Research Framework

Introduction

The archaeology of far north Queensland’s rainforest region has up until recently received relatively scant attention from Australian archaeologists. This is hardly surprising as rainforests are difficult to work in as a result of high rainfall, difficult terrain and dense vegetation. This monograph is concerned with the archaeology of Aboriginal–European contact in a previously unexplored area of far north Queensland’s rainforest region, investigating whether the application of a longitudinal (temporal) framework can produce useful new perspectives in the interpretation of the pre- and post-contact archaeological record. The contact and post-contact periods are a time when massive change and transformation took place for Aboriginal populations across the Australian continent and the only period in Aboriginal history for which documentary records exist. Research into contact archaeology, the recording and analysis of cross-cultural encounters in Australia, has expanded during the last two decades. The research presented here contributes to this growing interest.

This monograph presents interdisciplinary research that draws on archaeological evidence from three open Aboriginal occupation sites on the Evelyn Tableland, situated within the Wet Tropics World Heritage Area in tropical far north Queensland. All three archaeological sites investigated are considered ‘traditional’; meaning here that they were used long-term, i.e. before Aboriginal–European contact took place in this area in the late nineteenth century, as well as in the post-contact period. Also presented is ethnohistorical information and oral history gathered during informal talks with Aboriginal elders and European descendants, assisting with interpretations of the pre- and post-contact archaeological records.

Study location and cultural setting

The research presented here is concerned with an area on the Evelyn Tableland, which is part of the larger Atherton-Evelyn Tableland region (referred to as the Tablelands in the text) (Fig. 1.1). At the time of European settlement, the Tablelands were predominantly occupied by Djiirbal people of three Aboriginal groups: the Mamu, Ngadjon and Jirrba people, as well as the Tableland Yidinjii people in the north. The Girramai, Gulngai and Djiru Aboriginal people in the area southeast of the Evelyn Tableland are closely related to the Jirrba people, with only slight differences in dialect separating the four groups (Dixon 1972). Before European arrival, Girramai, Gulngai and Djiru Aboriginal people lived predominantly on the coastal plains and utilised coastal resources. Some smaller groups also inhabited the rainforest region in and around the Tablelands as well as the coastal lowlands (Dixon 1972). Historical and linguistic evidence (Dixon 1972; Tindale 1974; M. Barlow, pers. comm., 2001) suggests that the rainforest and the archaeological sites investigated for this research project was home to the Jirrba people at the time of Aboriginal–European contact. It has previously been suggested that the location of traditional Jirrba territory, which includes areas of rainforest and open sclerophyll forest areas to the west of the rainforest region, was such that the Jirrba people had access to resources from these two very different environments (Birtles 1997a, 1997b; Ferrier 1999; M. Barlow, pers. comm., 2004).
Ethnohistorical information (e.g. Ferrier 2002, 2006; Lumholtz 1889; Mjöberg 1918, 1923, 1925; Roth 1898, 1900, 1901–10), linguistic studies (Dixon 1972, 1991; Dixon and Koch 1995), archaeological studies (Cosgrove 1979, 1984, 1996, 2005; Cosgrove et al. 2007; Horsfall 1987, 1990, 1996) and studies on Aboriginal subsistence strategies (Ferrier and Cosgrove 2012; Harris 1978, 1987; Pedley 1992, 1993; Tuchler 2010; Tuchler et al. 2014) all provide important information on Aboriginal rainforest occupation and use of the Tablelands in the past. From this information, it appears that at the time of European contact, Aboriginal rainforest people exploited a diverse range of rainforest plant and animal species for subsistence as well as for the manufacture of artefacts, many of which are unique to the rainforest area. Some evidence suggests that campsites and rainforest tracks were regularly burnt to keep them clear of vegetation (Ritchie 1989:22; Tindale 1941:III). The existence of large eucalypt pockets within core rainforest also allowed for the establishment of semi-permanent campsites and large ceremonial gatherings to take place at certain times of the year (Mjöberg 1913, 1918).
The development of contact archaeology in Australia

Early research into contact interactions

Up until the 1990s, research into Aboriginal and European contact interactions in Australia were predominantly the realm of historians. Reynolds’ early influential works on frontier contact, framed around a European dominance–Aboriginal resistance model, depicted a violent frontier with Aboriginal people actively resisting European incursion (e.g. Reynolds 1972, 1990). Reynolds’ work highlighted, for the first time, that in many instances Aboriginal people encountering Europeans were prepared to fight for land regarded as terra nullius by the colonising Europeans but which was existentially important to the Indigenous owners. As an outcome of Reynolds’ work, many historical studies of contact interaction adopted the dominance–resistance model to specific situations and time periods (for example, Loos 1982; Morris 1989).

Regional studies

The focus in historical studies of contact gradually shifted away from the frontier to smaller regional studies, highlighting variability and complexity in Aboriginal responses to Europeans. For example, Attwood’s (1989) research in Gippsland, Victoria, demonstrated that as a result of Aboriginal strategies of avoidance and indifference, only minor violent incidents occurred and Aboriginal people and Europeans managed to coexist. Williamson (2004:186) has suggested that the trend for early historical contact research to concentrate on particularistic studies—a trend persisting up until the late 1980s—may be seen as a feature of a disciplinary divide between archaeology and history. Finding a way to sensitively integrate archaeological data with documentary sources to write history continues to be a challenge in historical and contact archaeology generally.

Early studies in contact archaeology

One of the first contact archaeology studies in Australia was Allen’s 1969 (2008) study of Port Essington, a historic site located on the Cobourg Peninsula, now in the Garig Gunak Barlu National Park, Northern Territory. In his exploration of this European military frontier settlement, he used both archaeological and historical data to investigate Aboriginal–European interactions as well as post-European Aboriginal behaviour at the site, with the aim of producing a history of Port Essington constructed from all of the available sources. Allen’s research was groundbreaking within the context of Australian archaeology in many ways. It was the first PhD dissertation in Australian historical archaeology and the first to actively explore contact archaeology and the history of a particular place (Murray 2000:145; 2008:xi; Williamson 2004:184). Another early example of contact archaeology research and the use of diverse sources of information is McBrayre’s (1978) attempt to reconstruct cultural history in northeast New South Wales using ethnographic information. This study affirmed the value of literary sources in documenting culture at the very moment of change. Another early example is a study by McKnight (1976), in which the archaeology of contact between Macassan trepangers and Aboriginal people on the northern Australian coastline was documented. Early investigations into contact archaeology thus tended to focus on the earliest contact experience, and Allen’s work aside, tended to model Aboriginal history as a single evolutionary process rudely halted by the arrival of Europeans. Overall, these archaeological studies are descriptive and particularistic rather than analytical with a focus on describing artefacts (see also Coutts et al. 1977; Rhodes 1986).

Proliferation of approaches to contact archaeology research

A proliferation of approaches to contact archaeology research has emerged over the last two decades, approaches that look beyond brief episodes of Aboriginal–European contact. Current research in contact archaeology is modelled upon a combination of innovative theory, new forms of data and
alternative interpretations. Some of the sources that have been employed in more recent contact research include ethnographic collections (Ferrier 1999, 2002; Taçon et al. 2003), oral traditions (Clarke 1994, 2000), explorers’ diaries and photographs (Birmingham 2000; Lydon 2002) as well as contact artefact assemblages (e.g. Carver 2005; Courtney and McNiven 1998; Harrison 2002; Wolski and Loy 1999). Archaeological research that uses concepts of continuity and change in constructing contact has also been employed in several rock art studies (e.g. Frederick 1999; May et al. 2010). Also influential in the development of contact archaeology is the development of Indigenous land rights and native title claims. This has resulted in a shift in emphasis away from prehistoric research, the results of which are difficult to use to demonstrate the continued links to traditionally owned lands as required in native title claims (e.g. Lilley 2000; Riches 2002). Consequently, a greater emphasis has been placed on research into the contact period and on the specific histories of Indigenous communities. However, it has been noted in assessments of the potential role of contact archaeology in native title determinations, that there is a lack of archaeological data and also issues surrounding what a contact material culture record look like (Fullagar and Head 1999, 2000; Harrison 2000, 2005; McDonald 2000; Veth 2000). In addition, the emphasis on Aboriginal pre-European traditions and continuity, and the ways they are interpreted in the Native Title Act, has demonstrated that to allow for Indigenous land rights in the future the Act needs to be changed to acknowledge that Indigenous communities have transformed both prior to and after European contact.

European-controlled sites and traditional sites

A review of Aboriginal–European contact archaeology research in Australia reveals that two main approaches have developed over the last two decades: integrated studies into culture contact at European-controlled sites, and studies that cover a long period of time and focus on culture change and continuity at traditional Aboriginal sites. Archaeological studies of Aboriginal–European interaction have mostly focused on European-controlled sites that contain Aboriginal artefacts and sites where Aboriginal occupation and Aboriginal–European interaction is historically documented. An early example is Birmingham’s 1992 study at Wybalenna, an Aboriginal post-contact establishment on Flinders Island, Tasmania. Examples of other investigations at European-controlled sites include that of Brown et al. (2002) at the Ebenezer Mission cemetery, a study by Lydon (2002) of historical photographs from Coranderrk Aboriginal Station, and Paterson’s study of Aboriginal–European culture contact at Strangways Springs Station in northern South Australia (2008). In a study by Porter (2003) of historical artefacts from Blackfellows Waterhole, a contact period site in western Victoria associated with historical documentation, it was demonstrated that the interpretation of the site was restricted by the ephemeral nature of the contact archaeological record. Porter’s study highlights the generally ephemeral nature of contact archaeological records at European-controlled sites with documented Aboriginal occupation. The historic documentary record is often given precedence and, as a result, particular aspects of the colonial relationship are emphasised. Aspects of change in Aboriginal material culture as a result of European colonisation are also emphasised, whereas change and continuity in other aspects of Aboriginal culture are not often addressed. Archaeological investigations of the contact period that highlight changes and continuities in traditional Aboriginal material culture and society related to the process of Aboriginal–European contact are less common (Colley and Bickford 1995:13). However, analyses of Indigenous responses to contact situations that cover longer time periods than the actual moment of contact have been applied in culture contact studies locally (e.g. Clarke 1994, 2000; Colley 2000; Torrence and Clarke 2000:6) and internationally (e.g. Cusick 1998; Lightfoot 1995; Trigger 1983).

Investigating long-term Aboriginal history

Murray (1996a, 2000 and 2004) has suggested that contact archaeology has the potential to explore notions of ‘shared histories’ and investigate aspects of ‘shared’ experiences of colonialism in Australia. Several contact archaeology studies more interested in the long-term influences and effects of European settlement on Aboriginal people have moved away from the earliest contact period and instead focused
on the entangled historical archaeology of both Aboriginal and European settlers (e.g. Clarke and Paterson 2003; Harrison and Williamson 2002; Torrence and Clark 2000). Murray’s ‘shared histories’ model was applied by Harrison (2002) in contact archaeology studies in the southeast Kimberley and NSW regions. Harrison argued for two interrelated avenues of archaeological research in Australia as a powerful tool for understanding pre- and post-contact history: the ‘shared’ histories and archaeologies of post-AD 1788 Australia, and the relationship between these shared pasts and the long-term trajectories of Aboriginal Australia (Harrison 2002:38). This theme also emerged in a study by Head and Fullagar (1997) on the nature of the pastoral industry. Results from their research suggested that Aboriginal people in the northern Australian pastoral industry were able to maintain social obligations and attachments to particular places because of seasonal work activities in the tropics. Archaeological data, such as stone artefacts and ochre used for rock art, demonstrated continuities in the use of pre-contact sites into the post-contact period. These studies show the potential for investigations of long-term continuity and change in Aboriginal societies.

Another example of a long-term contact archaeology study is Colley’s (2000) investigations into a rock shelter located in coastal NSW, which demonstrated that the archaeological record provides evidence for Indigenous people continuing to pursue key elements of their traditional lifestyle after European colonisation. Colley (2000:292) hypothesised, from the depth and nature of the deposits, a possible indication of change to a more intensive use of the rock-shelter following European contact. In studies by Clarke (1994, 2000), trajectories of change and continuity in settlement and subsistence patterns on Groote Eylandt were investigated across a time period spanning the late Holocene to the present day. Clarke argued that recent archaeological sites can contribute to an overall understanding of the material correlates of short-term social change and that, at the level of landscape, they provide a powerful statement about the continuities, discontinuities and changes in hunter-gatherer land use practices within the social and historical context of encounters with outsiders (Clarke 2000:145). By constructing a regional case study, Clarke demonstrated change in settlement patterns during the period of Macassan–Aboriginal interactions on Groote Eylandt, as well as change and continuity in the archaeological record.

It has been suggested that one way to approach the writing of an Aboriginal history that encompasses the pre-contact, contact, and post-contact periods is through exploring the notion of trajectories defined as temporal sequences of transformations in culture systems (Clarke 1978; Williamson 1998 and 2004:191). Thus, rather than tracking a single evolutionary process halted by the arrival of Europeans, a sounder way of writing Aboriginal history may be to explore and trace ‘cultural trajectories’ and interpretive possibilities. This temporal approach to writing Aboriginal history allows for an integration of the archaeological and historical records and is applied in the research presented here.

Archaeology of the mid- to late Holocene period

Previous archaeological research in north Queensland’s rainforest region suggests that a regional change took place in the mid- to late Holocene period, and it is in this time period that rainforest occupation and use appears to have become more permanent for the first time (Cosgrove et al. 2007; Ferrier and Cosgrove 2012; Horsfall 1987). A summary of Australian archaeological research related to this time period is presented to establish a baseline of archaeological knowledge for the research presented here. The start of the Holocene period has recently been formalised at 11,700 BP (Walker et al. 2009), however, the generally accepted meaning of the mid- to late Holocene period in Australian archaeological discourse is that it encompasses the last 5,000 years. The vast majority of archaeological sites recorded in Australia date to within this time period (Flood 1992:246; Williams 2013). This concentration has led a number of archaeologists to conclude that from around 5,000 years ago there was an increased intensity of Aboriginal occupation of the continent. It is around this time
that the discard rates of archaeological materials within sites start to increase, intensities of regional land use increase, and previously little-used environments or resources become more systematically exploited (e.g. Barker 1991; Lourandos 1983, 1985; O’Connor 1992; Ross 1981).

**Late Holocene intensification**

Lourandos’ influential work (1977, 1985, 1997; Lourandos and Ross 1994) challenged the early, static frameworks of Aboriginal history, which emphasised early cultural continuity and conservative exploitation of an apparently harsh environment. He promoted research on sites dated to the mid- to late Holocene period in order to detect and explain evidence of cultural change identified in material culture found in the archaeological record. In his explanations for change, Lourandos emphasised social factors and proposed an overall continent-wide process of socioeconomic intensification, predominantly based on evidence from southwest Victoria (Lourandos 1983, 1985). With this approach, Lourandos modelled trajectories on gross characteristics of the archaeological record and emphasised widespread cultural continuities within changing structures (Ulm 2004:191). In response, alternative frameworks were put forward to describe and analyse the processes affecting the nature of the archaeological record across the continent. These include site preservation factors, environmental change, population growth and the introduction of new technologies (e.g. Beaton 1985; Bird and Frankel 1991a; Frankel 1993; Hiscock 1986; Rowland 1999). Frankel (1991:147) argued that explanations of cultural change involving a single process of intensification puts limits on the characterisation of regional and local variability. Instead, changes within particular sites or regions should be viewed as largely independent, and archaeological evidence should be explained without reference to an overall continental scale model. Studies of archaeological databases (e.g. Bird and Frankel 1991b; Holdaway and Porch 1995) have also revealed a more complex picture than can be accommodated by a continental narrative, with the use of sites, places, landscapes and regions changing through time.

**Research at a regional level**

Ulm (2004:192) reflects on previous and current themes in the archaeology of mid- to late Holocene Australia and the constraints on understanding the archaeology of this period. He argues that in Lourandos’ and others’ use of generalised chronologies, and in the synthesis of evidence from distinctly different Holocene trajectories, unique regional patterns and trajectories are made insignificant as sites and regions are linked into a continental narrative. He discusses several detailed studies that emphasise long-term variability of behavioural responses to environmental change at the regional level across the continent: on the southeast Cape York Peninsula (David and Chant 1995), in the arid zone (Smith 1993; Veth 1995, 1996) and in southeast Queensland (Ulm and Hall 1996). These studies demonstrate that an examination of the basic assumptions underlying archaeological studies at the continental scale is important (e.g. Bird and Frankel 1991a; Hiscock and Attenbrow 1998; Holdaway et al. 2002). In a discussion of Holocene environmental variability, Rowland (1999) proposed that interpretations of cultural change should be reassessed in relation to improved knowledge of Holocene environmental change. Global climate oscillations occurred throughout the Holocene, but understandings of Holocene environmental variability have not yet been fully explored in the Australian archaeological context (Rowland 1999:11). The theme of exploring human–environment interactions and cultural change in response to environmental variability in the Holocene period has also been a focus of more recent research (e.g. Bourke et al. 2007; Brockwell et al. 2013; Haberle and David 2004). To further resolve the relative importance of climatic, environmental, and cultural changes on human activity and the archaeological record, high-resolution palaeoenvironmental sequences, studied in association with fine-resolution archaeological sequences, are clearly required.
The archaeological record of the last 5,000 years demonstrates that cultural changes were taking place in Aboriginal societies on the Australian continent. It appears that marginal areas like the rainforest region were occupied on a more permanent basis for the first time (Cosgrove et al. 2007; Ferrier and Cosgrove 2012), desert areas were periodically abandoned (Smith 1993; Veth 1995, 1996), people were possibly establishing semi-permanent camps in the western district of Victoria (seen archaeologically as mounds) and major technological changes took place (Cosgrove et al. 2007; Frankel 1991; Holdaway et al. 2002; Mulvaney and Kamminga 1999). These are developments, inventions and alterations that took place in dynamic Aboriginal societies, though not necessarily in a directional manner (Frankel 1991:148).

Research approach, objectives and methods

The research presented here is a study in contact archaeology. It investigates the potential of applying an analytical framework that takes a temporal and interdisciplinary approach to writing Aboriginal history in an area where no contact archaeology projects have been undertaken previously. The view is that without a pre-European (prehistoric) perspective, comparative analyses of culture change and continuity before, during, and after Aboriginal–European contact are inadequate. As already stated, at the core of contact archaeology there is a recognition of the value of information from sources other than material culture and a more critical and historical approach to the construction of archaeological knowledge. The research presented here therefore brings into play multiple perspectives and employs a variety of data sources. The specific methods and methodological issues faced in applying the proposed research approach to the analysis of different data sets are discussed in the individual data chapters. Analyses of archaeological evidence excavated from three traditional open sites facilitated the identification of the long-term cultural trajectories that this project focused on: material culture and technology, plant subsistence strategies and Aboriginal rainforest settlement patterns. The main objectives of the research are: (i) to present new archaeological evidence from three open sites located in north Queensland’s rainforest region; (ii) to integrate the archaeological evidence with gathered historical (documentary and oral-historical) information, addressing both settler and Indigenous perspectives, which in turn allows agency to the Indigenous people whose land was intruded upon; and, (iii) to explore long-term change and continuity in the identified cultural trajectories.

Using a temporal framework requires an understanding of the different temporal scales applied to differing data sets, addressing the problem of how to sensibly integrate different sets of data such as fine-grained ethnographic observations and the longer-term structure of the archaeological record to investigate Aboriginal history. The data analyses presented recognise that both large-scale and short-term records have their own limitations and advantages; the pre-European archaeological record reflects longer temporal scales whereas the contact archaeological record reflects shorter-term events supplemented with historical information. To address this methodological problem, analyses of the relatively rich archaeological material from the Urumbal Pocket site examines Aboriginal rainforest use and occupation before European arrival in and around the traditional lands of the Jirrbal people on the Evelyn Tableland. Urumbal Pocket’s long-term occupation history is used subsequently as a backdrop in the construction of occupation histories at two open sites (Boignjul and Cedar Creek) used by the Jirrbal people in the more recent past. Analyses of the archaeological and historical data sets demonstrate that careful application of ethnographic analogy can provide significant clues to past human behaviours and in gaining an understanding of long-term change and continuity in Aboriginal rainforest culture and society.
The data sources

Archaeological evidence

New archaeological evidence from three open sites provides small windows into the Aboriginal occupation of an area in the rainforest throughout the pre-contact and contact periods. The three sites investigated are Urumbal Pocket, Boignjul and Cedar Creek, all located within the traditional lands of the Jirrbal Aboriginal rainforest people. Analyses of the archaeological evidence excavated from these three sites facilitated the identification of the trajectories of culture change and continuity that form the focus of this investigation: (i) material culture and technology; (ii) plant subsistence strategies; and (iii) rainforest settlement patterns. The manner in which open sites may be identified archaeologically has been much debated (e.g. Binford 1980; Gould 1980; Kent 1987; Meehan and Jones 1988) and because open sites are prone to erosion through natural processes, an examination of these and other processes in each of the three archaeological sites allows for some assessment of site formation through time. An examination of Holocene environmental variability in the rainforest region allows for change and continuity interpreted from the archaeological record to be considered in relation to Holocene environmental change.

Historical information

A relatively rich body of ethnographic information from the rainforest region exists. In addition, the ethnohistorical record details some aspects of interactions between early European settlers and the local Aboriginal rainforest people. Two primary documentary sources used herein, Coyyan (1915, 1918) and Mjöberg (1913a), are both directly linked to the Jirrbal people through the first-hand observations made by these authors. A series of newspaper columns written by prospector Michael O’Leary under the pseudonym of Coyyan (Coyyan 1915, 1918) provide information on Aboriginal rainforest use in the early phase of Aboriginal–European contact of the 1880s as well as insights into pre-European Aboriginal lifestyles in the study area. The O’Leary material has not been analysed or used in any detail previously.

A second primary source of historical information is the previously unanalysed diaries and related publications of Swedish scientist Eric Mjöberg, who spent several months travelling in the rainforest region in 1913. After 75 years in obscurity, Mjöberg’s diaries have recently been located in the California Academy of Sciences archives (C. Hallgren, pers. comm., 2005). The diaries provide information on the Aboriginal use of the rainforests in the study area and on Aboriginal–European interactions in the transitional contact period (Mjöberg 1913a, 1913b, 1914, 1918, 1925). Mjöberg viewed the Australian ‘natives’ as a dying race that had to be studied and captured in words and photographs before European influences resulted in their inevitable extinction, an attitude far from unusual at that time (see, for example, May 2010). It led, however, to important documentation of Aboriginal rainforest culture and society in the study area that provides some important information on change and continuity in the post-contact period (Ferrier 1999, 2002, 2006). These two sources provide a documentary history, which is used in this study to assist interpretations of the archaeology of contact in the rainforests of the Evelyn Tableland.

Oral traditions and living memory

Aboriginal perspectives of recent open campsites and their childhood memories of life in the rainforest provide another line of evidence that is integrated into the analysis. The inclusion of historical information from Indigenous and non-Indigenous people with associations to the study area gives the study a ‘human’ perspective that is denied in investigations confined to the archaeological or documentary record alone. The principal informant in the study is Jirrbal elder Maisie Yarrcali

1 The pages of these diaries are unnumbered and therefore quotes from this source do not include pagination.
Barlow. Maisie was born in the early 1920s, and later in life she resumed the storytelling tradition (and other rainforest traditions) which had been interrupted by European settlement (Barlow 2001). The acknowledgement and understanding of an Aboriginal history in the area before contact, and the documenting of Aboriginal people as individuals participating and adapting to rapid changes in the contact period are important to the Jirrbal community. Oral information about this particular time period will not be available forever and the research presented here contributes to the recording and preservation of some of that knowledge. Maisie’s stories reflect aspects of a lifestyle that arose from traditional rainforest occupation, and from traditions told to her by her grandmother when she was a young girl, as well as from her own observations and experiences in the post-contact period. Informal interviews were carried out with Maisie Barlow at her home and at all three archaeological sites investigated. She also assisted with translating historical information provided by Lizzie Wood, who lived at Cedar Creek as a young child in the 1910s. During a cultural mapping project carried out in the study area in the early 1990s (Duke and Collins 1994), Aboriginal sites were recorded and classified according to their past use and function, and map references to site locations were given. Many elders were still alive and participated in the project. The report was made available for the purpose of this study by permission from the Jirrbal elders and the report’s authors. Valuable information on the study area’s logging history was provided by retired timber cutter Reg Lockyer, who was born in the 1930s and grew up near Ravenshoe. He is amongst generations of timber cutters who logged rainforests up until the time they were declared part of the Wet Tropics World Heritage Area in 1986 and has a thorough understanding of the rainforests around Ravenshoe and the upper Tully River where he has lived and worked for most of his life.
This text is taken from Journeys into the Rainforest: Archaeology of Culture Change and Continuity on the Evelyn Tableland, North Queensland, by Åsa Ferrier, published 2015 by ANU Press, The Australian National University, Canberra, Australia.