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Timothy O'Rourke, *University of Queensland*

Architectural Experiments in Aboriginal Housing in the Early 1970s

Identified and represented as a problem in the post-war period, the quality and quantity of Aboriginal housing has been a persistent challenge for government housing providers and designers. In the early 1970s, a small number of architects responded to the problem with ideas and designs for Aboriginal housing. This paper draws together case studies of architectural designs for Aboriginal housing produced in this period. It documents the influence of the Aboriginal Housing Panel, formed in the wake of a national seminar on Aboriginal housing convened by the Royal Australian Institute of Architects in 1972. Established initially as an advisory body and conduit between architects and Aboriginal housing associations, the Panel supported exploratory research on Indigenous housing and the development of housing prototypes by architects. The climatic, economic, logistic and historical conditions presented complex challenges for the architects. Although the experimental design schemes were considered largely unsuccessful, the architectural ambitions and ideas were not without merit. The use of experimental construction was a common feature of the projects. Despite extensive criticism of the schemes, much was learned from the construction methods and assessments of the occupants' use of the completed designs and their architectural qualities. The Aboriginal Housing Panel's emphasis on evaluation of the completed projects, resulting in a number of reports, established a seminal body of architectural knowledge on Indigenous housing. This paper argues that these historical precedents continue to provide lessons on the design and delivery of Aboriginal housing. Without knowledge of these precedents, the ideas and their deficiencies, well-intentioned architects and policy makers may reproduce the mistakes from the recent past.

Introduction

It is difficult to determine the earliest date that architects in Australia began contributing to the design of houses for Aboriginal people. Aboriginal housing as a government policy concern or problem had its roots in the 1950s, but it was not until the late 1960s that political action, government policy and expenditure created opportunities for the greater participation of the architectural profession. The 1967 referendum and political agitation in the 1960s gave rise to principles of Aboriginal self-determination and the establishment of Aboriginal Housing Associations across the country.

In the October 1967 edition of *Architecture Australia*, Balwant Saini noted the profession's lack of attention to Aboriginal housing and, in a lengthy article, described the complexities of this considerable architectural challenge.¹ Saini (from the Architecture Department at the University of Queensland) made a number of astute observations about the social and cultural requirements of housing Aboriginal people in the more remote parts of Australia, including the potential contribution of anthropologists to design. A year later, Ian Mackay reported on the housing conditions of Aboriginal people in rural New South Wales, which portrayed a bleak picture of fringe camps and humpies.²

A turning point in the profession's engagement with the Indigenous housing crisis was a national seminar in 1972 convened by the Royal Australian Institute of Architects (RAIA), which led to the formation of an advisory group of architects, the Aboriginal Housing Panel.³ With greater political, academic and professional interest in ameliorating the shortage and low quality of housing, governments and the nascent Aboriginal housing associations began to engage architects. Although attention to the problem was neither far-reaching nor consistent, the 1970s was a significant period for architectural advocacy, and the generation of knowledge, ideas and relationships that influenced a number of practitioners and academics whose work continues to inform practice to the present day.

This paper is part of a broader project to collate and analyse data on houses designed by architects for Aboriginal people and Torres Strait Islanders in the 1970s and -80s. Analyses of these projects raise questions about professional practice, architectural themes and ideas, and the quality and performance of the few designs that were built. The paper collates data on a number of architectural case studies in the early 1970s, which are described within the context of the profession's newfound attention on Indigenous housing.

In the early 70s, the design of Aboriginal housing was a difficult task given the locations and historical and socio-cultural backgrounds of the people architects were required to house.

1 Balwant Singh Saini, "Aboriginal Problem - An architect's view," *Architecture Australia* (October 1967), 782-95.

2 Ian McKay, "Housing for aborigines in New South Wales," *Architecture Australia* (June 1968), 486-94.

3 Royal Institute of Australian Architects, *Aboriginal Housing Panel Annual Report* (Canberra: Royal Australian Institute of Architects, 1973).

Perceptive architects recognized the need for extended consultation in the early phases of the design process but there was little recourse to design precedent although gradually knowledge of the organization of traditional camps and their use began to influence architects in this formative decade.⁴ The sheer scale of the housing shortage, the remote locations, the climates and limited funds led to experimental approaches to design and construction. Harsh criticism of a number of the designs was delivered in reports by consultants based on technical evaluations and responses by Aboriginal users. It is tempting to dismiss these early projects as naïve and of marginal historical significance, but I attempt to show here that the site conditions and architectural zeitgeist favoured experimentation and merit can be found in the solutions. This paper is interested in the architectural intentions of the designers, which, I hope to show in further research, reappear in projects and housing policy in the three decades following the 1970s.

Remote and Rural Focus

In this paper, there is an emphasis on remote housing, which in part reflects the available archival evidence and the political and professional attention (which has continued to the present despite demographic shifts to major cities). Ian McKay's report on the Aboriginal population and housing in New South Wales focussed on the rural towns partly because of the shortage of information on the relatively large urban population. His limited urban data showed Aboriginal families were concentrated in poorer suburbs such as Redfern and frequently living in extremely crowded conditions.⁵ Some Aboriginal tenants occupied public housing in the 1960s, but this urban accommodation was generic rather than purpose built for Indigenous people. In rural and remote regions, the majority of Aboriginal people on reserves, pastoral properties and town camps, lived in either self-built humpies and huts, frequently utilizing Aboriginal building traditions, or rudimentary cottages built on missions and government settlements. Tim Rowse has argued that Indigenous Australians were absorbed into cities in post-war migrations whereas rural municipalities segregated and, to a certain extent, controlled Aboriginal labour through the use of reserves and fringe camps.⁶ Solutions to the Aboriginal housing problem were directed toward these more architecturally conspicuous fringe camps, missions and reserves, with this focus compliant with policies of integration and assimilation.

4 See Michael Heppell, (ed.), *A black reality: Aboriginal camps and housing in remote Australia* (Canberra: Australian Institute of Aboriginal Studies, 1979).

5 McKay, "Housing for aborigines in New South Wales," 94.

6 Tim Rowse, "Housing and Colonial Patronage, Alice Springs, 1920-65," in *Settlement: A history of Australian Indigenous housing*, ed. Peter Read (Canberra: Aboriginal Studies Press, 2000), 85-98.

Transitional Housing

In the 1950s and -60s policies of assimilation led to the use of transitional housing as a step between self-constructed camps and mainstream public housing.⁷ In the Northern Territory, government policy makers advocated the use of three dwelling types to bridge the behavioural gap between nomadic and sedentary life in mainstream housing: un-serviced, single-room shelters; two-roomed houses with water and electricity; and two to three bedroom standard housing commission types.⁸ This policy was not without precedent. The use of huts and cottages (and dormitories) to assimilate Aboriginal people is evident in the mission architecture of the nineteenth and early twentieth century.⁹ The various rudimentary transitional huts and shelters used on government settlements rarely displayed the skills of an architect, but the idea of a transitional stage between customary camps and conventional housing influenced architectural designs in the 1970s. In many of the settlements, the Aboriginal people had no experience of living in conventional mainstream housing, which heightened the design challenge for architects.



Fig. 1. A Kingstrand hut at Areyonga Mission, 1958. National Archives Australia.

The prefabricated Kingstrand hut was used extensively for the first stage of transitional housing across the Northern Territory communities (for example in Amoonguna, Papunya, Yuendumu, and Warrabri).¹⁰ An unlined, un-insulated single room dwelling, clad in aluminium sheet on a concrete slab, the Kingstrand huts were notorious for their poor levels of thermal comfort, particularly in summer when they compared poorly with traditional spinifex-clad wiltja (fig. 1).¹¹

7 Saini, "Aboriginal Problem - An architect's view," Jeremy Long, "The Commonwealth Government and Aboriginal Housing, 1968-81," in *Settlement*, ed. Read, 103-17.

8 Department of the Interior, "Aboriginal Housing in the Northern Territory," in Royal Australian Institute of Architects, *Aboriginal housing: A report of a seminar*, (Canberra: The Royal Australian Institute of Architects, 1972) 1-12; G. E. Laikve, "Aboriginal Housing in South Australia," in *Aboriginal housing: A report of a seminar*, ed. Royal Australian Institute of Architects (Canberra: The Royal Australian Institute of Architects, 1972) 1-37.

9 Bain Attwood, "Space and Time at Ramahyuck, Victoria, 1863-85," in *Settlement*, ed. Read, 41-54.

10 Photographic records in the National Archive attest the widespread use of the Kingstrand huts across Northern Territory settlements.

11 Saini, "Aboriginal Problem - An architect's view," 792.

Aboriginal Housing Panel

Prior to the 1970s, only a few architects in state public works departments were designing houses for Aboriginal settlements, such as Aurukun and Mornington Island in Queensland. Increased federal expenditure on Aboriginal housing at the beginning of the 1970s was a decisive factor in a greater role for architects in remote and rural housing projects.¹² In its recognition of the housing problem, the Aboriginal Housing Panel created a forum within the architectural profession and opportunities to design projects for a few of its members. The history of the panel and its activities are a significant source of data on the architectural designs and the discourse surrounding housing problems across most of the 1970s.

The panel was established as a committee by the Royal Australian Institute of Architects in 1972 "to provide assistance, advice and co-ordination to Aboriginal, Government, professional and community organization".¹³ Funded by the Department of Aboriginal Affairs, the first committee consisted of volunteers including Michael Griggs (chair), Peter Hamilton, Ron Sevitt, and Ken Woolley, with Virginia Braden as secretary. Aboriginal members Charles Perkins and Ray Nagas were both on the Panel in 1974. The Panel was incorporated in 1976 (as the Aboriginal and Torres Strait Islander Housing Panel) and reduced its dependence on the RAI, although architects remained on staff. Aboriginal representatives formed the majority of the committee by the time the Australian Government ceased its funding in 1978.¹⁴ Michael Heppell, an anthropologist who was appointed the director of the Panel in 1975, described the first three years as exploratory, noting an emphasis on the development of satisfactory buildings for remote Aborigines based on proper consultation and sound working relationships with Aboriginal groups.¹⁵ From its inception, the housing research was included on its agenda: "The Panel's tasks include collection and co-ordination of existing research information, conduct of further research, a review of the relative effectiveness of existing housing, pilot studies for proposed housing schemes and design and testing of prototype solutions."¹⁶

More specific architectural objectives of the Panel were enumerated in an early introductory letter to the architectural profession and these included: "[The] design of houses for specific climatic and geographical regions; investigate the use of mobile housing; study the use of materials for houses. This includes the use of local materials such as spinifex and others, for example fibre glass; research into the formation of regional construction groups; investigate methods of disseminating information about housing to Aborigines."¹⁷ Many of these objectives were developed and tested

12 Michael Heppell, "Introduction: Past and present approaches and future trends in Aboriginal housing," in *A black reality*, ed. Heppell, 1-64; Department of the Interior, "Aboriginal Housing in the Northern Territory."

13 Aboriginal Housing Panel, "The Aboriginal Housing Panel - Report for 1974," *Aboriginal News* 1 (1975), 8-9.

14 Michael Heppell, "Epilogue: The Aboriginal and Torres Strait Islander Housing Panel," in *A black reality*, ed. Heppell, 229-46.

15 Heppell, "Epilogue: The Aboriginal and Torres Strait Islander Housing Panel," 230-31.

16 Royal Australian Institute of Architects, "The Aboriginal Housing Panel," Letter (Red Hill, ACT: RAI, April, 1973), 1-2.

17 Royal Australian Institute of Architects, "The Aboriginal Housing Panel," Letter (Red Hill, ACT: RAI, 1974), 1-3.

in the Desert Housing Project, initiated by the Panel in 1973.¹⁸ In an attempt to provide Aboriginal housing types suited to arid regions, the project set out to design, construct and evaluate a range of experimental dwellings for Central Australian settlements. The comprehensive report on the project and its prototypical designs by the Panel's director Michael Heppell was the first post-occupancy evaluation of Aboriginal housing. Unfortunately, Heppell was to cancel the project due to insufficient funds.¹⁹

Annual reports and minutes from the Australia wide meetings of the Panel record the participation, ideas and activities of architects in the early 1970s. Architects and social scientists were engaged by the Panel to evaluate town planning and housing design in settlements across Australia, including architects Peter Hamilton, Peter Myers and Paul Memmott and anthropologist Derek Freeman. Heppell's reports and books from the 1970s have become important documents in the history of Aboriginal housing. The following case studies begin to demonstrate the significance of the Aboriginal Housing Panel as well as the influence of the participants and architectural ideas in this formative period.

Laverton House

The house for the community of Laverton in Western Australia designed by architect L. Howroyd is a notable example of experimental design driven by misconceptions and professional hubris rather than an informed understanding of the users' preferences or needs. The architect did attempt to analyse the needs of Aboriginal people at Laverton, but his design rationale is patronizing and naïve. Members of the local community apparently rejected the design proposal but construction went ahead.²⁰ Heppell described the technical problems and socio-cultural inadequacies of the one completed design. The circular plan was enclosed with a 2.5 m high earth brick wall with roof cover limited to the prefabricated service core – the openness enabled the users to see the stars (fig. 2).

African vernacular dwellings may have influenced the organic form but the prefabricated service core was entirely modern. Not surprisingly, the Laverton community rejected the house, and not only because of the lack of shelter it provided. The house also failed because it restricted views of the horizon and the surrounding community. Although courtyard design is a common planning solution for arid-region vernacular housing, even a more considered plan than the Laverton house would compromise the socio-cultural requirements for views and surveillance from external living areas. Earth construction has made sporadic appearances in remote Aboriginal housing since at least the 1960s but rarely succeeded on a large scale.

18 Michael Heppell, "*Desert housing project*," occasional report no. 3 (Canberra: Aboriginal and Torres Strait Islander Housing Panel, 1977).

19 Paul Memmott, "The Tangentyre housing stock assessment," unpublished report (Brisbane: Aboriginal Data Archive, The University of Queensland, January 1989), 27.

20 Heppell, "Introduction: Past and present approaches and future trends in Aboriginal housing," 31-33.

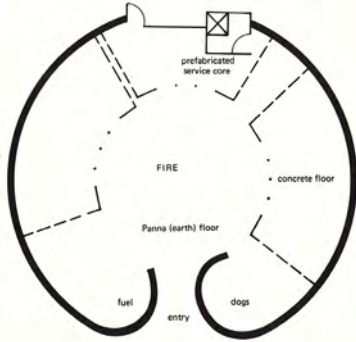


Fig. 2. The plan of the Laverton House
Drawing: Michael Heppell 1979.

Ernabella Housing

Adelaide architect W. Lance Brune designed houses for the Aboriginal community of Ernabella in South Australia. Unfortunately the sketch design for the most interesting house was the only available documentation of the project although photographs of a completed dwelling show that at least one version of the house was constructed in Ernabella. The influence of local traditional domical dwellings is suggested in the isometric sketch and the concept of transitional housing is indicated in the plan options. Numerous practitioners working in this field have struggled with the architectural representation and symbolism of housing, with Aboriginal people in remote areas frequently preferring housing that is more conventional in appearance.²¹

Finke Housing and the Aputula House

Architect Andrew McPhee, from Alice Springs, presented a paper at the RAI's national seminar on housing 1972 and was involved in the activities of the AHP, including the formation of a regional branch of the Panel in Central Australia.²² A detailed study of McPhee's work on Aboriginal housing is yet to be undertaken but his practice in Alice Springs was involved in a number of Aboriginal housing projects.²³ His design for housing at Finke, dated 1970, appears to be influenced by transitional housing but demonstrates a number of thoughtful planning decisions that are likely to have been based on observations of Aboriginal living preferences. Planned on a 4 foot (1.2 m) module, the relatively wide and encompassing verandahs, semi-enclosed outdoor sleeping and living areas and a large bedroom prefigure later recommendations for remote Aboriginal housing (fig. 4).

21 Jane Dillon and Mark Savage, "House design in Alice Springs Town Camps" in *Housing design in Indigenous Australia*, ed. Paul Memmott (Canberra: Royal Australian Institute of Architects, 2001), 44.

22 K. Andrew McPhee, "Aboriginal housing," in *Aboriginal housing: A report of a seminar*, ed. Royal Australian Institute of Architects (Canberra: Royal Australian Institute of Architects, 1972).

23 Antony McPhee, "Housing: Aboriginal clients," in *Architecture Australia* 96, no. 6 (November 2007).

Based on his observations of Aboriginal camps and housing, McPhee designed a house with a space frame roof, initially proposed for the Aboriginal community at Finke, and described in his 1972 seminar paper.²⁴ This design was one of the prototypical houses built in the Desert Housing Project, named the Aputula Mark III Space Frame house.

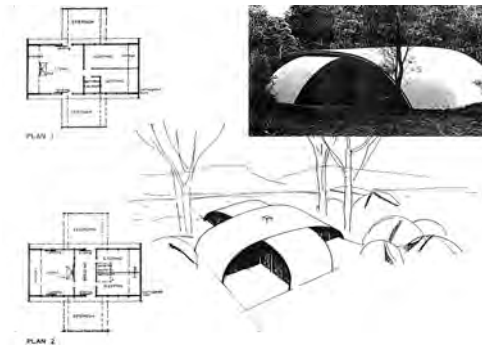


Fig. 3. Aboriginal housing at Ernabella
Peter Hamilton/Aboriginal Environments Research Centre.

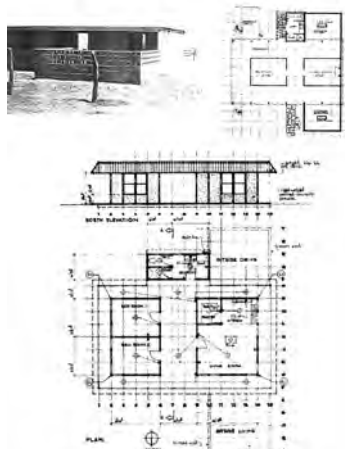


Fig. 4. A house at Finke by Andrew McPhee and
drawings of the Aputula Space Frame house below
Aboriginal Environments Research Centre and McPhee 1972.

The steel space frame was assembled on a floor slab and then lifted into position and fixed to four posts, clad in steel roof sheets and insulated. The modular wall system was to be made on site from lightweight concrete (fig. 4). The rationale for the design was based on a number of technical and social propositions. The space frame roof and modular structure were designed to allow for planning flexibility and capacity to rearrange and add to the house through a series of stages, as the residential group changed. The space frame and wall panels were to encourage local participation

²⁴ McPhee, "Aboriginal housing".

in the construction. The developed design was built in a number of communities in central Australia, mostly from a kit of parts supplied by prefabricators from Alice Springs or Adelaide.²⁵

Built versions of the design attracted extensive criticism in Heppell's report to the Aboriginal Housing Panel.²⁶ The relative cost of the Aputula houses compared with more standard structures, thermal performance and technical faults were the major shortcomings of this technological approach to the housing problem - particularly air infiltration and problems with heating in winter. The size of the dwelling, compared to a traditional humpy, attracted criticism, but so did the difficulty of extending the space frame structure to add more accommodation. The assembly of the space frame was also unnecessarily complex and time consuming and the report indicates that the design required further refinements.²⁷ Despite its failings, the thorough evaluation of the design, cost, construction and performance of the Aputula prototypes (only six were built) contributed to knowledge of remote Aboriginal housing. McPhee went on to design further houses for Aboriginal communities but was frustrated by the task toward the mid-70s.²⁸ (Peter Hamilton described McPhee's approach to Aboriginal housing as sensitive and thoughtful.)

Clarke, Gazzard and Flowers at Mowanjum

The Mowanjum Community, just south of Derby on the Western Australian coast, provides a noteworthy case study in Aboriginal settlement planning and housing design in the 1970s. In 1973, the Mowanjum Housing Society appointed the firm Clarke, Gazzard and Flowers to prepare a town plan and housing design for the community.²⁹ Don Gazzard had volunteered to work for the Aboriginal Housing Panel and visited three communities in Western Australia, where the practice ran a Perth office. Gazzard said that this was a time of incessant discussions, shoestring budgets and impediments to realizing projects.³⁰

During the initial design phase the anthropologist Derek Freeman from the Australian National University prepared two reports on the community for the Aboriginal Housing Panel in 1974. These provided a relatively thorough historical, social and cultural account of the community at Mowanjum as well as an evaluation of the design proposals based on consultation with community members - Freeman met with Flowers to discuss the designs.³¹ John Flowers produced three sketch designs, dated 1973, for two, three and four bedroom houses. Large covered areas were included in all three

25 Heppell, *Desert housing project*, Occasional Report No. 3 (Canberra: Aboriginal Housing Panel).

26 Heppell, *Desert housing project*, 96-98.

27 Heppell, *Desert housing project*, 96.

28 Michael Heppell and Julian Wigley, *Black out in Alice: A history of the establishment and development of town camps in Alice Springs* (Canberra: Australian National University, 1979), 157.

29 John Derek Freeman "A report on the Mowanjum Community with special reference to its housing needs" (Canberra: Australian National University, Department of Anthropology, 7 November 1974).

30 Don Gazzard, personal communication (6 February 2014).

31 Freeman, "A report on the Mowanjum Community," 30-31.

plans, which garnered praise from Freeman for both climatic and social reasons. Photographs by Bal Saini, taken in 1978, show recently completed housing at Mowanjum, but there are some differences, or compromises, between the images and drawings (fig. 5). In 1974, Gazzard wrote a spirited defence of the firm's town plan and house designs after a critical report by Peter Myers, prepared under the auspices of the Aboriginal Housing Panel (but not sighted by this author).³²

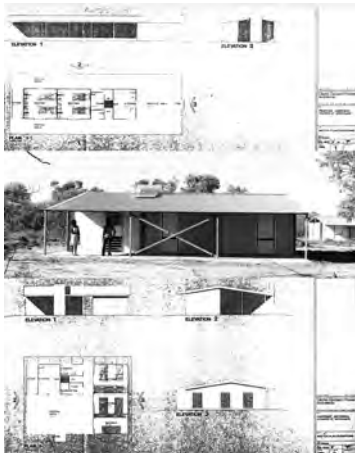


Fig. 5. Drawings and photograph of houses at Mowanjum. Aboriginal Environments Research Centre/Balwant Saini.

Wiltja Designs

The Desert Housing Project supported the fabrication and installation of two tent-like structures: the James Wiltja and the Geodom. A third structure, the 3B wiltja (a small-scale fibre-glass shelter) was not built. Employed as a temporary but quick method of providing shelter, the designs were presumably based on observations of traditional domical dwellings (Hamilton presented his research on wiltja in his 1972 seminar paper). The structures show similarities to the architectural experiments of the counterculture movements, which were documented in the mainstream architectural media in the era.³³ The James *Wiltja* was a steel-framed tent-like structure designed by Bill James of the South Australian Housing Trust as a short-term solution to remote housing shortages. Interlocking steel rods created a structure 2.1 m square and 1.4 m high, which was covered by canvas fabrics or synthetic fabrics such as Kordex and Nylex (fig. 6). Catherine Keys has noted that 17 James wiltjas were erected in Yuendumu alone and proved popular with the

32 Donald Gazzard, Letter (29 April 1974) [copy held in the Aboriginal Environments Research Centre, The University of Queensland].

33 For example in *Architecture Australia* (April 1975).

community.³⁴ The Geodom was a steel-framed geodesic dome with a fabric cladding but proved to be less popular and only two were built.



Fig. 6. Architectural experiments included the use of local materials such as spinifex grass. Aboriginal Environments Research Centre.

In the arid regions, bough shades with a roof of spinifex grass or branches were part of the repertoire of traditional dwellings and their use has continued across many inland parts of Australia. Architect Julian Wigley drew extensively on traditional construction techniques in his sketch designs for outstation architecture in a report commissioned by the AHP in 1977.³⁵ In the 1990s, landscape architect Jim Sinatra revised the idea for shade structures with a tensile structure called the Big Wilytja. To be used in yards in Aboriginal communities, two of these were erected in Kintore: "They are designed as an addition to the house and contribute to the development of the entire residential block as an extended family's total living environment."³⁶

Conclusion

In the 1970s, the designs and ambitions of architects working on remote Aboriginal housing included experiments in mobile housing, prefabrication, the use of local materials, advanced materials and technologies, self-help housing, and tent-like structures. Some of these ideas were realized but few escaped criticism in reports or from the Aboriginal users. (Additional case studies were beyond the scope of this paper.) The criticism is in part justified, but faced with an intractable economic, logistical and socio-cultural problem associated with Aboriginal housing, architects understandably turned toward innovative technical solutions. Although many more Aboriginal people now have much wider experience of mainstream housing many of the problems faced by architects in the

34 Catherine Keys, "The House & the Yupukarra (Married People's Camp): A History of Housing in Yuendumu 1950s-1990s," in *Settlement: A history of Australian Indigenous housing*, ed. Peter Read (Canberra: Aboriginal Studies Press, 2000), 123.

35 Michael Heppell and Julian Wigley, *Desert homeland centres*, occasional report (Canberra: Aboriginal and Torres Strait Islander Housing Panel, 1977).

36 Paul Murphy and Jim Sinatra, *Landscape for Health: Settlement planning for better health in rural and remote indigenous Australia* (Melbourne: RMIT Publishing, 1997).

1970s still exist in the twenty-first century. Providing thermal comfort in the harsh arid or tropical climates using passive design is an onerous architectural task, particularly on tight budgets.

With the possible exception of the Laverton house, the case studies briefly outlined in this paper demonstrate genuine attempts to provide appropriate housing solutions for Aboriginal groups. I have attempted to highlight the technical themes behind these ambitious designs. This is because these themes reappear in policy and practice in later decades, be it prefabrication or the use of local labour. It is difficult to separate local contextual influences of these architects from the broader movements in 1970 Australian architecture. The interest in technologies, prefabrication and even owner-built architecture were common themes in the early to mid-1970s.

Considerable care is needed in proposing architectural innovation in cross-cultural environments such as Indigenous housing. In the 1970s, architects and advisors to the Aboriginal Housing Panel recognised the importance of evaluating designs but the practice was to be all but ignored in the next three decades. The Aboriginal Housing Panel emerges as a high point in the architectural profession's attention to Indigenous housing in the last 45 years. Its physical reach may have been limited, but the knowledge produced by reports commissioned by the Panel made a lasting contribution to this sub-discipline of architecture.³⁷ From its inception the Panel advocated an approach to design that began with extended consultation by open-minded practitioners and ended with thorough evaluations of the projects. In contrast, lack of post-occupancy evaluation of Aboriginal and Torres Strait Islander housing has been a persistent criticism of housing programmes since the 1970s. During this earlier time, valuable contributions to knowledge of remote housing were made by Peter Hamilton, as is evident from his national seminar paper and a subsequent evaluation of his ethnographic studies of Aboriginal camps and shelters.³⁸ Architects from this formative period went on to work for Tangentyre Design in Alice Springs, which was to set new standards in Aboriginal housing through cautious design based on extensive consultation, housing evaluations and careful observations of camp life.

37 See also Heppell and Wigley, *Blackout in Alice*; and Heppell (ed.), *A black reality*.

38 Peter Hamilton, "Aspects of the interdependence between Aboriginal social behaviour and the spatial and physical environment", in *Aboriginal housing*, ed. Royal Australian Institute of Architects; Paul Memmott, *Gunyah, Goondie and Wurlie: Aboriginal architecture in Australia* (St Lucia, Qld: University of Queensland Press, 2007), 212-25.