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Cathy Keys, *University of Queensland*

### Skin Fabric Iron Shade

Existing literature and built responses demonstrate a tendency to look offshore for the historical references and ideas underpinning Australian housing. When the focus does turn closer to 'home' it is on ideas around responses to material, climate, topography and extreme alien 'threats'. But what reference has been made to the local - specifically the Indigenous vernacular architecture of Australia? Actually, there has been very little interest shown in recording the possibilities of the occurrence of cross-fertilisation of ideas, materials and built responses between new European arrivals to Australia and the local Indigenous Australian vernacular architecture of Aboriginal and Torres Strait Islander people. In Central Australia in the early part of the 20<sup>th</sup> century, Aboriginal people and growing numbers of non-Indigenous Australians lived and worked in the insulated shadows of bough shades. Aboriginal oral histories and published journals of European travellers record a transfer of architectural practice between Warlpiri-speaking Aboriginal and non-Indigenous Australians in the 1930s to create habitable shade in often treeless country. This form of living space provides a simple case study of the cross-fertilisation of ideas, materials and built responses that occurred between European settlers and Aboriginal people at times of initial contact as people adapted to maintain their well-being at a time of recession, drought and rapid cultural change. It provides an opportunity to explore an historical perspective that considers Australian Indigenous architectures more centrally in understandings of Australian Architecture.

Narrative texts in Australian architectural history prior to the 1980s only mention examples of traditional living environments of Aboriginal and Torres Strait Islander people in passing or remain silent on the subject.<sup>1</sup> The sidelining of Indigenous living environments appears largely unchallenged within the architectural community;<sup>2</sup> instead ideas about the Australian house are considered post-colonial responses to climate and availability of building materials drawing on ideas largely imported from overseas. Anthropological and architectural interest in Aboriginal people's housing needs and descriptions of their culturally specific living environments began tentatively in the late 1960s and early 1970s.<sup>3</sup> However, it is not until the late 1970s and -80s<sup>4</sup> that interest in the exchange of architectural knowledge *from* Indigenous *to* non-Indigenous Australians was raised as an idea within architectural histories.<sup>5</sup>

The context for this case study, within the field of architectural history, is drawn from the following sources: theoretical interest in the Australian house from the 1950s; more targeted recognition and descriptive studies from the 1970s of Indigenous building traditions in Australia, best represented by architect and anthropologist Paul Memmott's, *Gunyah, Goondie and Wurley*, 2007;<sup>6</sup> fringe concern from the 2000s onwards with the impact of knowledge of Australian Indigenous built environments on the question of what is architecture in this country;<sup>7</sup> histories of exchange expressed in Maori and European architecture in New Zealand,<sup>8</sup> and to some extent international concern with vernacular architecture.<sup>9</sup>

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- 1 See Robin Boyd, *Australia's Home: Its Origins, Builders and Occupiers* (Carlton: Melbourne University Press, 1952); J. M. Freeland, *Architecture in Australia: A History* (Melbourne: Cheshire, 1968).
  - 2 Although see Balwent S. Saini, "Aboriginal Problems: An Architect's View," *Architecture Australia*, October (1967): 783-99.
  - 3 See M. Heppell, ed., *A Black Reality: Aboriginal Camps and Housing in Remote Australia* (Canberra: Australian Institute of Aboriginal Studies, 1979).
  - 4 See Ian Evans, *The Australian Home* (Sydney: Flannel Flower Press, 1983), 36-37; John Archer, *Building a Nation: A History of the Australian House* (Sydney: William Collins, 1987).
  - 5 See Howard Pearce, *Homesteads of the Stony Desert* (Adelaide: Rigby, 1978, 20), who briefly mentions the link between European dwellings and local Aboriginal bough shades found in remote desert regions of South Australia in the late 1800s, early 1900s.
  - 6 Paul Memmott, *Gunyah, Goondie and Wurley: The Aboriginal Architecture of Australia* (Brisbane: University of Queensland Press, 2007).
  - 7 Stephen Long, "Between the Georgina and the Great Western Railway: The Transformation and Maintenance of Aboriginal Architecture in North-West Queensland," in *Shifting Views: Selected Essays on the Architectural History of Australia and New Zealand*, ed. Andrew Leach, Antony Moulis and Nicole Sully (Brisbane: University of Queensland Press, 2008), 143-55; and Paul Memmott and James Davidson, "Exploring a Cross-Cultural Theory of Architecture," *Traditional Dwellings and Settlements Review*, vol. 19, no. 2 (2008): 51-68.
  - 8 Deidre Brown, *Maori Architecture: From Fale to Whareniui and Beyond* (Auckland: Raupo, 2009); Christine McCarthy, "'The Maori House', 'Te Pa' and 'Captain Hankey's House': Bicultural Architecture in New Zealand at the Turn of the Century," *Fabrications* 11, no. 1 (2000): 62-78; Bill McKay, "Maori Architecture: Transforming Western Notions of Architecture," *Fabrications* 14, no. 1-2 (2004): 1-12.
  - 9 Paul Oliver, ed. *Encyclopaedia of Vernacular Architecture of the World* (Cambridge: Cambridge University Press, 1997).

## Skin

The land of Warlpiri-speaking Aboriginal people in Central Australia is located northwest of Alice Springs stretching over the Northern Territory-Western Australian border, west of the Stuart Highway, with Lajamanu its most northern settlement and Yuendumu its largest settlement to the south (fig. 1). The topography and vegetation are diverse, and include: the sandy flat spinifex and grass plains; areas of red sand dunes and mulga stands; mountainous rocky areas with sparse low trees; tree lined creekbeds; and floodplains. Water sources are scarce and dependent on localised rainfall. The climate can be summarised as hot dry, recording an extreme diurnal temperature range. Summers are hot during the day but cool at night. Winter days can be mild but evenings are very cold, sometimes with frost. Heavy rainfall, strong winds and dust storms occur infrequently throughout the year. Hours of sunlight in this region are the highest in the continent. In terms of human physiology these conditions can be challenging (even life threatening). However, over thousands of years, Warlpiri-speaking Aboriginal people travelling naked through this country refined their dwelling needs in balance with this environment to thrive and express a culturally rich secular and sacred lifestyle.<sup>10</sup>



Fig. 1. Map of Central Australia.  
Drawn by Linda Thompson, Cathy Keys,  
Aboriginal Environments Research Centre, 2014.

All Warlpiri living environments were centred on places for communal use of fire, an element that defined Warlpiri living environments.<sup>11</sup>In periods of extreme wind, rain, dust and cold Warlpiri people created warm, dry living environments in yujuku (enclosed shelters)<sup>12</sup> or rock shelters and caves.<sup>13</sup> In good conditions and for much of the year they dwelt in externally orientated living environments

10 Mervan J. Meggit, *Desert People: A Study of the Warlpiri Aborigines of Central Australia* (Sydney: Angus and Roberts, 1962).

11 The location and type of fire is a very important spatial and social signifier in Warlpiri living environments. For a contemporary discussion of this ongoing significance see Yasmine Musharbash, *Yuendumu Everyday: Contemporary Life in Remote Aboriginal Australia* (Canberra: Aboriginal Studies Press, 2008).

12 Cathy Keys, "Warlpiri Ethno-Architecture and Applied Aboriginal Architectural Design: Case Studies from Yuendumu," *People and Physical Environment Research*, 55-56, (2000): 54-68.

13 Charles A. Chewings, *Back in the Stone Age: The Natives of Central Australia*, (Sydney: Angus and Robertson, 1936), 36.

defined by architectural forms of yunta (wind-breaks), yama-puralji (shade trees) and malurnpa (shade structures or bough shades).<sup>14</sup> Warlpiri men and women were equally responsible for, and knowledgeable about, building living environments.<sup>15</sup>

Colonial incursion into Warlpiri country was seriously challenged by isolation, lack of dependable surface water, inconsistent rainfall, extreme climate and topography, transport costs, communication challenges and low soil fertility. This delayed the major impacts of European settlement on Aboriginal people and the landscape until the early part of the 20<sup>th</sup> Century. Early descriptions of Aboriginal living environments near and in Warlpiri country were provided by explorer John McDouall Stuart<sup>16</sup> who travelled nearby in 1860-61; Allan Davidson<sup>17</sup> who performed geological explorations in 1889 and 1900; Michael Terry<sup>18</sup> who made excursions in 1926, 1928, 1930, 1932 and 1933 providing descriptions of living environments occupied by both Warlpiri and European people; and Charles Chewings in 1936.<sup>19</sup>

Much of the year conditions did not necessitate the construction of enclosed shelters. However, daytime shade was critical especially during the long hot often cloudless summer days. Existing photographic records and verbal descriptions provided by Warlpiri people suggest that there were two types of structural frames being used in the construction of daytime shade structures.<sup>20</sup> One type involved tree branches placed into the ground in a circular plan so that the leafy ends were leaning in toward a central point to create a dome.<sup>21</sup> Alternatively, a post and rail frame was first created by resting branches up against a single spanning rail supported between two forked posts. Larger versions utilized two parallel rails supported on four forked sticks (called malurnpa or bough shades). These two alternative framing systems were then clad in a range of natural materials including leaf, spinifex and grass thatching. This roof covering was remarkable in its thickness which was at least 30-50 cm deep. Malurnpa often had a permeable shade wall to the west but were open on all other sides and were externally orientated <sup>22</sup>(fig. 2).

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14 Keys, "Warlpiri Ethno-Architecture," 54-68.

15 Meggitt, *Desert People*, 5.

16 John McDouall Stuart, *Explorations in Australia: The Journals of J. Mc.D Stuart During the Years 1858, 1869, 1860, 1861 and 1862*, (Melbourne: Bailliere, 1865), 254; John McDouall Stuart, *Fourth Expedition Journal, March to September 1860* (Adelaide: Sullivan Cove, 1983), 20, 34, 78.

17 Allan A. Davidson, *Journal of Explorations in Central Australia by the Central Australian Exploration Syndicate Limited* (Adelaide: Government Printer, 1905), 21, 22, 46, 47.

18 Michael Terry, *Sun and Sand: Two Gold Hunting Expeditions with Camels in the Dry Lands of Central Australia*, (London: M. Joseph, 1937), 74.

19 Chewings, *Back in the Stone Age*.

20 Fieldwork by the author in Warlpiri country in the 1990s indicates that the scale and degree of enclosure of malurnpa and their cladding depended on climatic conditions, time of day, available resources, numbers of occupants and whether they were used in living environments to provide comfortable places to support daytime sleep, rest, work or social interaction. Cathy Keys, "The Architectural Implications of Warlpiri *Jilimi*" (PhD diss., University of Queensland, 1999), 40.

21 Michael Terry, *Hidden Wealth and Hiding People* (London: Putnam, 1931), 132.

22 Keys, "Architectural Implications," 187-93.



Fig. 2. Photograph of yujuku - enclosed shelter (left) and malurnpa - bough shade (right) taken by Micheal Terry 1928 near Coniston Station. Sourced from Michael Terry, *Hidden Wealth and Hiding People*. London: Putnam, 1931, facing page 229.

## Fabric

European visitors to the edges of Warlpiri country by the start of the 20<sup>th</sup> Century were male explorers, drovers, doggers, prospectors and cattle or horse thieves. They travelled through the country creating transient living environments with swags and canvas tents using supplies carried on foot or by horse or camels. The 'bush' and observation skills of these men were critical to their ability to look after themselves and their stock.<sup>23</sup> Some were willing to learn from, and be guided by, Aboriginal people. Others 'struck up' relationships with Aboriginal women<sup>24</sup> who were experienced at building traditional living environments and working in the local conditions.<sup>25</sup> Ann McGrath, writing about the contact history to the north of Warlpiri country in her book *Born in the Cattle: Aborigines in the Cattle Country*, (1987), describes Aboriginal people building bough shades in stock camps and Aboriginal women assisting in the building of European station homesteads by digging the holes and "sinking the posts for the frame".<sup>26</sup>

Pastoral settlers, missionaries and government employees living to the south or east of Warlpiri country were also building simple homesteads and station buildings.<sup>27</sup> Lessons needed to be learnt as simply importing European building materials, designs and construction methods used in the

23 Keith Willey, *Boss Drover* (Sydney: Rigby, 1971), 139.

24 Petronella Vaarzon-Morel, *Warlpiri Women's Voices: Our Lives, Our History* (Alice Springs: Institute for Aboriginal Development Press, 1995), 36.

25 Drover Matt Savage, who worked to the north of Warlpiri country and travelled through to the Tanami with his Mutpurra-speaking Aboriginal wife, describes building a camp for periods of inclement wet weather that included a windbreak and waterproofing with Indigenous building materials (spinifex). See Willey, *Boss Drover*, 115.

26 Ann McGrath, *Born in the Cattle: Aborigines in Cattle Country*, (Sydney: Allen and Unwin, 1987), 29, 52, 54.

27 For descriptions of European homesteads during this early contact period in Central Australia - see David Carment, *History and the Landscape in Central Australia: A Study of the Material Evidence of European Culture and Settlement* (Darwin: Australian National University North Australian Research Unit, 1991) and Peter Donovan, *Alice Springs: Its History, and the People Who Made It* (Alice Springs: Alice Springs Town Council, 1988). To the north - see Darrell Lewis, *A Wild History: Life and Death on the Victoria River Frontier* (Clayton, Vic.: Monash University Publishing, 2012). For descriptions of European homesteads in this period in north-eastern South Australia and western Queensland see Howard Pearce, *Homesteads of the Stony Desert* (Adelaide: Rigby, 1978).

coastal parts of the country proved costly. One of the first major government building projects in the region was the construction of the Overland Telegraph Line (1870–72), which ran the length of the country from Adelaide to Darwin. Rapid termite damage had resulted in all timber poles carrying the line north of Alice Springs being replaced with steel almost as soon as construction of the line was completed.<sup>28</sup>

Gold had been observed in 1900 at Tanami (Janami) and Granites Hill (Yarturlu-yarturlu) in largely treeless, spinifex and gibber country in the north-western territories of Warlpiri lands. Mining commenced in 1908 attracting up to sixty European men,<sup>29</sup> but by 1910 the rush was over and the majority of Warlpiri were able to continue their traditional lifestyle unhindered.<sup>30</sup> On the south-eastern edges of Warlpiri country more permanent European pastoral holdings and dwellings were being established at places of reliable water<sup>31</sup> as Central Australia experienced a period of intense drought between 1924 and 1929.<sup>32</sup> Warlpiri people who had up to this time managed to avoid extensive contact with Europeans began to collect in large numbers at places with available water which were now occupied by European pastoralists and their stock.<sup>33</sup> These forced concentrations of people resulted in resource competition and conflict.

“Throughout the 1920s and 1930s most pastoralists lived in makeshift bough-and-bag shelters while prospectors and doggers lived even rougher, often camping with Aboriginal people on whom they relied for information, unpaid labour and sexual services. Water was short, life for European settlers could be very hard, and when it came to Aboriginal Australians, justice was not simply rough but non-existent. The Warlpiri, Arrernte and Waramanga people who live in central Australia refer to the 1920s as the ‘killing’ or ‘shooting’ times, the years of terrible massacres and brutal treatment at the hands of many pastoralists, miners and doggers.”<sup>34</sup>

The killing of pastoralist Fred Brookes on the eastern edge of Warlpiri country in 1928 brought a punitive party, led by Constable Murray, to the area; randomly killing large groups of Warlpiri men, women and children. This is now known as the Coniston massacres.<sup>35</sup> Aboriginal women’s accounts

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28 Donovan, *Alice Springs*, 46–48.

29 R. Donald Barnes, “Building an Implementation Framework for Agreements with Aboriginal Landowners: A Case Study of the Granites Mine,” (MA Phil diss., University of Queensland, 2013), 28.

30 Meggit, *Desert People*, 21; and Barnes, “Building an Implementation Framework,” 27.

31 Tim Rowse, *White Flour, White Power: From Rations to Citizenship in Central Australia* (Cambridge: Cambridge University Press, 1998), 54; and David J. McClay, “Surviving the Whiteman’s World: Adult Education in Aboriginal Society” (PhD diss., University of Queensland, 1988), 162.

32 Meggitt, *Desert People*, 24.

33 Rowse, *White Flour*, 54.

34 Julie Marcus, *The Indomitable Miss Pink: A Life in Anthropology* (Sydney: University of New South Wales Press, 2001), 31.

35 For Aboriginal accounts of these events see Vaarzon-Morel, *Women’s Voices*, 45–53 and Peter Read and Jay Read, ed., *Long Time, Olden Time: Aboriginal Accounts of Northern Territory History* (Alice Springs: Institute for Aboriginal Development Press, 1991), 33–54.

of these terrifying events include the burning down of bough shades in a deliberate effort to move people on.<sup>36</sup>

## Iron

Warlpiri people had accumulated generations of knowledge and experience of their environment and had been generous in sharing this expertise as they lived and worked among European arrivals.<sup>37</sup> This transfer of knowledge had included knowledge of water sources, navigation, topography, vegetation, climatic conditions, food sources and how to build for the desert conditions. When anthropologist Olive Pink performed research in Warlpiri country during the 1930s not only was she guided to permanent water sources and places of ritual significance by Aboriginal people but they also set up her campsites and built bough shades as her main daytime workspaces.<sup>38</sup>

Pink was highly unusual for her time, living alongside Aboriginal people and paying them for their time and knowledge.<sup>39</sup> Her recognition of Aboriginal knowledge, expertise and relationship with the land was in direct contrast to the majority of cross-cultural exchanges occurring between the Warlpiri and European men chasing gold. Henry Reynolds in his book, *The Other Side of the Frontier: Aboriginal Resistance to the European Invasion of Australia* (1982), makes the point that this was not an interaction of mutual exchange and benefit: "Miners felt little need to accommodate the Blacks ... They lived in canvas and galvanised iron packed in from the coast ... and rarely developed the sort of relationship with the environment which elsewhere led Europeans to an appreciation of indigenous knowledge and expertise."<sup>40</sup>

Between 1931 and '33, at the height of the Australia-wide depression, prospectors once again arrived at Tanami and The Granites goldfields<sup>41</sup> with over 200 men reportedly on the field.<sup>42</sup> Senior Warlpiri man Darby Jampijinpa Ross, who worked for prospector Jack Saxby (1931–33), noted that many Warlpiri people were also camped at The Granites.<sup>43</sup> Warlpiri people at these camps built their own forms of living environments including malurnpa (bough shades).<sup>44</sup> By now the railway line had reached Alice Springs (1929) providing a direct link to Adelaide.<sup>45</sup> Truck and vehicle transport were

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36 Vaarzon-Morel, *Women's Voices*, 53, 58.

37 For examples see Alec Jupurrula Wilson who acted as guide and interpreter for explorers in Warlpiri country in Read and Read, *Aboriginal Accounts*, 1991, 3; and the life of Darby Jampijinpa Ross in Liam Cambell and Warlpiri Media Association, *Darby: One Hundred Years of Life in a Changing Culture* (Sydney: ABC Books, 2006).

38 Marcus, *Indomitable Miss Pink*, 93, 95, 128, 181, 194.

39 Marcus, *Indomitable Miss Pink*.

40 Henry Reynolds, *The Other Side of the Frontier: Aboriginal Resistance to the European Invasion of Australia*. (Ringwood, Vic.: Penguin Books, 1982), 254.

41 Geoffrey Blainey, *The Tyranny of Distance: How Distance Shaped Australia's History* (Melbourne: Sun Books, 1983), 321.

42 Meggit, *Desert People*, 25; and Barnes, "Building an Implementation Framework," 31.

43 Cambell and Warlpiri Media Association, *Darby*, 136.

44 Terry, *Hidden Wealth*, 132.

45 Donovan, *Alice Springs*, 141–43.



also available in Central Australia. It was still a long way to haul building materials and tents to the goldfields and the occasional tin shed was the main form of European accommodation. Journalist F. E. Baume described the difficult living conditions at The Granites: "It was no use trying to write or work in the early afternoon, for the sun smashed through a tent like a sledgehammer and had the lungs gasping and the heart pounding."<sup>46</sup>

The impacts of ongoing mining and high residential numbers meant most available trees were cleared and shady places in which to live and work became scarce. European men at Tanami and The Granites were, therefore, building and occupying bough shades built almost identically to Warlpiri malurnpa. Photographs show simple open framed, flat roofed structures with thick layers of vegetation on the roof.<sup>47</sup> (fig. 3), and the accompanying descriptions highlight their cool shady properties.<sup>48</sup> Here prospectors worked, rested, ate, kept stores and managed communications through the heat of the day.<sup>49</sup>



Fig. 3. Photograph of 'white man's bough shade' where occupants are sampling gold, Ivy Lease Granites, 1928. Sourced from Michael Terry, *Hidden Wealth and Hiding People*. London: Putnam, 1931, facing page 277.

While traditional European building materials like canvas and corrugated galvanised iron failed to provide protection from intense radiated heat associated with the sunlight, the thick layer of vegetation cladding of the Warlpiri malurnpa (when incorporated into European bough shades) not only provided shade but arguably reduced radiant heat loading in two ways; firstly by having a deeper insulation mass of air than a single sheet of canvas or iron and secondly by offering better reflective properties. Furthermore, many of the dried spinifex hummocks, tussock grasses and Eucalyptus leaves of the region are light or silvery in colour, maximising their reflective properties. The author is not aware of any architectural technology experiments to test this proposition but European men in Warlpiri country in this period are clearly utilising these Aboriginal building designs, building techniques and building materials.

46 F. Eric Baume, *Tragedy Track* (Sydney: F.C. Johnson, 1933), 72.

47 Terry, *Hidden Wealth*, 277.

48 Terry, *Hidden Wealth*, 124, 214-15, 277; and Baume, *Tragedy Track*, 57-58.

49 Baume, *Tragedy Track*, 57-58.

## Shade

European bough shades were identical to traditional Warlpiri malurnpa in terms of structure and thick vegetated roof thatching but differed in terms of their height and screening. European bough sheds were built with the flat roof raised above head height (allowing standing room) while Warlpiri malurnpa had their flat roof at about shoulder height (supporting sitting room). Additionally, European bough shades did not always have a semi-permeable shade wall to the west, a common feature of Warlpiri malurnpa that created a longer shadow from the setting afternoon sun than simply having the roof plan covered. Warlpiri people were observed to move over the afternoon to occupy the lengthening shadow created beyond their shade structures<sup>50</sup>(and not just underneath).<sup>51</sup> These differences in bough shade height and occupation actually reflect different domiciliary behaviours: Warlpiri lifestyles were externally-orientated as opposed to the imported European lifestyle which was predominantly internally-orientated.

A distinction is made in the literature between *bough shades*, which have a roof and possibly one screen wall, and *bough sheds* which had a roof and four walls. The structure and roof are identical in both types but the shed is far more enclosed and internally orientated like a traditional European house found throughout Australia at the time. Descriptions<sup>52</sup> and photographs<sup>53</sup> of bough sheds built by European settlers at the Tanami and The Granites indicate that these securable spaces utilised Indigenous insulation design and building materials but were subdivided and walled internally for separate activity areas and used for storage and sometimes sleeping in inclement weather (fig. 4). Their internal spaces were hotter than those of bough shades simply because they did not support the transmission of any available cooling breezes, trapping heat loading from the roof and walls. Similar structures were made by European pastoralists on the eastern edges of Warlpiri country.<sup>54</sup>

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50 Terry, *Hidden Wealth*, 132.

51 This is also my experience of malurnpa use in Warlpiri women's camps (*jilimi*) in Yuendumu in the 1990s.

52 Baume, *Tragedy Track*, 1933, 72; and Terry, *Hidden Wealth*, 122, 219, 227.

53 Terry, *Hidden Wealth*, 123.

54 Randal Stafford's bough shed at Coniston "was a simple affair - upright logs embedded in the ground supporting rafters on which was a thatch of spinifex and bundles of grass" in Michael Terry, *War of the Warramullas* (Adelaide: Rigby, 1974), 9.



Fig. 4. Photograph of bough shed 'store' at the Granites.  
Sourced from F. E. Baume, *Tragedy Track*.  
Sydney: F.C. Johnson, 1933, facing page 89.

The Tanami and The Granites gold rush collapsed by early 1933 and once again miners left the area<sup>55</sup>, taking their knowledge of insulated bough shades with them. European bough sheds and homesteads on the few pastoral stations were eventually roofed in corrugated iron and it seems that Warlpiri shading and insulation practices were soon forgotten by European builders. The introduction of westernised 'housing' for Aboriginal people from the late 1940s utilising industrialised building materials like corrugated galvanised iron, ignored Warlpiri externally-oriented domiciliary behaviour, shading and insulation knowledge and did little to provide habitable living spaces in the extreme desert conditions.<sup>56</sup>

Warlpiri people however continued to build their own insulated bough shades. Malurnpa were being built at Yuendumu in the late 1990s and were generally clad in thick layers of vegetation, were screened on the western wall and incorporated non-Indigenous building materials. The structure of a single bay of a malurnpa consisted of four forked posts made of branches aligned so that the forks ran east-west. Two rails or beams spanned between these forks and ran north-south. Spanning between these two frames and resting on top of these rails was a system of horizontal sub-framing. Larger malurnpa were created by adding multiple bays to the north or south. A roof was created when this structure was covered in cladding utilising spinifex, leafy branches, sheets of corrugated roofing steel and tarpaulin. The roof was between 1.4-1.5 metres high above the ground. Sub-framing and roof cladding were often tied to the frames with strips of fabric or found wire. Posts and the stems of leafy branches erected on the western screen wall were placed directly into the ground.

Residents stored food and personal possessions on and in the thickness of the roof cladding. Malurnpa were occupied in the hotter times of the year from mid-morning through to late afternoon. Occupants sat under the malurnpa with their backs to the western sun moving progressively out from under the roof as the western-screened wall threw a lengthening shadow to the east.<sup>57</sup> Despite

55 Barnes, "Building an Implementation Framework," 32.

56 Meggit, *Desert People*, 77.

57 Keys, "Architectural Implications," 187-93.

over 60 years of government supplied housing<sup>58</sup>, the construction of self-built malurnpa persisted among Warlpiri-speaking Aboriginal people.

## Conclusion

The architectural history of Aboriginal housing and contact tends to emphasise the transfer of architectural ideas from Europeans to Aboriginal people. What this case study suggests is that this flow of architectural ideas was also happening in the reverse direction *from* Aboriginal people *to* Europeans. The use of bough shades is not unique to Warlpiri people in Central Australia, and Europeans were building similar lean-to's and attaching skillion roofs and verandas to their internally-orientated housing as they adapted to the climatic conditions in Australia. However it is the addition of Warlpiri insulation and screening practices to European bough shades that made them suitable for the extreme conditions in Central Australia and this is what is significant about this case study. It is this example of European 'borrowing' of local Indigenous knowledge to create a 'habitable' externally oriented insulated shade area that is of significance in terms of a fresh way of looking at the transfer of architectural ideas in Australia's contact history.

This paper provides a documented example of a cross-fertilization of ideas, materials and built responses between post-colonial settlement in Australia and the existing architecture of Aboriginal and Torres Strait Islander people. It is an historical perspective that considers Australian Indigenous architectures more centrally to understandings of Australian Architecture. It hints at how a critical history of Australian architecture that is actively inclusive of the Indigenous architectural legacy, practice and expertise might appear.

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58 Cathy 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), 118-29.