that ‘Since then many adventurers have gone forth; most of the prominent civilized nations taking their share in exploration’.⁴³ Most expeditions took scientists and brought back valuable data, hypotheses, and findings: from meteorology, to the interaction of the Earth’s magnetic field, the aurora, and radio transmissions, to the fossilised leaves of Scott’s expedition which contributed to the adoption of continental drift as an accepted theory. For most of the expeditions and their leaders,

⁴¹ Brigid Hains, *The Ice and the Inland: Mawson, Flynn, and the Myth of the Frontier* (Melbourne: Melbourne University Press, 2002), p.43. See also Keene, and Collis and Stevens.

⁴² Stephen Pyne, *The Ice: A Journey to Antarctica*, (Seattle and London: University of Washington Press, 1986), p.137; Cherry-Garrard, p. 228.

⁴³ Mawson, *Home of the Blizzard*, pp.xiii-xiv.

science was at the forefront of their reasons for travelling to Antarctica as well – certainly in the case of Mawson, whose AAE was ‘regarded as the most scientific of the Heroic Age expeditions’, and without a doubt for Phillip Law, himself a passionate scientist whose ‘establishment of Mawson station ... had led to some fine, pioneering science’.⁴⁴

When the New Zealand government decided not to provide any funding for the Australasian Antarctic Expedition, Mawson berated the Prime Minister, Sir Joseph Ward, using science especially as a cudgel. ‘Your decision was quite unexpected,’ he complained,

for New Zealand bears the name of generously assisting scientific exploration ... As you know, there is no British Expedition that has yet set forth for the Antarctic Continent so well equipped for scientific work and with the imperial objects in view which are the platform of our programme.⁴⁵

Mawson also became incredibly frustrated with some of the radio operators at Commonwealth Bay as he could not get them interested in figuring out how and why the radio worked best at some points and not at others; they were interested only in operating the technology.⁴⁶

For his part, Law suspected that science might even become the basis on which Antarctic claims were legitimated, prophesying for his political masters that international territorial competition in Antarctica is to be replaced largely by scientific competition, with Antarctica becoming an arena in which East and West compete to demonstrate their respective scientific and technological excellence for purposes of prestige and propaganda.⁴⁷

⁴⁴ Tom Griffiths, *Slicing the Silence: Voyaging to Antarctica* (Cambridge, Mass. and London: Harvard University Press, 2007), p.267.

⁴⁵ Douglas Mawson to Sir Joseph Ward, 20 October 1911, ‘AAE – Papers for the period 1911 (1 December 1910 - 6 November 1912): I-Z’, MLMSSS 171/3, ML.

⁴⁶ Mawson, *Mawson's Antarctic Diaries*, pp.191-192.

⁴⁷ Phillip Law, ‘Future Operations of the ANARE, 1959-1964’, no date, 511015-A1838-1495/3/4/1-PART4, National Archives of Australia (NAA).

Scott too, according to his contemporaries, was a man of science before anything else. In his preface to the first published edition of Scott's diaries, Sir Clements Markham was particularly insistent, writing in two short pages that 'The object of Captain Scott's second expedition was mainly scientific', that his 'objects were strictly scientific', that his intention in reaching the South Pole 'was, if possible, to achieve scientific results on the way', and concluded that 'The principal aim of this great man ... was the advancement of knowledge'.⁴⁸ Cherry-Garrard insisted that 'Scott, though no specialist in any one branch, had a most genuine love of science',⁴⁹ and Scott described science in his diary as 'the rock foundation of all effort'.⁵⁰ While it seems reasonable to believe that Scott certainly rated science very highly, and perhaps as one of the two major reasons for the *Terra Nova* expedition, the goal of reaching the pole still seems to have been his priority. Scott certainly did not understand a lot of the science being undertaken on his expedition. He wrote with good-natured bafflement for example, that 'It took me days and even months to realise fully the aims of our meteorologist'.⁵¹ But decades later Scott Base, though built in the first instance as part of the Trans-Antarctic Expedition, was from the beginning intended to play a significant scientific role as a site of the International Geophysical Year, one of 'hundreds of stations in all parts of the world' – and particularly in Antarctica – 'combining in an investigation into related [scientific] phenomena'.⁵²

The bases also created civilization through their roles as political tools for the states that largely or entirely supported and funded the expeditions. Until the signing of the Antarctic Treaty and its coming into effect in 1961, seven states – including all three in this study – had claims over parts of the Antarctic continent. None of these were universally recognised, and some even overlapped with those of

⁴⁸ Clements Markham, 'Preface', in Robert Falcon Scott, *Journals: Captain Scott's Last Expedition*, ed. Max Jones (Oxford: Oxford University Press, 2005), pp. 3-4.

⁴⁹ Cherry-Garrard, p. 206.

⁵⁰ Scott, p. 190.

⁵¹ Scott, p. 166.

⁵² Bob Miller to DSIR, 29 June 1957, R18662576-C582821-AADL-W1516-564-Box470-c-2/20/8/1, ANZ.

other countries (Britain's, Chile's, and Argentina's). Meanwhile, the United States and the Soviet Union, while very active in Antarctica by the end of the period under study, had not made any claims but had made clear their opinion that they had the right to, should they so decide.

The claimant states' political concerns were geopolitical, strategic, and economic. Geopolitically and strategically, Antarctica offered the potential for huge advantages to states that controlled parts of the continent, so claimants were eager to secure their interests and deny those of others. A New Zealand Cabinet Minister told a newspaper after visiting Antarctica that 'The Ross Sea Dependency must remain within the orbit of British interests for strategic reasons,' explaining that 'submarines stationed there could dominate the whole of the South Pacific'.⁵³ Aircraft and even nuclear warheads operating from the Antarctic, especially in the context of the Second World War or the Cold War, were other nightmares the claimants did not want to countenance. The Australian government wrote lengthy, secret intelligence reports on the potential value of Antarctica to their Cold War adversaries, the 'Soviet Bloc'.⁵⁴

Likewise there was great economic promise in resource extraction, and while at the time it was technologically and economically unfeasible to consider seriously such activity (past whaling and sealing), base-building claimant states wanted to ensure unchallenged access to those resources in the future. In the interview the New Zealand Minister went on to say that 'the commercial possibilities [in Antarctica are] almost limitless. Traces of a large range of minerals [have] already been found'.⁵⁵ Mawson wrote to the Australian Prime Minister's Department in the 1920s urging strongly 'that the Australian rights to this territory should be upheld',

⁵³ 'Antarctic Base Must Be British', *Nottingham Evening Post*, 21 October 1957, R20084343-C747382-CAHU-CH89-Box6-a-10/5/1, ANZ.

⁵⁴ See 536701-A1838-1495/3/2/1-PART2, NAA.

⁵⁵ 'Antarctic Base Must Be British'.

arguing that its 'economic future ... may be very great' due to the 'great wealth of life in the seas – whales, seals and penguins ... while fish life is very abundant'.⁵⁶

Antarctic built environment was a key element in this political civilization to the continent due to generally accepted international law among the claimants: law demanded that, in order to make a legal claim over land, a state must demonstrate occupation and administration of that space as well as any other arguments of priority, history, or proximity that it may make. Being the first to travel across and explore terrain gave strength to a claim over it, in the first place.⁵⁷ Australia's claim over Australian Antarctic Territory, for example, was based on the early exploratory work of, in particular, Douglas Mawson, his being the first claims made over that space, and its proximity to Australia. New Zealand's claim over the Ross Dependency was based on Britain's early exploration of the area by Ross in the early nineteenth century, Scott in the Heroic Age, and New Zealand's role in the 1957-1958 Trans-Antarctic Expedition.⁵⁸ The Dependency's relative proximity to New Zealand, and Britain's transfer of its claim to the area to New Zealand were other significant factors.

Occupation and administration, however, demanded that Australia and New Zealand demonstrate effective governmental control over the area (administration) and have people living in the places they claimed (occupancy). While exploration was made easier and more significant by operating from built environment, occupancy, of course, required it. Collis and Stevens call Mawson Station, for example, a 'textbook geopolitical/legal colony', 'situated in the AAT, by Australia, in order to consolidate the imperial claims installed by Australian explorers'.⁵⁹ Law

⁵⁶ Douglas Mawson, article, *The Register*, 13 February 1925, no other information, quoted in Fred Jacka and Eleanor Jacka, 'Introduction', in Douglas Mawson, *Mawson's Antarctic Diaries*, eds. Fred Jacka and Eleanor Jacka (Crows Nest: Allen and Unwin, 2008), p.xliii.

⁵⁷ Hains, p.46; Christy Collis, 'The Proclamation Island Moment: Making Antarctica Australian', *Law Text Culture*, vol. 8, 2004, p.40.

⁵⁸ For more on the TAE, see Klaus Dodds, 'The Great Trek: New Zealand and the British/Commonwealth 1955-58 Trans-Antarctic Expedition', *The Journal of Imperial and Commonwealth History*, vol. 33, no. 1, January 2005, pp. 93-114.

⁵⁹ Collis and Stevens, p.239.

told an Australian newspaper that the base 'would press Australia's claims to half the Antarctic continent'⁶⁰. The Australian Minister of External Affairs told his Cabinet that 'we cannot afford to neglect our claim to sovereignty in what may prove in future to be a very important region'⁶¹, and told Parliament that Mawson Station 'will make it quite clear that Australia intends to exert effective control over her Antarctic possessions and it will strongly consolidate our position'. New Zealand's Attorney-General wrote in a letter that 'One of the main purposes of the [Trans-Antarctic] Ross Sea Expedition is to strengthen our claim to the Ross Dependency, which is under our administration'.⁶² The Minister of External Affairs repeated this to New Zealand's Cabinet, recommending that it approve looking into building Scott Base. Cabinet was at once 'favourably disposed' to the idea, especially as a definitive *lack* of action could have been seen as an abandonment of New Zealand's claim over the Ross Dependency (see Illustration 28).⁶³

The bases' creation of this scientific and political civilization in Antarctica is so significant because, unlike technology, behaviour, ritual, or the trope of the urban form, which were confined to the sites of the bases themselves, this 'civilization' was spread across the entire continent. By logistically allowing scientists to explore and understand the continent, built environment was key in casting this 'civilized' net of scientific meaning and knowledge across Antarctica. 'Just as British colonists imported the plough, the rabbit and the sparrow to civilize the melancholic Australian bush,' writes Hains, 'Mawson and his men brought the tools of the scientist and technician to civilize the Antarctic wilderness' during the AAE, a task

⁶⁰ 'Aust. base in Antarctic', *Canberra Times*, 25 August 1952, 554677-A1838-1495/4-PART4, NAA.

⁶¹ 'Proposal for an Australian Expedition to the Antarctic Continent', 13 January 1953 and 'Statement in House of Representative by the Minister for External Affairs', no date, both in 554677-A1838-1495/4-PART4, NAA.

⁶² Attorney-General to Postmaster General, 19 July 1955, R4414834-AAMF-W3118-Box3-1955/2876, ANZ.

⁶³ Cabinet Paper, 12 January 1955; Minister of External Affairs to Prime Minister, 19 January 1955; Secretary of the Cabinet to Minister of External Affairs, 16 March 1955; all in R20822175-C359965-AAFD-W2347-811-Box102-i-CAB409/1/1, ANZ.



***Illustration 28.** The ceremonial founding of Scott Base for the TAE in January 1957, a politically charged event (Scott Base, 1957, no other information, TAE385, © Antarctica NZ Pictorial Collection).*

that would have been at least severely impaired by the lack of a base.⁶⁴ Similarly, the political civilization of territorial claims consolidated by the bases, containing all the relationships of geopolitics, economic possibilities, and strategic concerns, was spread across the huge areas of Antarctica delineated by those claims. ‘Legally,’ argue Collis and Stevens, it is only Mawson Station’s ‘full-time presence of bodies

⁶⁴ Hains, p.43.

and buildings that transforms claimed land into a sovereign possession'. The base's impact on the cultural construction of the Antarctic environment as civilized

far exceeds its local environment. Since 1954, the buildings and occupants of Mawson, in concert with Australia's two other polar stations, have produced nearly six million square kilometres of Antarctica as Australian space.⁶⁵

Physically occupying only a toehold on the continent, then, Antarctic built environment nonetheless managed to create political and scientific civilization and broadcast it across the entire, vast region.

A new civilization

Built environment played a major role in creating civilization in Antarctica for the expeditioners and the rest of their culture watching from elsewhere in the world. But through the twentieth century there also began to grow among some a feeling that in and around Antarctica there was growing an advanced, utopian civilization based on peace and cooperation. While Western culture dealt with the horrors and atrocities of two world wars, the development and use of nuclear weapons, and the beginning of the Cold War, those living in and dealing with Antarctica seemed to be cooperating more and more and behaving more civilly than ever.

Various expeditioners noticed a dislike of war and conflict among their colleagues on Antarctic bases. 'Every now and then there is a good deal of peace and war discussion at meals,' Bechervaise wrote at Mawson in 1955. He continued:

The majority of men with me were too young to fight in the last war. Time and time again the talk is cynical and pessimistic. The thought of war becomes more and more repugnant. Someday, genuinely, the only war that the people will support will be one for sheer survival, against the races which

⁶⁵ Collis and Stevens, pp.236-7.

are not European and that not wholeheartedly until a self-confident enemy is on the point of invading their lands.⁶⁶

Being part of a small, isolated community inspired reflection among some – especially, unsurprisingly, the leaders – on the best way to organise and run a society. At Mawson one night in 1955 Bechervaise, wrote a good deal ruminating on the nature of running an Antarctic station, pondering the organisation of the men and how the community worked. Towards the end of the entry he wrote that perhaps he was dealing, on an Antarctic base, with ‘the ideal circumstances for a kind of true modern democracy’.⁶⁷

Science was a major part of this utopian vision. In 1961 the Special Committee on Antarctic Research (SCAR), the international organisation of scientists that discussed and decided on the priorities for Antarctic scientific research (as it still does), met in Wellington. The meeting caused the idea of a cooperative, peaceful Antarctic civilization to be discussed in New Zealand’s newspapers. Napier’s *Daily Telegraph* reported on ‘International Co-Operation in the Antarctic’. It wrote that

While the rest of the world is subjected to the alarums and tensions of the cold war, more than 60 polar scientists attending the Special Committee on Antarctic Research in Wellington provide a glowing example of international co-operation. The cold war is forgotten against the background of the world’s coldest place.⁶⁸

In Wellington *The Dominion*, in an article titled ‘Antarctica, Home of Co-Operation’, reported the mayor’s speech at a reception for the gathered scientists, in which he declared that ‘When the history of Antarctic research was written the outstanding factor would not be the scientific work but the fact that Antarctica was the continent where man had learned to live together’. He continued that ‘SCAR was giving the world an example of good science that could well be translated into politics. Perhaps

⁶⁶ Bechervaise, 30 April 1955, MS 7972-6.

⁶⁷ Bechervaise, 12 June 1955, MS 7972-6.

⁶⁸ ‘International Co-Operation in the Antarctic’, *The Daily Telegraph*, 19 October 1961, R20084361-C747382-CAHU-CH89-Box6-s-10/5/1, ANZ.

the most important aspect of research in the Antarctic was its international co-operation'.⁶⁹ An article about the formal founding of Scott Base with the flying of the New Zealand flag reports the official in charge saying, 'We are now working with other nations to gather knowledge which will be of benefit to all mankind,' immediately covering the implicit geopolitical (and thus 'old-style' conflictual) work of the base with an insistence on the purely scientific (and thus progressive) nature of the project.⁷⁰ 'This is the greatest scientific undertaking in man's history,' the director of the United States' International Geophysical Year programme summed up for New Zealand reporters, 'and we don't want to complicate it by politics. One of the most important aspects of I.G.Y. is the hope that it will demonstrate what men of goodwill can do if they want to'.⁷¹

Those on the political and diplomatic side felt similarly. Speaking to a symposium of Antarctic scientists in 1958, New Zealand's Prime Minister concluded:

The greatest feature of the whole [IGY] programme however has been in a field where mankind desperately needs to make progress – that of international co-operation. The conception – in many cases the very terms – of science are universal. Political differences have sometimes had the effect of creating divisions or barriers among the world's scientists. But here we have co-operation and the sharing of results among all nations. The scientists of I.G.Y. are giving the world (and its political leaders) an example of co-operation in practice.⁷²

The signatories to the new Antarctic Treaty, meeting in Canberra in 1961, agreed with him, and found time to send a message to stations in the Antarctic. '[T]he first

⁶⁹ 'Antarctica, Home of Co-Operation', *The Dominion*, 10 October 1961, R20084361-C747382-CAHU-CH89-Box6-s-10/5/1, ANZ.

⁷⁰ 'Naming of N.Z.'s First Antarctic Base', no further information, R20084344-C747382-CAHU-CH-89-Box6-b, ANZ.

⁷¹ No other information, R20084344-C747382-CAHU-CH-89-Box6-b, ANZ.

⁷² 'Notes for Prime Minister: Opening of Antarctic Symposium', 18 February 1958, R22851073-C344831-AEFZ-W5727-22620-Box171-194/0089, ANZ.

Antarctic Consultative Meeting sends greetings from [C]anberra to all who are wintering in the Antarctic area,' they wrote, continuing:

your work still involves great persistence courage and self sacrifice in the best traditions of Antarctic exploration[. W]e hope that the practical measures we are recommending [unanimously] to our governments will help all expeditions and stations by confirming and extending cooperation in the peaceful Antarctic [sic] among the twelve nations here represented.⁷³

This feeling rose even as high as the leader of the free world (or at least to his speech writers). On Midwinter's Day (the traditional Antarctic day of celebration) in 1961 all of the Antarctic stations, Mawson and Scott Base included, received a signal from John F. Kennedy, President of the United States, in which the President paid deferential tribute to 'all of you living [in] isolation at the scientific stations scattered over and around the Antarctic continent'. Kennedy connected their presence at and operation of the bases directly to the utopian sense of an unquestionably positive and progressive science, and to the seemingly unprecedented international cooperation of the Antarctic Treaty. He saluted 'each and every one of you for his significant contribution to the advancement of science' and assured the expeditioners that

The harmonious cooperation which exists among you is an example to us all. Your calm fortitude and your friendly international exchanges are coming to fruition in the Antarctic Treaty, which testifies to the faith we have in your endeavours.⁷⁴

A return signal to Kennedy from Scott Base, and copied to New Zealand's Prime Minister, began 'Dear John'. It assured the President that 'we've never had it so good and we wish we had got into the racket a lot sooner' and that they had 'beaten fatigue by doing as little as possible as slowly as possible and remain in bed as long as possible'. Despite its irreverent tone – and it was not in fact sent – the signal

⁷³ Canberra to Scott Base, 28 July 1961, R241416-C746358-CAHU-CH20-Box2-a, ANZ.

⁷⁴ John F. Kennedy to Scott Base, 15 June 1961, R241412-C746357-CAHU-CH20-Box1-c, ANZ.

pointed to the importance of simple interaction and friendship among different nations' expeditioners in creating a foundation for this utopian effort. 'As long as there is a P.X. and a Chief's Club,' the New Zealanders wrote, referring to semi-formal social groups at McMurdo Station, 'you can be assured of our harmonious co-operation'.⁷⁵

To many, the cooperation of the IGY and its continuation in the Antarctic Treaty promised not only a new style of civilization for Antarctica, but for the world. New Zealand's Prime Minister, Walter Nash, for one, felt that such examples 'may well have an influence far wider than even the vast Antarctic continent itself'.⁷⁶

Ambivalences and contradictions

International cooperation and the advancement of science were key elements of Antarctic civilization and the bases built there. But, as has been pointed out several times through this thesis, it is important to recognise that things were never this simple. There had long been complications and ambivalences in the expeditioners' culture about the goods and the bads of civilization, cities, and wilderness: nature was not always bad, and culture was not always good.

Nature was, on many occasions, a place of great beauty, and even morality. Vitruvius, the Roman architect, thought that a building's *venutas*, its beauty, one of his three great virtues, would come from its emulation of nature.⁷⁷ More recently for the expeditioners, the eighteenth- and nineteenth-century Romantic movement in the arts had brought admiration for nature and natural forces, and particularly of wildernesses in the search for the sublime, back to the fore. Nineteenth-century imperial adventure fiction, hand-in-hand with the stories of an expanding British Empire, had depicted the excitement and thrill of adventuring and exploring in

⁷⁵ Leader, Scott Base, to John F. Kennedy, no date, R241412-C746357-CAHU-CH20-Box1-c, ANZ.

⁷⁶ 'Message for "Icebound" on New Zealand and Antarctica', 22 December 1959, R22851307-C344832-AEFZ-W5727-22620-Box172-196/0299, ANZ.

⁷⁷ Vitruvius, *On Architecture*, trans. Richard Schofield (London: Penguin, 2009), pp. xiii, 19.

unknown, wild places. Even more specifically for the Antarctic expeditioners at Mawson Station and Scott Base, the published diaries and accounts of the Heroic Age expeditions – Scott’s diaries, Mawson’s *Home of the Blizzard*, Shackleton’s *Endurance*, and so on – had incorporated the earlier Romantic and adventure genres into a particular tradition of Antarctic expedition writing that wrote about the Antarctic environment in terms of rapturous beauty and ‘boys’ own’ adventure as often as it did in terms of enmity and battle. Consequently many Antarctic expeditioners had come to the ice in order to have an adventure, to test themselves against the elements, and have an encounter with the wilderness. On a sledging trip away from Commonwealth Bay in 1912, McLean and others explored a mountain. He wrote that ‘It was quite romantic setting forth to explore this sentinel mountain with its rocky face [amid] a wilderness of snow. It made me think of one of Rider Haggard’s imaginations’.⁷⁸ Conversely Laseron, after returning to the hut to spend the night rather than camp, thought that ‘Thus ended the day rather ingloriously’.⁷⁹ Back at the base, McLean was not immune to the beauties of the Antarctic environment, causing him to elevate the natural environment above the built one at times: ‘To sit down in the lee of one of these rocks and watch the sea-smoke hurrying with the wind was better than the most inspiring occupation in the hut’.⁸⁰

Built environment and the comfort it provided could also be rather a thorn in the side of true adventure. ‘I begin to think we are *too* comfortable in the hut,’ worried Scott at Cape Evans in 1911, ‘and hope it will not make us slack’.⁸¹ Hillary rang Scott Base’s architect once the base was completed ‘saying how all the ... wintering-over members were snug and comfortable – “... too comfortable”’.⁸² Cherry-Garrard wrote that

⁷⁸ McLean, 22 November 1912.

⁷⁹ Laseron, *South with Mawson*, p. 124.

⁸⁰ McLean, 5 June 1913.

⁸¹ Scott, p. 176.

⁸² W. Frank Ponder, *A Man From the Ministry: Tales of a New Zealand Architect*, Caxton Press, Christchurch, 1996, p.107.

The importance of plenty of out-door exercise was generally recognized, and our experience showed us that the happiest and healthiest members of our party during this first year were those who spent the longest period in the fresh air.

Having discussed the dangers of fire at Cape Evans, Cherry-Garrard wrote cheerfully that 'From such grim considerations it is a pleasure to turn to the out-of-door life we now led'.⁸³ Going further, Laseron wrote of the AAE at Commonwealth Bay:

Day by day the outside world faded farther from our thoughts. It was indeed hard to imagine that we had ever been puppets tied to the routine of cities. ... We lived in a world of our own, a primitive world, in which the only standards were efficiency and utility, and in which, in an all-satisfying way, we made our own news, devised our own pleasures, and were busy with our own work.⁸⁴

The sense of idyllic, primitive, simple pleasure, and its necessary distance from that hum-drum beast of manipulation and exploitation, the city, is palpable in Laseron's words.

The sense of being isolated in the wilderness was, in the same way, sometimes welcomed. This was especially clear when, with increasingly sophisticated technology, expeditioners felt that they could not get away from civilization even if they tried. 'We are not free from "the world" even here,' Mawson sighed in his second winter at Commonwealth Bay,

for the chatter [from other wireless radio broadcasters] which goes on in the aether every evening is so 'deafening' as to frequently prevent Macquarie [Island, the relay station,] from asserting itself.⁸⁵

⁸³ Cherry-Garrard, *The Worst Journey in the World*, pp. 193, 464.

⁸⁴ Laseron, *South with Mawson*, p. 55.

⁸⁵ Mawson, *Mawson's Antarctic Diaries*, p.187.

The same concerns, although more tongue-in-cheek, were felt about radio in the 1950s and 1960s. In a signal to Wellington the leader of Scott Base noted that the Americans over the hill were 'experimenting with a broadcast station for local reception' and that the chief scientist on the station did 'not altogether approve of this development ... he feels that civilization is beginning to catch up with him'.⁸⁶ The development of reliable aircraft flights to Antarctica had a major effect – rather than weeks of sailing, expeditions could be in the Antarctic after only a few hours' flight. 'The Antarctic has come as close to the shops of Christchurch as most people's back doors are to the tradesman's delivery van,' boasted a newspaper as it described fresh fruit, vegetables, and milk arriving at Scott Base the day after they had been ordered by radio.⁸⁷ The distance could also lead to reflection on life in the city. Bechervaise quotes the physicist at Mawson in 1955, saying, 'When you look at the cities from this distance they seem mad whirlpools'.⁸⁸ The bases themselves could seem too populated, small claustrophobic spaces weirdly packed full of people in the face of the huge, 'empty' Antarctic. Cherry-Garrard wrote that 'the only time in the year that a man could be alone was in his walks abroad from [base], for the hut, of course, was always occupied, and when sledging this sardine-like existence was continuous night and day'.⁸⁹

This chapter has shown that Antarctic built environment was interpreted in many ways as civilization in the 'home of the blizzard'. As comfortable, technologically-advanced places that followed social rules about etiquette and hospitality and were identified with town, cities, and other urban forms, the bases seemed bastions of civilization in the wilderness of Antarctica. Even more powerfully, the bases were established by powerful markers of civilization, science

⁸⁶ Leader, Scott Base to Wellington, no. 109, 4 May 1961, R241412-C746357-CAHU-CH20-Box1-c, ANZ.

⁸⁷ 'Antarctica Brought Close to New Zealand by Plane', February 17 1957, no other information, R20284354-C747382-CAHU-CH89-Box6-c, ANZ.

⁸⁸ Bechervaise, 24 April 1955, MS 7972-6.

⁸⁹ Cherry-Garrard, p. 193.

and politics. The bases then facilitated the reproduction of these in Antarctica, fashioning the bases as symbols and crystallisations of science and politics but also broadcasting them across areas of the continent much, much larger than the actual bases' sites. Further, by the end of the period under study, there was a growing, utopian sense that, through the international co-operation of IGY and the signing of the Antarctic Treaty, and against the backdrop of two world wars, two atom bombs, and a cold war, Antarctic built environment was facilitating and encouraging a new, more peaceful, more rational civilization to develop down south. Even within such strong symbols and indicators of civilization, major complications and ambivalences ran through the expeditioners' thoughts about Antarctic built environment. As in chapters one and two, this understanding of the bases was not always welcomed as broader scientific and political goals, sometimes at odds with individual expeditioners' motives, resulted in a little too much comfort. It is also interesting to note another resemblance with the first two chapters: as emblems and instruments of civilization, the similarities between the Heroic Age and the later bases are more striking than the differences.

In general, then, this chapter has presented another way in which Antarctic built environment was, and can be, understood. It also shows again the significance of base life in the human experience of Antarctica. The bases inherited and were infused with a cultural narrative that saw built environment as both the purest artifact and the crucible of civilization. On first approach the bases hardly seemed inspiring as examples of the majesty of human civilization, but their location in what was considered the world's greatest wilderness raised their low timber frames into the spectacular. Remarkably, in the ultimate site of nature, expeditioners constructed the ultimate site of human culture, whether it was a Claridge's or a Barrier View Hotel.

Conclusion

Delivering a lecture in 1964, Phillip Law, the director of the Australian Antarctic Division and the mastermind behind Mawson Station, imagined what 'the picture of Antarctica will look like in 1984'. Serviced by jet aircraft, 'atomic icebreakers', and 'small, beetle-like hovercraft', Law imagined mining towns built deep underground, 'irradiated with "simulated" sunshine generated electrically from nuclear power' and so 'independent of surface ... conditions'. In these towns, Housewives will work and cook and tend their infants, children will go to school, doctors and nurses will attend their patients in the small efficient hospitals and all the busy activity of a normal township will proceed in this human anthill.

Law provided many more details of these futuristic Antarctic towns, but concluded by noting that 'As for the elements, man will do what he has always done – shelter from them rather than battle against them, wherever it is possible to do so'.¹ The blizzard cities of the future, it seemed, would be very different in many ways. In their meaning and significance, however, as protective bastions of civilization and all that meant in Law's imagining – peaceful domesticity and technological superiority – they would remain exactly the same.

Protection, peace, and modernity are all themes that have appeared in this thesis. By focusing on four sites at particular points over fifty years, several

¹ Phillip Law, *Antarctica – 1984* (Hobart: Adult Education Board of Tasmania, 1964), pp.9-12. Law also prophetically imagined aircraft passengers watching fully coloured 'small television screens in front of each seat'.

arguments about built environment have been advanced. The bases were sanctuaries that protected the expeditioners from the harsh elements of the extreme southern environment, allowing them to go about their business during the worst blizzard or in the deep, dark fridity of the winter. Antarctic built environment created warm, illuminated, comfortable havens of wood and metal, filled with companionship and good cheer, in which expeditioners could survive. That warmth and light was evidence, furthermore, of the bases' modernity – these buildings were furnished with impressive modern technology, such as the generators that heated and lit the structures, wireless radio, intricate scientific apparatus, and the materials of the buildings themselves. The modern sanctuaries of Antarctica were by no means unthreatened, however. The bases were embattled by various forces: snow, hurricanes, blizzards, and fire all presented hazards to the effectiveness, comfort, or even existence of Antarctic built environment.

Antarctica's extremes also revealed the built environment's plasticity. The realities of operating in Antarctica shine a light on how flexible, malleable, and permeable the built environment was, contradicting a powerful expectation in the expeditioners' culture that built environment was stable, durable, and impenetrable. As Hans Blumenfeld writes, 'grey matter is harder to move than concrete'.² Buildings could change in form, being renovated, extended, and even moved. They also changed in function, being used for different purposes at different times. Plasticity was also evident in their permeability – it was difficult to think of the buildings as impenetrable fortresses while great jets of snow drift shot through invisible cracks in the walls. The constant maintenance required, too, highlighted the impermanence of the bases. Expeditioners had to constantly re-shape the warping built environment.

² Hans Blumenfeld, 'Continuity and Change in Urban Form', in in Larry S. Bourne (ed.), *Internal Structure of the City: Readings on Urban Form, Growth, and Policy*, 2d ed. (New York and Oxford: Oxford University Press, 1982), p.56.

Plasticity could thus be cultural, such as changes in building use or shifts in expeditioners' associations with parts of the base, or it could be physical, such as structures being renovated or repurposed. Some exhibitions of plasticity were intended, while others were accidental or unplanned. Changes could be human-directed, such as renovations, or they could be caused by the natural environment, requiring maintenance.

This thesis has also argued that besides simply allowing the expeditioners to survive, the built environment allowed them to create civilization in the wilderness. The expeditioners' culture already had a narrative about the civilizing power of towns and cities, which Antarctic built environment inherited; but it also reinforced this narrative by creating civilization not only in a wild place, but in what was seen as the world's greatest, most inhuman wilderness. The bases did this in several ways. Stocked and built with modern materials, devices, and systems, whether to light rooms or count cosmic rays, the bases were examples and symbols of civilization's advanced technology. Civilized behaviour and rituals among the expeditioners, such as hospitality or sitting down to shared meals, were established and expected. The expeditioners identified their bases with towns, cities, and other urban forms, recreating parts of the built environment as St George's Hospital, the Acropolis, or even an entire city in its own right. Antarctic built environment was also a manifestation of science and politics, two major features of the expeditioners' civilization. The bases were built to pursue the advance of scientific knowledge, as well as states' political concerns in creating and reinforcing claims over parts of the continent. Significantly, this spread these forms of civilization across Antarctica as a whole. Scientists were supported to physically and mentally investigate the continent, seeming to draw the full expanse of Antarctica into a scientific regime of understanding. The bases also allowed states, motivated by political considerations, to explore and demonstrate occupancy of claimed sectors of Antarctica, reinforcing those claims.

By the end of the period under study, a new style of civilization seemed to be emerging in Antarctica. From the science-based international cooperation of the International Geophysical Year and the signing of the Antarctic Treaty (especially welcome in the context of two world wars and a new Cold War), a rational, peaceful, cooperative model for civilization seemed to be developing, rooted in and around the bases down south. Antarctic built environment had imported and recreated civilization in the world's greatest wilderness – could it also remake that civilization there, improve it, and show humanity another way forward?

The two key arguments in this thesis intersect at a major point. They reinforce the argument made by scholars such as William Cronon, Doreen Massey, Eric Pawson, and Tom Brooking that environment is constructed culturally as well as materially. Narratives, traditions, myths, scientific descriptions, social, political, and economic relationships in general and so on are as important a part of an environment as its physical material, the ice, wind, and penguins. Culture is used to interpret the material parts of the environment. The thesis has then extended this argument, demonstrating that built environments are as culturally constructed as natural or wild environments.

Expeditioners culturally constructed their bases. They built them materially as well, of course: the buildings certainly did allow the men to shelter from low temperatures and heavy blizzards, they certainly were stocked with technology, and they certainly were threatened by hazards like fire – these were not representations or imaginary effects. But they *were* then interpreted and imagined by the expeditioners' particular culture, constructed with a particular inherited collection of stories and influences, assumptions and relationships that layered over and embellished the material. Chapters one and two showed how the bases were constructed as refuges of modernity assailed by threats. Chapter three showed how the built environment was culturally constructed as the site of civilization, and the power of that cultural construction to spread civilization across the entire continent when the bases occupied what might charitably be called footholds. This research has

also shown this cultural construction from the flip side: the revelation of the extent of the built environment's plasticity in the extreme Antarctic environment can be seen in part as an assault of the material environment on the expeditioners' cultural expectation that buildings should be stable, durable, and impenetrable.

This thesis treads across several areas of historiography, reinforcing, extending, and at times challenging broader conceptions of built environment, nature, civilization, Antarctica, and the many ways they are interconnected. Firstly, it makes several contributions to environmental history. It demonstrates the value of integrating the study of built environment more thoroughly into environmental history, in this instance providing new insights into the human relationship with Antarctica. By studying built environment in Antarctica, it also questions the focus of urban environmental historians on towns and cities. The study of built environment in environmental history does not need to be in typically 'urban' places, but can (and should) be widened to include, for example, farm buildings, huts in national parks, and remote scientific stations. Finally, this thesis extends environmental history's concern with culture by demonstrating that it is not only wilderness or rural landscapes that are culturally constructed. This research has shown that built environment, too, is constructed with narratives and social interrelationships. William Cronon called for more stories about stories about nature – telling more stories about stories about buildings should be part of this project.

Secondly, this thesis contributes to the efforts to unsettle Antarctic historiography, challenging polar historians to move on from an obsession with the Heroic Age and with explorative expeditions into the continent. Far more research ought to be done on humanity in Antarctica beyond the 1920s, and more research in general should be done on Antarctic bases and the experience of base life. The overwhelming human experience of Antarctica beyond the ship-based visit has been (and continues to be) that of the hut, base, or station, not the sledging journey or lonely tent. Regarding built environment and the West, the essayist Adam Gopnik writes: 'The world was once haunted by Titus Oates's self-made epitaph: "I am just

going outside and may be some time.” Well, *we* are going inside and may be some time; we *are* inside, and have been for a while’.³ Turning from the glittering expanse of the plateau, from powdered mountain ranges and the polished smiles of curving glaciers, this thesis has demonstrated the value of staying on base and going inside, investigating instead the cramped dormitory personalised with magazine clippings, the overheated workshop smelling of oil and sawdust, the gently humming and blinking laboratory, and the paths of well-trodden snow leading to the mess hall. Such an approach also shifts away from spotlighting the ‘Great Men’ of Antarctic history, creating space for the cooks, technicians, janitors, and mechanics, further opening the door to a new social history of Antarctica.

Finally, the thesis has challenged general, mainstream historians of Australia and New Zealand to consider more deeply those countries’ relationships with their enormous southern neighbour, rather than forgetting it as ‘a lacey fringe’ on a map.⁴ New Zealand and Australia have deep, significant historical connections with Antarctica. Geographically they are among the closest countries to Antarctica,⁵ and geologically they are siblings, all having been part of the great continent Gondwana. The ecosystems of New Zealand and Australia (or at least the latter’s southern regions) are affected by the great frozen mass to their south. Socially and culturally, the two countries have long relationships with Antarctica, playing significant roles in its exploration by sending expeditions of their own or acting as the jumping-off point for others. Cities such as Hobart and Christchurch, from which these expeditions typically departed and were administered, identified as Antarctic gateways, and this feeling remains strong today as modern Antarctic programmes continue to operate from them. New Zealand and Australia are politically deeply engaged with Antarctica as well of course, being key players in the Antarctic Treaty

³ Adam Gopnik, *Winter: Five Windows on the Season* (Toronto: Anansi, 2011), p.199.

⁴ Leslie Carol Roberts, *The Entire Earth and Sky: Views on Antarctica*, (Lincoln: University of Nebraska Press, 2008), p.5.

⁵ Anecdotally, New Zealand Prime Minister David Lange once called New Zealand ‘a strategic dagger pointed straight at the heart of Antarctica’.

System and having poured vast resources into making and sustaining territorial claims that, combined, mean they officially consider over half the continent to be within their sovereign borders. Given all this, it is extremely surprising that general national historians of Australia and New Zealand do not discuss Antarctica more prominently, or at all, in their histories.

In the depths of the winter of 1911, Edward Wilson, Henry ‘Birdie’ Bowers, and Apsley Cherry-Garrard journeyed from the *Terra Nova* expedition’s hut at Cape Evans to the far eastern end of Ross Island to gather samples of penguin eggs. Five weeks after setting off into the constant darkness of the polar winter, the men staggered back into the hut, frostbitten, malnourished, and exhausted, having survived huge privations and great cold. In *The Worst Journey in the World*, Cherry-Garrard began the chapter recounting that winter journey (for which he named the book) with a description of a party that took place a few days before they left on their journey.

The expedition was celebrating Midwinter, the traditional Antarctic day of festivities that marked the point at which the sun, imperceptibly at first, began returning to end the unbroken winter night. ‘Inside the hut are orgies’, Cherry-Garrard wrote, as the men became increasingly impaired and raucous. Gifts were given, and Titus Oates (who eight months later would be weakly stumbling from a tent into a blizzard and his death, uttering the famous explanation that he was just going outside) received a sponge and a whistle. He spent the evening blowing on his whistle at intervals and, asking if they were sweating, forcibly sponging his friends’ faces. Cherry-Garrard wrote:

As we turned in, [Oates] said, “Cherry, are you responsible for your actions?” and when I said Yes, he blew loudly on his whistle, and the last thing I remember was that he woke up Meares to ask him whether he was fancy free. It was a magnificent bust. Five days later and three men, one of whom at

any rate is feeling a little frightened, stand panting and sweating out in McMurdo Sound.⁶

The sudden swerve in Cherry-Garrard's narrative, from garrulous, child-like pleasure inside the hut to a situation of fear and discomfort outside, renders the narrative of the three men's struggles over the following weeks all the more shocking. The contrast is striking between the hut at Cape Evans, and all it represented to its occupants, and the Antarctic environment waiting just outside.

This contrast is in many ways at the root of this thesis, and is captured in its title. While nodding gratefully to Douglas Mawson's *Home of the Blizzard* and William Cronon's *Nature's Metropolis*, and referring to Antarctic bases themselves, 'Blizzard City' also invokes two concepts with its two words: the natural environment and the built, wilderness and civilization, nature and culture. This thesis holds those concepts separate as distinct words, yet pushes them into close relationship as a phrase. But it is a phrase with an unclear meaning, reflecting the complexities and ambivalences of any neat division between nature and culture. Does the phrase refer to a human city named after a natural phenomenon? A place constantly smothered by such phenomena? Or perhaps an imaginary city built and occupied by blizzards, a fairy-tale spirits' metropolis? Furthermore, the two words describe material phenomena *and* evoke cultural responses, reflecting the idea most central to this research: that any environment is constructed both materially and culturally. Andrew Ballantyne writes that when a building and a culture come into contact in this way

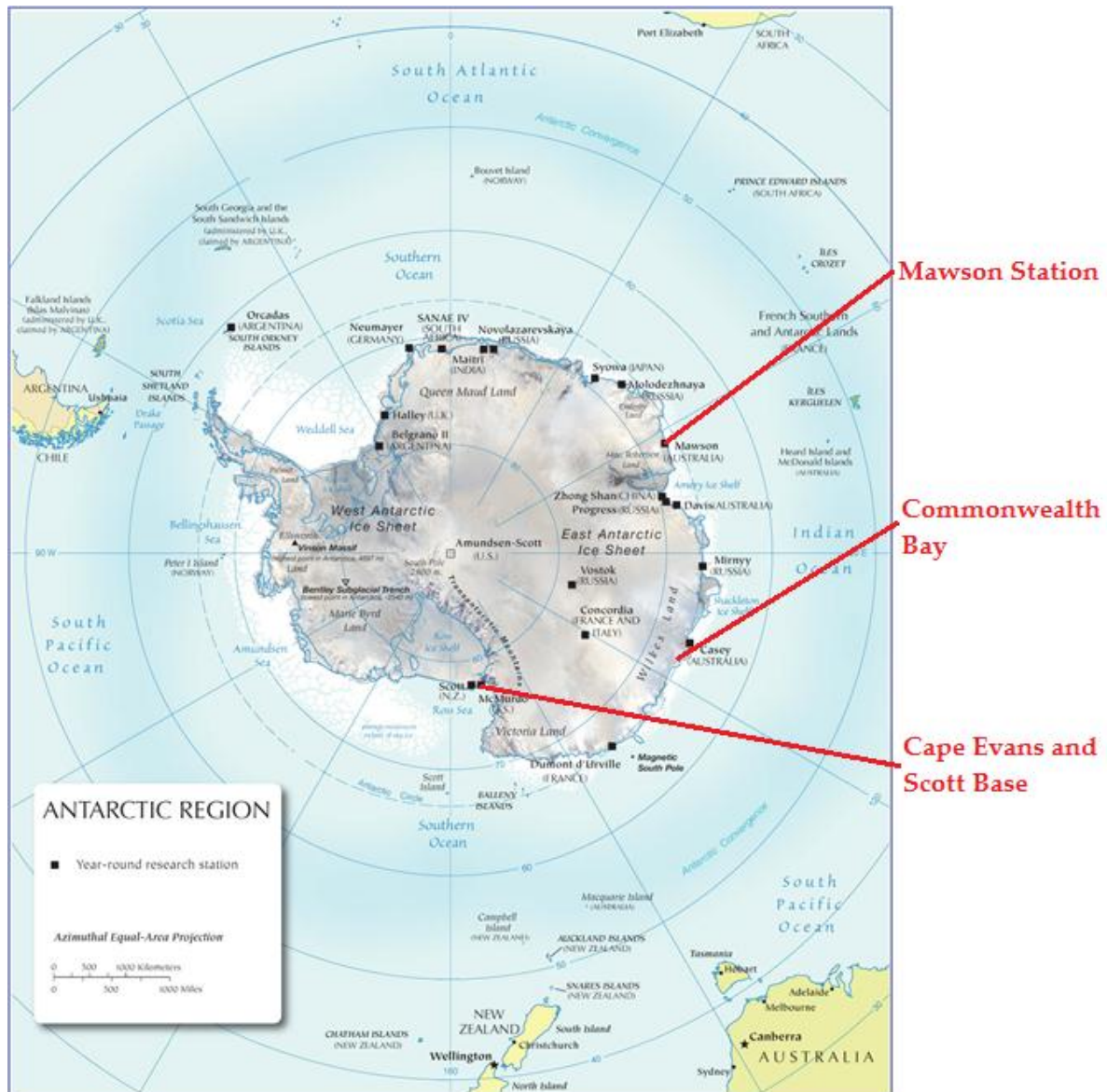
something valuable happens. We might be thrilled by it, or calmed, feel challenged or charmed, but if we do not pay attention to those responses ... then architecture dies in us, and the built world is an arid place.⁷

⁶ Apsley Cherry-Garrard, *The Worst Journey in the World*, new ed. (London: Chatto and Windus, 1965), pp.231-233.

⁷ Andrew Ballantyne, *Architecture: A Very Short Introduction* (Oxford: Oxford University Press, 2002), p.115.

This thesis began with Douglas Mawson, lost in a blizzard in 1912, and with two men fifty years later, watching another blizzard through a window at Mawson Station. For Sir Douglas, stumbling delightedly into the warmth and light of the hut at Commonwealth Bay, and for those men talking of their fathers and enjoying ‘the contrast of storm and sanctuary’, the built worlds of Antarctica, its blizzard cities, were many things – but they were not arid.

Appendix



(Original map source: Nations Online,
http://www.nationsonline.org/maps/antarctica_map.jpg)

Bibliography

PRIMARY SOURCES

Unpublished

National Library of Australia

Papers of Fred Elliott, MS 9442.

Papers of John Bechervaise, MS7972.

Papers of Philip Law, MS 9458.

Papers of Robert Summers, MS 9165.

Mitchell Library, State Library of New South Wales

'Australasian Antarctic Expedition – Records, 1 Dec. 1910 - 1 Dec. 1915', MLMSS 171.

Papers of Archibald McLean, MLMSS 382/2.

Papers of Charles Laseron, MLMSS 385.

Papers of Louis Macey, MLMSS 5343.

Papers of Walter Hannam, MLMSS 384.

Archives New Zealand

'Commonwealth Trans-Antarctic – Scientific and Technical (I.G.Y.) International Geophysical Expedition', 1958-1964, R4414884-C316145-AAMF-W3118-Box7-1963/967/3.

- 'Expedition – Commonwealth Trans-Antarctic – General', no dates, R4414834-AAMF-W3118-Box3-1955/2876.
- 'Expeditions – Antarctic and Ross Sea Expedition', 1948-1957, R2859070-C588242-ABLP-W4708-7213-Box62-29/7/-1.
- 'Government buildings – Scott Base, Antarctica', 1957, R20124806-C305534-AAQB-W3950-889-Box528-24/4374-4.
- 'Message for "Icebound" on New Zealand and Antarctica', 1959, R22851307-C344832-AEFZ-W5727-22620-Box172-196/0299.
- 'Notes for Prime Minister: Opening of Antarctic Symposium', 1953, R22851073-C344831-AEFZ-W5727-22620-Box171-194/0089.
- 'Ross Sea Committee – Trans Antarctic Expedition – Transport and Equipment – Tools and building materials', 1955-1957, R20084297-C747528-CAHU-CH89-Box1-t-1/5/9/1.
- 'Scientific Committee on Antarctic Research - Newspaper clippings', 1961, R20084361-C747382-CAHU-CH89-Box6-s-10/5/1.
- 'Scott Base Buildings', 1956-1960, R425930-C732452-CAYP-CH949-3460-Box19-c-1.
- 'Scott Base Building Programme, Minutes and Papers', 1961-1964, R425929-C732452-CAYP-CH949-3460-Box19-b.
- 'Scott Base – Fire Fighting', 1956, R425932-C732452-CAYP-CH949-3460-Box19-e.
- 'Scott Base – Newsletters, 'News From the South'', 1960-1969, R425939-C732452-CAYP-CH949-3460-Box19-l.
- 'Scott Base – Signals to and from Scott Base', 1960, R241411-C746357-CAHU-CH20-Box1-b.
- 'Scott Base – Signals to and from Scott Base', 1959-1962, R241412-C746357-CAHU-CH20-Box1-c.
- 'Scott Base – Signals to and from Scott Base', 1961, R241416-C746358-CAHU-CH20-Box2-a.
- 'Scott Base – Signals to and from Scott Base', 1961-1962, R241417-C746358-CAHU-CH20-Box2-b.

‘Scott Base – Signals to and from Scott Base – Miscellaneous’, 1959-1963, R241413-C746357-CAHU-CH20-Box1-d.

‘Trans Antarctic Expedition – Newspapers clippings 3 Jan-27 Dec 1957]’, 1957, R20084343-C747382-CAHU-CH89-Box6-a-10/5/1.

‘Trans Antarctic Expedition – Newspapers clippings [Jan 1957]’, 1957, R20084344-C747382-CAHU-CH89-Box6-b.

‘Trans Antarctic Expedition – Newspapers clippings [Feb 1957]’, 1958, R20284354-C747382-CAHU-CH89-Box6-c.

‘Trans Antarctic Expedition – Newspapers clippings [File Dec 1957]’, 1957, R20084351-CAHU-CH89-Box6-i.

‘Various Events and Topics Expedition to the Antarctic during International Geophysical Year Press Reports from Scott’, 1957, R18662576-C582821-AADL-W1516-564-Box470-c-2/20/8/1.

‘Antarctica – General’, 1953-1957, R20822175-C359965-AAFD-W2347-811-Box102-i-CAB409/1/1.

National Archives of Australia

‘Antarctic – Executive Planning Committee’, 1957-1959, 511015-A1838-1495/3/4/1-PART4.

‘Antarctica – Australian Antarctic Territory – General Policy’, 1956-1957, 536701-A1838-1495/3/2/1-PART2.

‘Antarctica – Expeditions to Antarctica – 1951-52-53-54’, 1952-1953, 554677-A1838-1495/4-PART4.

Oral sources

Bechervaise, John, interviewed by Suzanne Lunney, 1976, 2803258, National Library of Australia.

Images

Antarctica New Zealand Pictorial Collection.

Australian Antarctic Division Collection.

Personal Collection of Julian Evans.

'Plans – Scott Base – General Base Layout and Location Plans – 3 Sheets and Assembly Detail Plans for Buildings and Fittings', 1956-1960, R4915319-C676441-CAYP-CH947-3384-Folder9, Archives New Zealand.

PXE 725, Mitchell Library, State Library of New South Wales.

Published

Anonymous, 'Taste and Fashion', *New Englander and Yale Review*, April 1843, quoted in Nye, David E., 'Technology, Nature, and American Origin Stories', *Environmental History*, vol. 8, no. 1, 2003, pp.8-24.

Cherry-Garrard, Apsley, *The Worst Journey in the World*, new ed. (London: Chatto and Windus, 1965).

Evans, Edward, *South with Scott* (London: W. Collins and Sons, 1921).

Gould, Nat, *Town and Bush: Stray Notes on Australia* (London, 1896), quoted in Graeme Davison, 'The European City in Australia', *Journal of Urban History*, vol. 27, no. 6, 2001, pp.779-793.

Gran, Tryggve, *The Norwegian With Scott: Tryggve Gran's Antarctic Diary 1910-1913*, ed. Geoffrey Hattersley-Smith, trans. Ellen Johanne McGhie (London: National Maritime Museum, 1984).

Laseron, Charles, *South with Mawson: Reminiscences of the Australasian Antarctic Expedition, 1911-1914*, 2d ed. (Sydney: Angus and Robertson, 1957).

Lashly, William, *Under Scott's Command: Lashly's Antarctic Diaries*, ed. A. R. Ellis (London: Victor Gollancz, 1969).

Law, Philip, *Antarctica – 1984* (Hobart: Adult Education Board of Tasmania, 1964).

Law, Phillip and John Bechervaise, *ANARE: Australia's Antarctic Outposts*

- (Melbourne: Oxford University Press, 1957).
- Markham, Clements, 'Preface', in Robert Falcon Scott, *Journals: Captain Scott's Last Expedition*, ed. Max Jones (Oxford: Oxford University Press, 2005), pp. 3-4.
- Mawson, Douglas, 'Australasian Antarctic Expedition, 1911-1914', *The Geographical Journal*, vol. 44, no. 3, 1914, pp.257-284.
- Mawson, Douglas, *The Home of the Blizzard*, 6th ed. (London: Hodder and Stoughton, 1938).
- Mawson, Douglas, *Mawson's Antarctic Diaries*, eds. Fred Jacka and Eleanor Jacka (Crows Nest: Allen and Unwin, 2008).
- Douglas Mawson, article, *The Register*, 13 February 1925, no other information, quoted in Fred Jacka and Eleanor Jacka, 'Introduction', in Douglas Mawson, *Mawson's Antarctic Diaries*, eds. Fred Jacka and Eleanor Jacka (Crows Nest: Allen and Unwin, 2008), pp.xvii-1.
- Ponder, W. Frank, *A Man From the Ministry: Tales of a New Zealand Architect* (Christchurch: Caxton Press, 1996).
- Scott, Robert Falcon, *Journals: Captain Scott's Last Expedition*, ed. Max Jones (Oxford: Oxford University Press, 2005).
- Shackleton, Ernest, *South: The Endurance Expedition* (London: Penguin Books, 1919).
- Vitruvius, *On Architecture*, trans. Richard Schofield (London: Penguin, 2009).
- Wilson, Edward, *Diary of the Terra Nova Expedition to the Antarctic 1910-1912* (London: Blandford Press, 1972).

SECONDARY SOURCES

Books

- Attwood, Bain, *The Making of the Aborigines* (Sydney: Allen and Unwin, 1989).
- Ballantyne, Andrew, *Architecture: A Very Short Introduction* (Oxford: Oxford University Press, 2002).

- Chester, Jonathan, *Going to Extremes: Project Blizzard and Australia's Antarctic Heritage* (Sydney: Doubleday, 1986).
- Conway, Hazel and Rowan Roenisch, *Understanding Architecture: An Introduction to Architecture and Architectural History*, 2d ed. (London and New York: Routledge, 2005).
- Cowper, William, *The Task*, 1785, quoted in Leslie A. Clarkson, 'God, Man, and Cities: Creation, Re-Creation and Construction', *Journal of Urban History*, vol. 22, no. 6, 1996, pp.720-726.
- Cronon, William, *Nature's Metropolis: Chicago and the Great West* (New York and London: W. W. Norton, 1991).
- Fogg, G. E., *A History of Antarctic Science* (Cambridge: Cambridge University Press, 1992).
- Fox, William L., *Terra Antarctica: Looking Into the Empty Continent* (San Antonio: Trinity University Press, 2005).
- Gooday, Graeme, *Domesticating Electricity: Technology, Uncertainty, and Gender, 1880-1914* (London: Pickering and Chatto, 2008).
- Gopnik, Adam, *Winter: Five Windows on the Season* (Toronto: Anansi, 2011).
- Griffiths, Tom, *Slicing the Silence: Voyaging to Antarctica* (Cambridge, Mass. and London: Harvard University Press, 2007).
- Hains, Brigid, *The Ice and the Inland: Mawson, Flynn, and the Myth of the Frontier* (Melbourne: Melbourne University Press, 2002).
- Hamer, David, *New Towns in the New World: Images and Perceptions of the Nineteenth-Century Urban Frontier* (New York: Columbia University Press, 1990).
- Hanson, Elizabeth, *Animal Attractions: Nature on Display in American Zoos*, (Princeton and Oxford: Princeton University Press, 2002).
- Harrowfield, David L., *Call of the Ice: Fifty Years of New Zealand in Antarctica* (Auckland: David Bateman, 2007).
- Harrowfield, David, *Icy Heritage: The Historic Sites of the Ross Sea Region* (Christchurch: Antarctic Heritage Trust, 1995).

- Hynes, Samuel, *A War Imagined: The First World War and English Culture* (New York: Atheneum, 1991).
- Massey, Doreen, *For Space* (London, Thousand Oaks, and New Delhi: SAGE, 2005).
- McCulloch, G., *Documentary Research in Education, History and the Social Sciences* (London and New York: Routledge, 2004).
- McDowell, W. H., *Historical Research: A Guide* (Harlow and New York: Longman, 2002).
- McGonigal, David and Woodworth, Lynn, *Antarctica: The Complete Story* (Auckland, Random House, 2001).
- Merchant, Carolyn, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (San Francisco: Harper and Row, 1980).
- Merchant, Carolyn, *Reinventing Eden: The Fate of Nature in Western Culture* (New York and London: Routledge, 2004).
- Pyne, Stephen, *The Ice: A Journey to Antarctica* (Seattle and London: University of Washington Press, 1986).
- Quartermain, L. B., *New Zealand and the Antarctic* (Wellington: Government Printer, 1971).
- Quartermain, L. B., *South to the Pole: The Early History of the Ross Sea Sector* (Oxford: Oxford University Press, 1967).
- Roberts, Leslie Carol, *The Entire Earth and Sky: Views on Antarctica*, (Lincoln: University of Nebraska Press, 2008).
- Rykwert, Joseph, *On Adam's House in Paradise: The Idea of the Primitive Hut in Architectural History*, 2d ed. (Cambridge, Mass. and London: MIT Press, 1981).
- Schama, Simon, *Landscape and Memory* (New York: Vintage Books, 1995).
- Spufford, Francis, *I May Be Some Time: Ice and the English Imagination* (London: Faber and Faber, 1995).
- Templeton, Malcolm, *A Wise Adventure: New Zealand and Antarctica 1920-1960* (Wellington, Victoria University Press), 2000.
- Thomas, Keith, *Man and the Natural World: Changing Attitudes in England 1500-1800*

(London: Allen Lane, 1983).

Wheeler, Sara, *Terra Incognita: Travels in Antarctica* (London: Jonathan Cape, 1996).

Williams, Raymond, *Problems in Materialism and Culture: Selected Essays* (London: Verso, 1980).

Yanni, Carla, *Nature's Museums: Victorian Science and the Architecture of Display* (Baltimore: Johns Hopkins University Press, 1999).

Articles

Abbott, Carl, 'Thinking About Cities: The Central Tradition In U.S. Urban History', *Journal of Urban History*, vol. 22, no. 6, 1996, pp.687-701.

Baldwin, Peter C., 'In the Heart of Darkness: Blackouts and the Social Geography of Lighting in the Gaslight Era', *Journal of Urban History*, vol. 30, no. 5, 2004, pp.749-768.

Carey, Mark, 'The History of Ice: How Glaciers Became an Endangered Species', *Environmental History*, vol. 12, no. 3, 2007, pp.497-527.

Collis, Christy, 'The Proclamation Island Moment: Making Antarctica Australian', *Law Text Culture*, vol. 8, 2004, pp.39-56.

Collis, Christy and Quentin Stevens, 'Cold Colonies: Antarctic Spatialities at Mawson and McMurdo Stations', *Cultural Geographies*, vol. 14, 2007, pp. 234-254.

Cronon, William, 'A Place for Stories: Nature, History, and Narrative', *Journal of American History*, vol. 78, no.4, 1992, pp.1347-1376.

Davison, Graeme, 'The European City in Australia', *Journal of Urban History*, vol. 27, no. 6, 2001, pp.779-793.

Dodds, Klaus, 'The Great Trek: New Zealand and the British/Commonwealth 1955-58 Trans-Antarctic Expedition', *The Journal of Imperial and Commonwealth History*, vol. 33, no. 1, 2005, pp.93-114.

Flanagan, Maureen A., 'Environmental Justice in the City: A Theme for Urban

- Environmental History', *Environmental History*, vol. 5, no. 2, 2000, pp.159-165.
- Griffiths, Tom, 'The Cultural Challenge of Antarctica: The 2007 Stephen Murray-Smith Memorial Lecture', *La Trobe Journal*, no. 82, 2008, pp.4-18.
- Keene, Derek, 'Cities and Empires', *Journal of Urban History*, vol. 32, no. 1, 2005, pp.8-21.
- Kirby, Val G., Emma J. Stewart, and Gary D. Stee', 'Thinking About Antarctic Heritage: Kaleidoscopes and Filters', in *Landscape Research*, vol. 26, no. 3, 2001, pp.189-202.
- Massey, Doreen, 'Places and Their Pasts', *History Workshop Journal*, No. 39, 1995, pp.182-192.
- McNeill, J. R., 'Observations on the Nature and Culture of Environmental History', *History and Theory*, vol. 42, no. 4, 2003, pp.5-43.
- McNeur, Catherine, 'The "Swinish Multitude": Controversies over Hogs in Antebellum New York City', *Journal of Urban History*, vol. 37, no. 5, 2011, p.639-660.
- Melosi, Martin V., 'Humans, Cities, and Nature: How Do Cities Fit in the Material World?', *Journal of Urban History*, vol. 36, no. 1, 2010, pp.3-21.
- Melosi, Martin V., 'The Place of the City in Environmental History', *Environmental History Review*, vol. 17, no. 1, 1993, pp.1-23.
- Nye, David E., 'Technology, Nature, and American Origin Stories', *Environmental History*, vol. 8, no. 1, 2003, pp.8-24.
- Pyne, Stephen, 'The End of the World', *Environmental History*, vol. 12, no. 3, 2007, pp.649-653.
- Pyne, Stephen, 'Heart of Whiteness: The Exploration of Antarctica', *Environmental Review*, vol. 10, no. 4, 1986, pp.231-246.
- Robson, Brian, 'No City, No Civilization', *Transactions of the Institute of British Geographers*, vol. 19, no. 2, 1994, pp.131-141.
- Rosen, Christine M. and Joel A. Tarr, "The Importance of an Urban Perspective in Environmental History," *Journal of Urban History*, vol. 20, 1994, pp.299-310.

- Taylor, Alan, "'Wasty Ways': Stories of American Settlement', *Environmental History*, vol. 3, no. 3, 1998, pp.291-311.
- Simpson-Housley, Paul and Jamie S. Scott, 'Poles Apart? The Terra Nova and Fram Antarctic Expeditions and Judeo-Christian Attitudes Towards Nature', *Transactions of the Institute of British Geographers*, vol. 18, no. 3, 1993, pp.395-400.
- Stanley, Liz, 'The Epistolarium: On Theorizing Letters and Correspondences', *Auto/Biography*, vol. 12, no. 3, 2004, pp.201-235.
- Stine, Jeffrey K. and Joel A. Tarr, 'Technology and the Environment: The Historians' Challenge', *Environmental History Review*, vol. 18, no. 1, 1994, pp.1-7.
- Worster, Donald, 'Transformations of the Earth: Toward an Agroecological Perspective in History', *The Journal of American History*, vol. 76, no. 4, 1990, pp.1087-1106.

Chapters in collected works

- Blumenfeld, Hans, 'Continuity and Change in Urban Form', in Larry S. Bourne (ed.), *Internal Structure of the City: Readings on Urban Form, Growth, and Policy*, 2d ed. (New York and Oxford: Oxford University Press, 1982), pp.46-56.
- Corner, James, 'Terra Fluxus', in Charles Waldheim (ed.), *The Landscape Urbanism Reader* (New York: Princeton Architectural Press, 2006), pp.21-33.
- Cronon, William, 'In Search of Nature', in William Cronon (ed.), *Uncommon Ground: Rethinking the Human Place in Nature* (New York and London, W. W. Norton, 1996).
- Davison, Graeme, 'The City as Natural System: Theories of Urban Society in Early Nineteenth-Century Britain', in Derek Fraser and Anthony Sutcliffe (eds.), *The Pursuit of Urban History* (London: Edward Arnold, 1983), pp.349-370.
- Hernández, Felipe and Lea Knudsen Allen, 'Post-colonizing the Primitive', in Jo Odgers, Flora Samuel, and Adam Sharr (eds.), *Primitive: Original Matters in*

- Architecture* (London and New York: Routledge, 2006), pp.73-85.
- Holm, Lorens, 'The Primitive Hut: Fantasies of Survival in an All-White World', in Jo Odgers, Flora Samuel, and Adam Sharr (eds.), *Primitive: Original Matters in Architecture* (London and New York: Routledge, 2006), pp.43-54.
- Hvattum, Mari, 'Origins Redefined: A Tale of Pigs and Primitive Huts', in Jo Odgers, Flora Samuel, and Adam Sharr (eds.), *Primitive: Original Matters in Architecture* (London and New York: Routledge, 2006), pp.33-42.
- McHarg, Ian L., 'The Place of Nature in the City of Man', in Ian G. Barbour (ed.), *Western Man and Environmental Ethics: Attitudes Toward Nature and Technology* (Reading: Addison-Wesley, 1973), pp.171-186.
- Pawson, Eric, 'On the Edge: Making Urban Places', in Eric Pawson and Tom Brooking (eds.), *Environmental Histories of New Zealand* (Melbourne: Oxford University Press, 2002), pp.200-214.
- Pawson, Eric and Tom Brooking, 'Introduction', in Eric Pawson and Tom Brooking (eds.), *Environmental Histories of New Zealand* (Melbourne: Oxford University Press, 2002), pp.1-18.
- White Jr., Lynn, 'The Historical Roots of our Ecologic Crisis', in Ian G. Barbour (ed.), *Western Man and Environmental Ethics: Attitudes Toward Nature and Technology* (Reading: Addison-Wesley, 1973), pp.18-30.
- Worster, Donald, 'Appendix: Doing Environmental History', in Donald Worster (ed.), *The Ends of the Earth: Perspectives on Modern Environmental History*, (Cambridge: Cambridge University Press, 1988), pp.289-308.

Theses

- Ladd, Susan E., *Southern Comfort on Ice: Issues of Ownership, Use and Management of Heritage in the Ross Sea Region of Antarctica*, unpublished Master of Applied Science thesis, Lincoln University, 1999.

Rooten, David, *The Design and Serviceability of Antarctic Stations*, unpublished Master of Philosophy thesis, University of Cambridge, 1987.

Unpublished secondary material

Antarctic Heritage Trust, *Conservation Plan: Scott's Hut, Cape Evans* (Christchurch: Antarctic Heritage Trust, 2004).

'Draft Guide including index to correspondents', no date, MLMSSS 171, Mitchell Library, State Library of New South Wales.