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FIREARMS IN ROCK ART OF ARNHEM LAND, NORTHERN TERRITORY, AUSTRALIA

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Abstract. Firearms form part of Historic period rock art in the Northern Territory, Australia, and have been discussed in terms of initial and ongoing culture-contact between settler societies and Indigenous communities. Drawing on fourteen firearm paintings from eight archaeological sites in Arnhem Land, and a review of the historic literature, this study suggests that Indigenous communities experienced firearms in a variety of ways, progressing from early conflict through to ownership during the buffalo shooting industry. Firearm paintings demonstrate the influence on Indigenous society arising from the introduction of a powerful technological innovation. Firearms influenced Indigenous social organisation and became incorporated into the traditional belief system. Finally, firearm paintings reveal Indigenous perceptions of introduced technology and can inform on changes in settlement and mobility. This paper advocates the model of ‘ownership equals painting’ rather than simply painting what has been seen from afar as argued for depictions of maritime rock art.

Introduction

Western Arnhem Land (Fig. 1) has a very prolific assortment of rock art, amongst which there are an array of various ‘contact motifs’ consisting of introduced imagery arising from interactions by Aboriginal people of Arnhem Land with Macassans and Europeans. Firearms in the rock art of Arnhem Land are reported in detail in only a few references (e.g. Brandl 1982; Chaloupka 1993; Edwards 1979; Jelinek 1989; Lewis 1988; Roberts and Parker 2003). Chaloupka (1993) provides the most detailed account of firearm paintings in his discussion on contact period rock art. Others refer briefly to firearms as part of the historic phase of rock art painting and discuss them in terms of initial culture contact and interest from Indigenous painters. In contrast, this paper investigates the presence of firearms in rock art in relation to changes occurring in Indigenous society during the historic contact period in the Northern Territory.

Indigenous communities experienced firearms in a variety of ways, progressing from early conflict (early to mid-1800s) to ownership during the buffalo industry (late 1800s to 1940s) (Warburton 2009). Firearms are documented in rock art elsewhere internationally where settler culture’s encountered indigenous societies (Ouzman 2005; Yates et al. 1993), but only in Arnhem Land do they appear to be fully integrated into the traditional painting manner (Chaloupka 1993: 196).

A special value of contact-era rock art, during times

of confrontation, land seizure, population displacement, new diseases and population collapse — as was the case following the Europeans incursions into northern Australia — is that it gives some insight into this frontier as experienced from the Indigenous perspective. Historic sources and their accompanying illustrations are by definition the European viewpoint, and rarely attempt to convey the Indigenous experience.

While our cultural understanding of what constitutes a gun or ship allows us to recognise the object, and possibly privileges meaning of the painting, research into introduced subject matter (i.e. ships, cattle, horses etc.) in Indigenous art needs to take into account the traditional belief systems and practices of local groups. Porr and Bell (2012) challenge the primacy of Western scientific and literary academic methodologies in the study of Aboriginal rock art. They state that Indigenous ways of knowing need to be utilised in critical evaluation in rock art studies (Porr and Bell 2012: 15). Contact period rock art needs to be approached with an equal partnership of Western science and Indigenous knowledge in the interpretation of Indigenous people and their environment (Porr and Bell 2012: 40). Thus research on representations of firearms in Arnhem Land rock art provides an avenue to explore the dynamics between Indigenous society and introduced cultures (i.e. by Europeans). As discussed below, the ability of rock art to inform on the negotiation of cross-cultural space has received significant attention in recent years

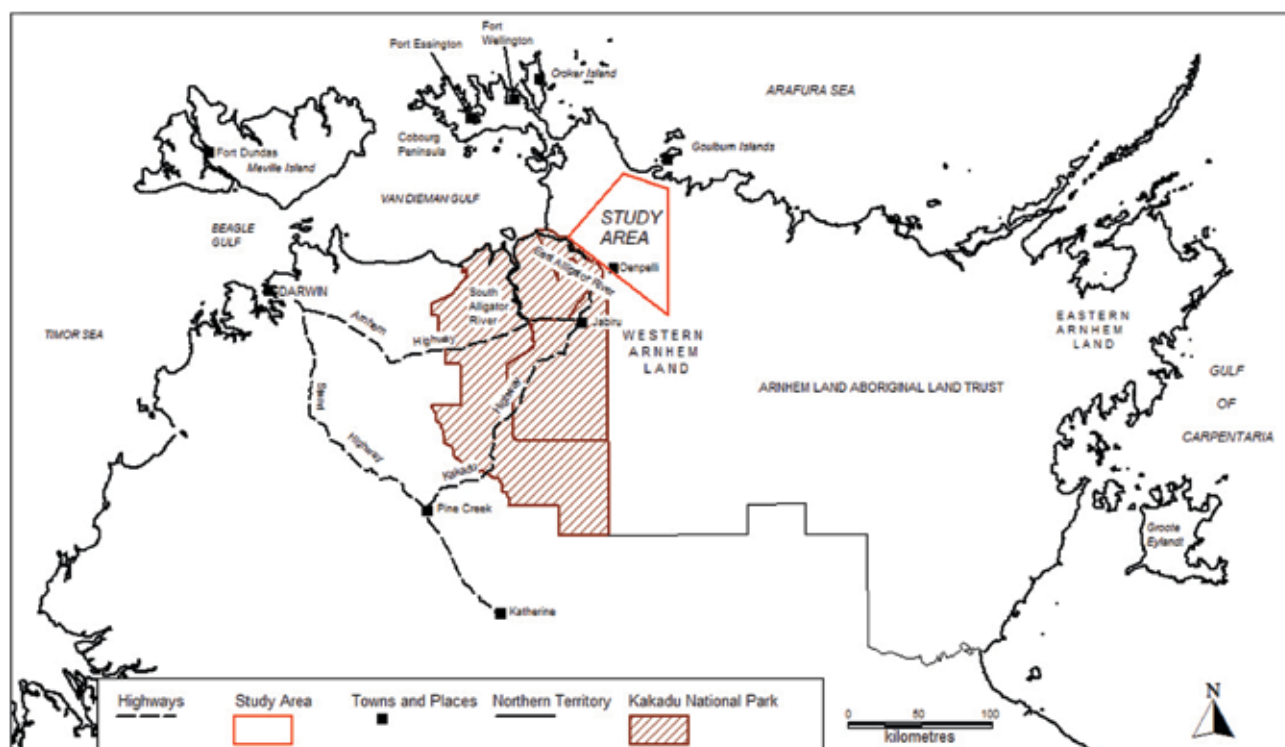


Figure 1. Location of the study area, Northern Territory, Australia.

(Clarke 2000a, 2000b; Frederick 2000; McNiven and Russell 2002; Torrence and Clarke 2000). Therefore, this paper not only records Indigenous familiarity with firearms, it attempts to go beyond simple presence and absence, to explore the impact of the technology and knowledge transfers into Indigenous cultures. The distribution of these motifs in different areas of Arnhem Land may also inform on changes in settlement, mobility and social organisation following European contact in the early 1800s.

Firearms and colonial contact rock art

According to McNiven and Russell (2002) contact archaeology has become part of the post-colonial discourse and such research should be aimed at understanding the dynamics of inter-cultural encounters rather than just missing histories. One such issue is the problematic nature of 'contact' rock art which is usually defined by the presence of specific contact motifs. Clarke (2000a; 2000b) proposes that it is not only a site of contact but also a context for mediating cross-cultural exchange through the making of pictures that record this exchange and interaction. On Groote Eylandt, Clarke and Frederick (2011: 142–143) investigated the ways in which Indigenous artists chose to represent their interactions with outsiders and argued that the differences in the depictions of Macassan and European subjects showed a different social dynamic and familiarity in the experience of contact. Similarly firearms in Arnhem Land rock art can provide a unique window into Indigenous experience during the various phases of contact.

What were firearms used for? Until recently the story

told and pictured in popular histories of the Northern Territory was one of conflict between European settlers and Indigenous people. For example, a typical frontier encounter is depicted in the illustration by E. Jacko on the cover of Pike's *Frontier territory* (1972) showing a white man on his rearing horse waving a Colt pistol, while the Aboriginal warrior below wields a barbed spear. That there were some such confrontations is reliably documented, although the frequency and severity of such engagements in western Arnhem Land is now disputed (Reynolds 2006). The scene drawn by Jacko has more of the air of fantasy history in the tradition of the American Western than of reality in the wetlands of the Top End. The more likely everyday experience of firearms, for both European and Indigenous Australians, was their mundane use for hunting. Birds and the smaller animals, like goannas and wallabies, were hunted with shotguns or small-calibre rifles, while a photograph from 1916 of two Arnhem Land hunters shows them using a small bore rifle and shotgun in a 'traditional' manner to carry their catch of fish (Fig. 2). The larger introduced animals — cattle, pigs, horses, donkeys, and above all the formidable water-buffalo, introduced from south-east Asia into Arnhem Land by the British settlers in the 1840s (Powell 1988), required the larger calibre rifles, typically ones also used by armies in combat. Thus in the early phase of European contact, the usefulness of firearms for hunting far outweighed their use in incidents of frontier fighting as depicted by Pike (1972).

We also know that following this initial phase of contact from approximately 1880 to the mid-1930s, there was a large industry in hunting feral buffalo for their

hides and horns (Levitus 1995). Indigenous people had two kinds of roles in the buffalo industry. A few, all men as far as we know, shot buffalo, alongside the white hunters. Others, both men and women, finished off the wounded animals, skinned them, and then washed, salted, cured and stacked the hides (Levitus 1995). The value of firearms in such economic pursuits has to be remembered when exploring their meaning for Indigenous painters.

Previous studies of contact rock art

The influence of other cultures on Indigenous groups in Arnhem Land has been a major theme for anthropologists. The Berndts wrote extensively on the influence of the Macassans and Europeans and this has been a continuing trend in Indigenous studies in this region (Berndt and Berndt 1954). Mountford (1956) was amongst the first to take an interest in contact rock art from Groote Eylandt and Arnhem Land and to recognise regional variation in the themes depicted. He noted that the imagery on Groote Eylandt is largely about Macassans and the trepang harvesting industry (Mountford 1956: 99; Clarke and Frederick 2011), whereas in western Arnhem Land, he recorded a European ship and a building which he was told by his Aboriginal informants were images seen in Darwin (Mountford 1956: 159). Images of firearms are recorded in later studies, such as the famous depiction of a person holding a firearm above his head from Deaf Adder Gorge in Brandl (1982: 18). Later, Lewis (1988: 413) illustrated a Martini-Henry rifle which he assigned to his long spearthrower period along with other figurative images of European objects in order to recognise them as one aspect of the continuous Indigenous painting tradition, rather than assign introduced imagery to a separate 'contact' category.

Chaloupka (1993: 191) considers the 1920s as the period when rock art production in the northern and western Arnhem Land escarpments declined. The chronology of rifles in the rock art tends to reflect this pattern, although painting occurred up to the 1950s in some other areas, for example at the Djulirri rockshelter in the Wellington Range (May et al. 2010; Taçon et al. 2010; Wesley et al. 2012). Chaloupka (1993: 198–201) observes that the buffalo shooting industry had a major influence on Indigenous society in Arnhem Land. Introduced stock and domestic animals such as horses, cattle, pigs, goats and cats were given language names and are also featured in the rock art (Chaloupka 1993: 201). He reproduces at least three images of Martini-Henry rifles, with two other firearm motifs likely to pre-date the 1850s (Chaloupka 1993: 194–197). Chaloupka (1993: 194) suggests that these early depictions of firearms reflect an understanding of their use as a weapon as they are painted in the same fashion as a spear being held by a person. Although



Figure 2. Photograph by Edward Reichenbach from 1916 showing Indigenous hunters using their rifles and shotguns in a 'traditional' manner to carry their catch of fish. PictureNT, Karilyn Brown Collection (PH0413/0018).

illustrating a number of firearm images, he provides limited discussion of their significance.

Three further images of firearms in rock art are illustrated by Roberts and Parker (2003). They note that the majority of firearms depicted in the Mt Borradaile area are of Martini-Henry rifles and some are likely to be muzzle loading percussion-cap pistols (Roberts and Parker 2003: 42). They also attribute the presence of firearms in the rock art of the region largely to a discourse of European conquest and frontier conflict, although there is acknowledgement that Indigenous experience of firearms would have occurred as a result of their employment in the buffalo industry (Roberts and Parker 2003:43).

Colonial contact rock art imagery has been recorded elsewhere in the world in North America and South Africa (e.g. Ouzman 2005; Yates et al. 1993). Yates et al. (1993) describe colonial contact imagery of horses, mules, other introduced animals, wagons, Europeans and ships from South African rock art sites. In contrast with the artistic continuity exhibited in the portrayal of European objects in the rock art of Arnhem Land, they describe the majority of colonial contact-period rock art in the south-west of South Africa as 'crudely rendered' (Yates et al. 1993: 67). The authors also discuss the paintings as an important source of information regarding resistance and social identity, the underlying belief system, ritual and artistic practices of the indigenous artists (Yates et al. 1993: 68).

Rifle technologies as a chronological indicator

Early encounters with firearms may have occurred as a result of contact with Macassan trepang mariners. Although the date of the first forays by Macassans is uncertain, there is considerable evidence that Macassans were processing trepang in Arnhem Land by the start of the 18th century, visited repeatedly until 1906 and were known to carry musket-type firearms (Clarke 1994, 2000a, 2000b; Flinders 1814: 290; Macknight 1969, 1986; Mitchell 1994; Taçon et al. 2010). These

Technology	Firearm types and manufacturers	Timing	Innovation and characteristics	References
Flintlock	New Land pattern musket; Short New Land Pattern musket	1795	Muzzle loading musket has a smooth bore inside the gun barrel and fires a lead ball projectile. Cock with flint, priming pan, pan cover (frizzen). Trigger guard, sling swivels, bayonet mounts, long barrel, a brass butt plate, and a general long narrow shape.	1800 to 1870 (Halls 1974; Skenneron 1975)
Percussion-cap	Previous muskets; pattern 1848 percussion musket; pattern 1853 Enfield; general variety of manufacturers and types	1840s 1848 1853	Existing muskets fitted with percussion-cap. Muzzle loading smooth and rifled bore. The percussion cap allowed more widespread use of rifling in the barrel instead of a smooth bore, improved accuracy. Firearms have same characteristics as flintlocks, general long narrow shape and retain hammer-and-percussion.	1848 Percussion-cap rifle (Duckers 2005; Halls 1974; Skenneron 1975)
English centre fire and rim fire breech loading	Snider Enfield .577 conversion; Martini-Henry rifle with a number of variations; wide variety of sporting rifle manufacturers	1866 1871	New firearms invented. Many conversions of existing firearms with flipping block. Breech-loading mechanisms and new bullet cartridge technology introduced. Martini-Henry has distinctive 'humped' breech and loading lever beneath wrist of stock	1870s U.K. (Halls 1974; Pauly 2004; Lugs 1973; Skenneron 1975; Westwood 2005)
American centre fire and rim fire breech loading	Sharps; Springfield; Winchester	1869 1868 1873	Breech loading, falling and lifting block, and lever action reloading. Distinctive features i.e. 'tang sight', different styles of stocks, fore-stocks, and levers	1870s U.S.A. (Lugs 1973; Pauly 2004)
Modern bolt action centre fire repeating rifles	.22 calibre rifles; .303 Lee-Enfield; Mauser	1880s 1888 1870s	New propellants, increased muzzle velocity, rifles with smaller calibres and longer range. Small calibre inexpensive. Bolt action predominant.	1900s (Lugs 1973; Halls 1974; Skenneron 1975; NTTG ¹)

¹Northern Territory Times and Gazette

Table 1. Technological innovations in firearms in the 19th century and major types of weapons in relation to the Northern Territory history. (See Fig. 3 for illustrations.)

firearms are rarely reported in accounts of Macassan trade, therefore this paper will concentrate on the depictions of 19th century firearms, and particularly rifles. Rifles underwent a rapid change in design and technology which enables individual firearms to be used as approximate chronological markers. The 1800s started with muzzle-loading muskets that could fire a maximum of four rounds per minute, and ended with the Lee Enfield .303 capable of firing up to 30 rounds per minute (Hall 1916: 27). It is important to note that transfer and adoption of new technologies in Western society was not a uniform standardised process in the 19th century. For example, the breech-loader, where ammunition was loaded from the rear of the rifle and not the muzzle, was invented early in the 1840s, yet it took some 30 years to become widespread in circulation. This point is important when constructing chronologies around firearms' innovation and use (Table 1). In other cases, commercial success and popularity became the driving force for the uptake of new rifles (Pauly 2004: 110).

In Australia, 19th century firearms began with the muzzle-loading flint-lock muskets issued to the British infantry and marine garrisons (Fig. 3). This is a slow firing weapon, requiring skill and training to master;

it was susceptible to weather and environmental conditions. Percussion caps replaced flints as the main ignition system in the early 1800s (e.g. the Pattern 1848 percussion musket). By the 1850s the British introduced a variety of percussion rifles into widespread service (Duckers 2005: 15). These two types of firearms, the musket and rifle with flintlock and percussion-cap actions, have very similar appearance characteristics and are very difficult to distinguish apart from a distance (see Fig. 3). This similarity makes it hard to distinguish these two musket types in rock art. Therefore these musket technologies are grouped together as firearms of the 1820 to 1870 period.

It is during this period that the earliest documented European encounters with Aboriginal people and firearms occur. The earliest report was at Goulburn Island. Captain Phillip Parker King (1827: 69) stopped at Goulburn Island, off the coast of north-west Arnhem Land in 1818 and ordered his shore party to fire at Aboriginal men who stole tools (Fig. 4). Later Indigenous encounters with musket firearms occurred at the English outposts of Fort Dundas, Melville Island (1824 to 1829); Fort Wellington, Cobourg Peninsula (1827–1829); and Victoria Settlement, otherwise known as Port Essington (1839–1849) (Fig. 1) (Allen 1969,

1972; Powell 1988). Generally firearms are referred to in accounts from these settlements simply as muskets, flintlocks, guns and pistols (Mulvaney and Green 1992: 54; Wilson 1837: 137, 141). Archaeological investigations by Allen found both expended flints and percussion-caps, and thus reflecting an important change in musketry that was taking place during the time that Port Essington was occupied (Connah 1988: 47).

The development of the bullet cartridge centre-fire and rim-fire rifles gathered pace in the 1870s (Pauly 2004: 96). In the late 1870s to 1880s there was a myriad of rifle action designs in production (Lugs 1973). It was a time of major invention and diversity until 1900 when most firearms manufacturers chose the horizontal breech loading design which in turn allowed for unique characteristics to be displayed when depicted in rock art paintings (Lugs 1973: 83–84). The introduction of bullet cartridges quickly made the muzzle-loading weapons obsolete and they were rapidly discarded as shooters much preferred the new superior technology, especially in frontier conflict situations. The Snider-Enfield was one of the many rifles that saw extensive use in the Northern Territory during its early occupation and development after 1869, as mining, agricultural and pastoral developments took hold (Bauer 1964; Goon 1995; Powell 1988). Early forays by prospectors and punitive expeditions into western Arnhem Land were noted to have been armed with the Snider Enfield rifles (NTTG 1875: 2, 1898: 3)

The Martini-Henry rifle was adopted by the British Army and entered service in June 1871 (Westwood 2005: 61) (Fig. 3). It is a single-shot weapon, rifled barrel, lever-action, with a falling breech-block and a .45 calibre bullet cartridge (Pauly 2004: 109). Martini-Henry carbines were to become the favoured weapons for horsemen in the cattle and buffalo industries in the Northern Territory as the powerful cartridges gave a long range, with a flat trajectory (Mulvaney 2004; Pauly 2004: 109). Evidence from reviewing buffalo shooter accounts suggests this was the most common type of rifle used between 1870 and 1900 on the north Australian frontier (NTTG 1873–1927; Warburton 2009). The incorporation of Indigenous labour by white buffalo shooters into the industry during the 1890s was widely reported, and it was during this time that rifles began to be used or owned in significant numbers by Indigenous



Figure 3. Examples of the firearms and their features from the different time periods identified in the paper.



Figure 4. View from Goulburn Island as Phillip Parker King's watering party is attacked by 'natives' in 1818 (nla.pic-an7851134).

Era	Group	Activities	Weapon types
Pre 1800	Macassans	Trepang fishing and trade with local Indigenous populations	Chinese/S.E. Asian muskets
1820 to 1870	Early colonial military outposts	Establishment of small garrisons to secure Australia's north and trade with Macassans. High representation of military personnel. Some exploration expeditions to the NT.	Brown Bess musket Indian Pattern musket Percussion-cap musket Snider-Enfield
1870 to 1920	Settlers, miners, pastoral settlers, buffalo shooters	Mixture of pastoralism, mining and natural resource extraction (buffalo shooting for hide export). Very low representation of military presence.	Snider-Enfield Martini-Henry Winchester Sharps rifle Henry rifle Break open shot guns Small bore .22 rifles
1920 onwards	Recreational shooters, Military, pastoral industry, buffalo shooters, missions	Large and small game hunting; pastoralism is entrenched as major industry; mining sporadic; beginning of missions; buffalo hide export declines by 1930s with introduction modern durable fabrics 1930s military build-up in Darwin and WWII large presence of military units	Lee Enfield .303 SMLE, Mauser pattern 7.69 mm, Winchester lever action, shot guns (various), small bore .22 rifles

Table 2. Historical economic periods with respective firearm types in the Northern Territory

people (Forrest 1985: 6–7; Mulvaney 2004: 13; Warburton 2009: 177); however, this was not entirely supported within the Northern Territory community at the time (Gilruth 1923: 4; O'Neil et al. 1910: 4).

Firearms made in the United States also appear in northern Australia, however, these rifles are rarer than British-made firearms owing to their greater cost and import tariffs. Despite this, US-manufactured repeating rifles began to make their way into the buffalo shooting camps of the Northern Territory in the late 19th century (Mulvaney 2004). The most successful of these rifles in Australia was the lever action 1873 manufactured by the Winchester Company (Pauly 2004: 110). These rifles did not have widespread use in the pastoral and buffalo shooting industries until the early 20th century, after Federation and subsequent changes in the Australian tariff and import regulations (Warburton 2009). Therefore, this group of firearms is assigned to the post-1900 era in the Northern Territory when they were likely to have been seen in greater numbers.

The development of bolt-action centre-fire rifles (firing pin) and the smokeless cordite propellant in the late 19th century saw the next major change in firearms technology (Lugs 1973). The English-made Lee-Enfield .303, used a bolt action and included the innovation of a detachable magazine (Fig. 3). Repeating rifles are most likely to have been used increasingly in the Northern Territory post-1900. Nevertheless, Indigenous access to rifles significantly declined after 1925 following the entrenchment of mission governance in western Arnhem Land, the decline in buffalo shooting, and the growing reach of government authority from Darwin with ordinances banning Indigenous men from owning firearms.

The distribution and chronology of firearm paintings recorded in this study

The author has recorded fourteen images of firearms in eight separate rockshelters across western Arnhem Land located near the northern coastline and deep into the Arnhem Land plateau stone country (Table 3, Fig. 5). The firearms consist of seven Martini-Henry rifles, two muskets, and two Winchester carbines. The remaining motifs are more difficult to identify and are possibly a Lee Enfield SMLE rifle or Winchester carbine, a Snider-Enfield carbine or shotgun, and a pistol of unknown technology. The Kundjumarndi firearm has been previously reported by Gunn (1988) and the site was re-recorded by the author in 2008. The pistol has been reported here as examples are very rare in the western Arnhem Land rock art assemblage. However, it is not discussed further owing to the lack of identifying characteristics. The manner in which the firearms are painted is consistent with the styles and traditions previously documented in the Arnhem Land region (Chaloupka 1993).

Figure 6 provides a summary of the rock art painting manner and pigment used in the firearm images. The use of white pigment in the majority of paintings accords with previous assessments of white pigment use during the contact period owing to diminishing access to traditional sources of red pigments (Chaloupka 1993). The white and blue pigment Martini-Henry painting is located at Mount Borradaile. Blue pigment is suggested to have been derived from Reckitts Blue, a laundry whitener (Chaloupka 1993). The use of Reckitts Blue for Indigenous painting is first reported by Spencer (1928: 831) occurring in the Alligator Rivers region by 1912. Chaloupka (1993) suggests that the blue pigment

Site	Firearm type	Motif description	Identifying features	Interpretation
Kundjumarndi	Martini-Henry	Red outline and infill on white; life size	Lever action; scalloped breech; trigger guard; general shape	Likely to be a representation of a Martini-Henry with 'humped' breech loading area with a trigger guard and loading lever.
Awunbarna	Martini-Henry	White with blue infill and outline; small	Scalloped breech; trigger guard; general shape, barrel; stock; butt stock	A cut-down rifle or carbine; i.e. with much of the length of the stock and barrel removed. 'Humps' on the breech and the lack of any visible firing mechanism could indicate that the basis of this weapon was a Martini-Henry.
Arrarra	Musket, New Land pattern	Red outline and infill on white background; life size	Cock and hammer; ramrod prominent; no breech; long barrel; butt plate	The cock is drawn without any upright thumb-piece to actually cock the arm. However, a flintlock with the cock and the frizzen both lowered would look something like the painted image. Two apparent trigger guards likely to be hand-steadying loop and lanyard attachment.
Arrarra	Martini-Henry	Red outline and infill on yellow; life size	Scalloped breech, lever action, sling, trigger guard, accentuated curve shape, butt plate	Configuration of the breech is very distinctive, having 'humps' on the top of the receiver before and behind the falling-block loading trap. Apparent thickness of the barrel as portrayed is probably due to it having the standard military wooden fore-end that extends almost to the end of the barrel.
Djarrng	Winchester repeating rifle	Superimposed over another firearm. Red outline with solid yellow infill; life size	Lever action; butt plate; trigger guard; rear sight; tang sight	Not likely to be a Martini-Henry as the receiver seems too short and the under-lever an odd shape. Most likely 19th century Winchester lever-action repeater carbine configuration. A tang sight could be fitted to this by screwing the sight to the upper butt strap (or tang) a couple of inches behind the hammer. The tang sight was used for target shooting and for long-range work typical of buffalo shooting.
Djarrng	Martini-Henry	Firearm image under another firearm painting. Outline with line infill; life size	Lever action; butt plate; scalloped breech area	Likely to be a representation of a Martini-Henry with 'humped' breech loading area.
Djarrng	Snider-Enfield carbine or shotgun	Solid white background with red outline and infill; life size	Short barrel and forestock, hammer, long butt, lever	The fairly straight stock, the very compact breech area, with an apparent hammer shown above, and the long slim barrel suggest that this could be a Snider Enfield carbine or possibly a shotgun.
Djurlirri	Firearm (musket?)	Outline; white; life size	Trigger, trigger guard, long barrel, possible bayonet(?)	The butt in the painting has been weathered, leaving only a thick barrel, a disproportionately large trigger guard and trigger, and a featureless breech area, with an extension under the barrel that may represent a bayonet, or bayonet lug.
Djurlirri	Winchester or Lee Enfield SMLE .303	Drawing; charcoal; small	Hammer or Bolt, Fore stock, sling, straight butt, squared off barrel, trigger guard and lever or possible trigger guard and square ammunition box	It appears to show a hammer, an under-lever behind the trigger guard and a rather thick fore-end. It does not differentiate the under-barrel tube magazine extending beyond the fore-end wood, possibly a carbine model. Could also be argued that painting is a 'sporterised' Lee Enfield .303" British rifle, i.e. a 303 that has had the fore-end wood cut to about half its length, leaving the forward part of the barrel protruding. The squarish forward 'trigger guard' could be seen as representing the protruding box magazine.
Mekinj Valley	Winchester carbine	Outline with infill; white outline with yellow infill; life size	Hammer, forestock, long barrel, trigger and guard	Hint of a loading under-lever behind the trigger guard, but without the distinctive breech shape it seems unlikely to be a Martini. As there appears to be a hammer depicted above the breech, the most likely identification is that it is a Winchester carbine.
Warran	Martini-Henry	Outline and infill; white; life size	Lever action, trigger guard, scalloped breech and butt, very long barrel	Long rifle appears to have an under-lever but without the distinctive breech of a Martini.
Warran	Martini-Henry	Solid; white; partially visible; life size	Butt, lever action, scalloped breech area	Diagnostic for the arm; the 'double humped' breech, the under-lever for loading and the stock shape is reasonably accurate for this rifle.
Malarrak	Martini-Henry	X-ray form; white background with red outline and infill; life size	Lever action, trigger guard, scalloped breech and butt, cartridge depicted inside chamber, barrel and cleaning rod, foresight	Diagnostic for the 'double humped' breech and trigger guard with loading lever. Stock shape is reasonably accurate for this rifle. Appears like standard military wooden fore-end that extends almost to the end of the barrel in this painting. The fore-end also served to house a steel clearing rod.
Malarrak	Pistol	Solid; white; small	Short barrel, pistol type grip	Possibly a pistol/revolver. Very limited detail in order to identify type and manufacturer.

Table 3. Firearm images recorded western Arnhem Land.

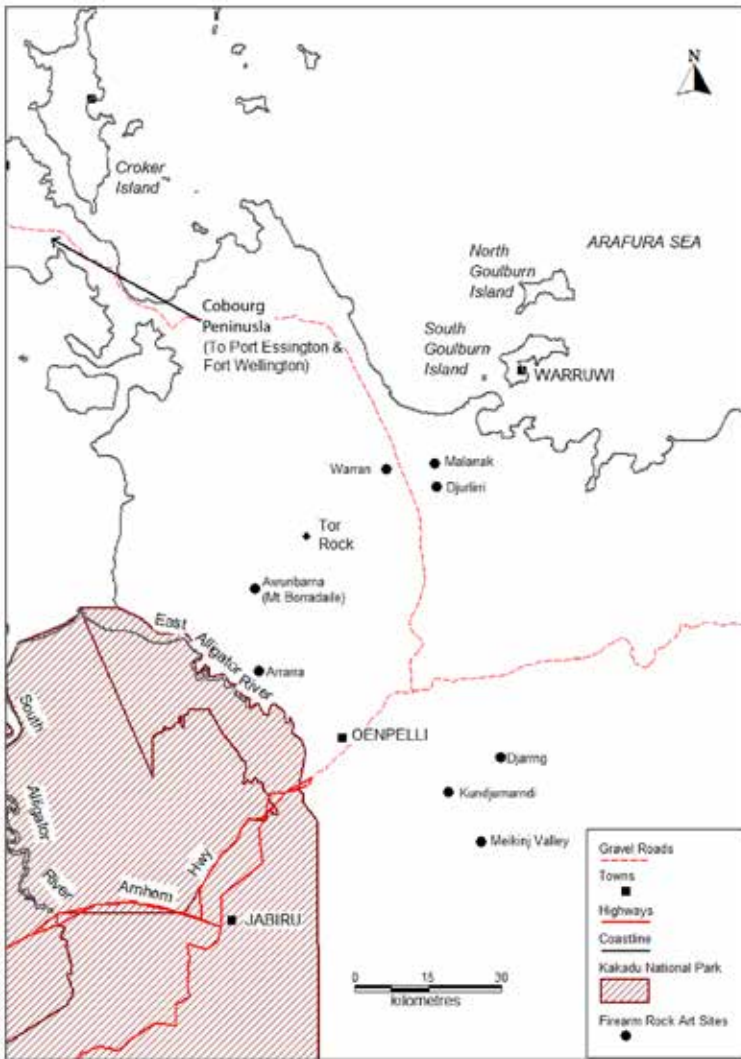


Figure 5. Location of rock art sites featuring firearm paintings and drawings.

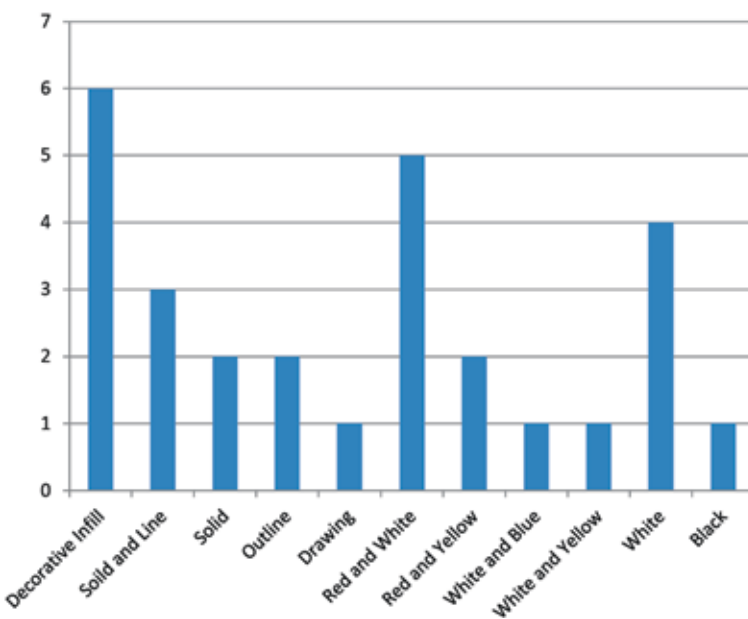


Figure 6. Summary of painting manner and pigments used in firearm paintings.

finds widespread use after the introduction of Reckitts Blue by Oenpelli missionaries in 1925.

The rifle motifs are all located in rockshelters with greater than 50 motifs. According to Gunn's (1988) definition of rock art sites, Djulirri, Awunbarna, Mikinj Valley, Kudjurnandi and Djarrng can be considered to be major rock art galleries with >100 paintings within the Arnhem Land complex. Djulirri has the highest number with over 1500 recorded motifs (May et al. 2010). The Arrara, Warran and Malarrak rockshelters contain fewer paintings and are considered as minor rock art galleries (Gunn 1988). Djulirri, Malarrak, Mikinj Valley and Awunbarna sites all contain other types of introduced contact imagery including paddle steamers, steamships, luggers, European structures, eating implements, letters of the alphabet, generic sailing vessels, buffalo and European anthropomorphous figures. Djulirri has the most extensive and diverse introduced contact imagery in western Arnhem Land (May et al. 2010). Contact period occupation is evident in all the sites containing firearm images, in the form of glass flakes, glass shards and fragments of corroded metals. Djulirri, Malarrak and Awunbarna contained further contact artefacts including fragments of smoking pipes, ceramic shards, glass beads, nails and wire. Other artefacts noted elsewhere in the greater Awunbarna complex of rockshelters include a matchbox tin, an iron adze, domino piece, tobacco pipe, bag of shot, and hand-forged nails and screws (Roberts and Parker 2003: 26). The diversity and abundance of the contact artefact assemblages at these three sites suggests they were focal points for occupation during this period.

Metrical attributes are not available for all the firearms as the sites were recorded as part of a summary site documentation process. However, the majority of the rifles (11) are depicted in life-size proportions. With the exception of Djulirri and Arrarra, the rifle paintings are all positioned prominently on a central large panel in each of the rockshelters. At Arrarra, the musket is obscured by a large boulder in front of the panel, and the Martini-Henry rifle is on the ceiling in another part of the site. The firearms at Djulirri are not prominently displayed. The Lee Enfield motif is small and placed at the base of a large panel, and the white outline musket is partially obscured by superimposition of later motifs.

There are two firearm motifs that exem-

plify the high level of detail depicted by the artist. The first, painted in the Arrarra complex of rock art sites approximately 20 km north of Oenpelli, is notable for a number of features which identify it firmly as a musket (Fig. 7):

1. 'Cock and hammer' above the trigger guard.
2. A sling swivel behind the trigger guard.
3. A distinctive ramrod holder mounted below the gun barrel.
4. The shoulder pad of the butt.
5. The use of decorative infill to distinguish the brass butt plate as separate to the gun barrel, i.e. made of wood and not iron.

The second, a rifle at Malarrak (Fig. 8), is a Martini-Henry showing the breech mechanism in great detail. The 'monkey tail' lever action and trigger housing can be clearly seen below the rifle, with the distinctive falling breech, block loading area on the top of the rifle. The breech is painted in x-ray style showing a bullet loaded into the firing chamber.

The Djarrng rockshelter potentially has three different types of firearms depicted. These include a Martini-Henry rifle, but interestingly also two other firearms that have significantly different characteristics. One firearm has an unusual rear sight known as a 'tang sight' developed for buffalo shooting in the United States from the 1870s (Fig. 3) (Lugs 1973). The other is a short rifle depicting a type of carbine with a hammer typical of the Snider Enfield (Fig. 9).

These examples illustrate the attention to detail by the artists in showing individual firearm characteristics. This is typical of what may be regarded as a continuous observational tradition in Indigenous art in Arnhem Land from the earliest images through to the contact period, which Chaloupka (1993: 181) identifies as 'scientific' illustration. Some of the firearms also incorporate elements of complex decorative infill and x-ray styles that were in common use at the time of contact (Chaloupka 1993: 191-203).

Discussion

Pre-1800s to 1840s early contact phase

Indigenous use of firearms in the early contact phase is likely to be limited. Muzzle loading weapons were generally inaccurate beyond 100 m (Lugs 1973).



Figure 7. A percussion-cap or flintlock style of firearm at Arrarra painted with decorative infill, with red on white pigments (D. Wesley 2006). Below is a drawing illustrating the hammer mechanism, ramrod under the barrel, trigger guard and sling swivel.

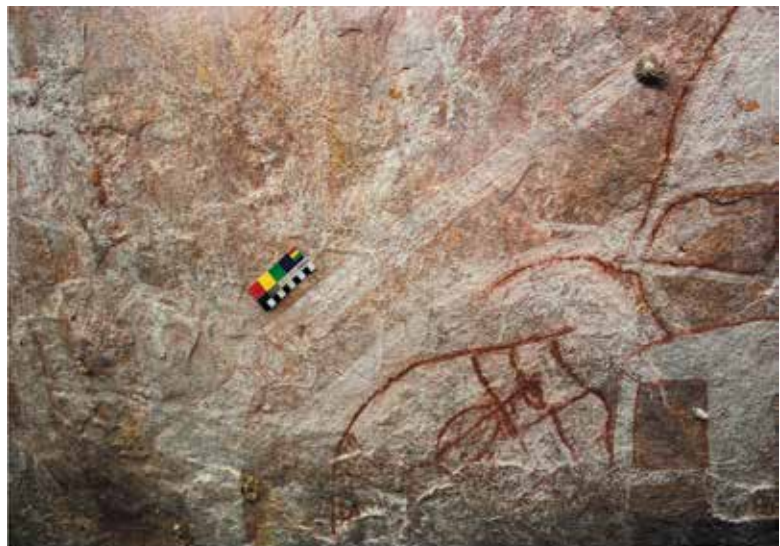


Figure 8. A Martini-Henry rifle from Malarrak painted in outline and x-ray, with red on white pigments (D. Wesley 2008). Below is an illustration showing the lever action, trigger housing, breech area, and a bullet in the chamber. Note the freshwater buffalo painting to the right.



Figure 9. Carbine type of rifle at Djarrng painted in outline then solid and decorative infill, red on white pigments. A distinctive hammer mechanism is seen above the trigger guard and breech (D. Wesley 2006).

Muskets would therefore not have been decidedly better weapons than spears and spear throwers already used by the Indigenous people. Muskets could fire four rounds per minute but according to Traditional Owner Jacob Nayinggul (dec.), an Arnhem Land warrior could throw many more spears a similar distance in that time and with similar accuracy (Nayinggul, pers. comm., 2006). Also, muskets did not particularly improve Indigenous hunting techniques owing to unfamiliarity, poor conditions of weaponry, and lack of shot and powder. Even in the mid-20th century, *Maung* hunters were still using spears to hunt water buffalo (Capell and Hinch 1970: 114). During the 19th century it was difficult to resupply lead shot and gunpowder owing to the intermittent supply from visiting Macassans, and the European settlements would have discouraged firearms being taken up as a weapon of choice by a hunting society. Iron muskets are highly susceptible to rust, and the wet-dry tropical climate of Arnhem Land makes it hard even today to maintain iron materials without corrosion.

Contrary to this logic, muskets were well known by Indigenous people at Fort Wellington on the Cobourge Peninsula (Mulvaney and Green 1992; Wilson 1837). Wilson (1837: 319) recorded the local Indigenous language word that had been given for firearms as *ubara*. The English attempted on a number of occasions to demonstrate the usefulness of musketry and cannon in encounters (Wilson 1837: 88, 89, 121, 137). Early Indigenous interactions with firearms were supervised and regulated by English officers and non-commissioned officers, with only the senior Aboriginal male elders present at the early Cobourge Peninsula outposts (Commandant Barker cited in Mulvaney and Green 1992).

It is proposed here that even though these slow-

loading firearms were next to useless in terms of increasing hunting efficiency, they acquired a high level of social capital and status and then become prominent in contact rock art. Chaloupka (1993) interprets certain depictions of firearms in the rock art of Arnhem Land as examples of people encountering firearms for the first time as, for example, those carried by the Leichhardt expedition into Arnhem Land in 1845 (Leichhardt 1847). These are generally painted using traditional design elements, with very limited detail of the weapons' characteristics. However, the complex decorative depiction of such a firearm at Arrarra may suggest this weapon was owned, or at least handled and fired, by Indigenous men. The Arrarra firearm shows five specific characteristics, the hammer and flash pan, ramrod, sling swivel, and trigger guard, whereas the depictions described by Chaloupka (1993) show none of these specific characteristics. I propose that

such a dichotomy arises from possession or use in close proximity to the English settlements on the Cobourge Peninsula. The rock art at Arrarra implies that a close interaction between the Indigenous painter and the weapon has occurred.

As mentioned earlier, Indigenous groups were aware of firearms before Leichhardt arrived in the Alligator Rivers region of Arnhem Land and probably prior to King's visit in 1818 (Leichhardt 1847). Muskets are not depicted in the Wellington Range, yet there are numerous depictions of a single-masted cutter of the type that King was sailing. This presents an interesting contrast in terms of painting firearms and sailing vessels. It is known that painting of early European ships circa 1805 to 1849 occurred in the Wellington Range, however, there are no depictions of firearms that can be reliably dated to this period. Applying the model of 'ownership equals painting' that is advocated in this paper, the lack of firearms paintings from this early colonial period may reflect a lack of ownership and familiarity by the Traditional Owners painting at the time in the Wellington Range.

1870s–1920:

modern European firearms and Arnhem Land rock art

The Indigenous use and ownership of firearms in this period in the Northern Territory from 1849 to 1870 can be attributed to one overwhelming cause: the Asian water-buffalo hunt. There is a hiatus of firearm painting owing to the absence of substantial European presence in western Arnhem Land with no reliable identified paintings of the percussion rifle technology. It is after 1870 that firearms become more common in the region and vis-a-vis more prominent in the rock art. According to Roberts and Parker (2003: 42) the most

prolific contact period motifs in the Awunbarna area are ships and firearms. They propose that the majority of contact art is from the 1870–1920 period, given the proliferation of images depicting sloops, cutters and ketches that were prevalent off the coast during the buffalo shooting period.

It is during this period that we see one of the first instances of a hybrid European-Indigenous economy occur in the Top End of the Northern Territory (Altman 2007). Altman suggests traditional market and non-market theories are not adequate to fully explain Indigenous interaction with the introduced European economy. Consequently, he proposes a hybrid economy with spatial and temporal flexibility where the Indigenous customary economy and the European market economy combine (Altman 2007). The buffalo-shooting industry is an example of a well-developed hybrid economy between white Australian shooters and Indigenous families. Participation of Indigenous labour in this industry was not only crucial for survival, but also because the industry was transient and seasonal and it allowed matched Indigenous people to maintain traditions and customs (Altman 2007; Levitus 1982).

There are also a number of reports of Europeans encountering Aboriginal men armed with firearms not associated with the buffalo industry. There is no specific record of when or how the first decision was made by a buffalo shooter to give Aboriginal men rifles, but there were certainly buffalo shooters who readily acknowledged the importance of Indigenous labour, and participation in the industry and is well documented pictorially (Fig. 2) (Mulvaney 2004; Warburton 2009).

Warburton (2009: 220) knew the value of Indigenous involvement in buffalo shooting and states 'Big Head [one of the black boys] was an experienced buffalo-shot, and I had given him Dinah [an expert and favoured horse] and a gun'. Europeans also benefitted from the prowess of Indigenous hunters with firearms. An account from the *Northern Territory Times and Gazette* (NTTG Friday, 23 December 1898: 3) states that an Aboriginal man '... will fulfil the order, and as long as you keep him in cartridges and tobacco you need never go short of game'.

It is proposed here that ownership of firearms was a major reason for painting firearms throughout Arnhem Land during this period. The majority of the rifles depicted in the rock art are Martini-Henry rifles, the main weapon known to be in widespread use by Aboriginal men in the buffalo industry. The prominent place that depictions of the Martini-Henry rifles have in the rockshelters and the attention to detail reflect an intimate knowledge of the firearm and a rationale for display.

1920 onwards: decline in firearms ownership

From 1910 onwards, there was a concerted effort to disarm Indigenous people and regulate firearms ownership. Legislation enacted after 1911 prohibited

them from owning firearms without a permit from Protector of Aborigines. The following appears in the *Northern Territory Times and Gazette* (Friday, 28 October 1910: 3):

Iniquity of permitting half civilised Aborigines to wander around the country armed with rifles, and instances at least two murders that have taken place recently from this cause... To place a rifle and cartridges in the hands of a black-fellow... is to convert him into an omnipotent demi-god as respects his unarmed fellows, and it is only to be expected that his savage instinct will lead him sooner or later to abuse such power.

Apart from buffalo shooters actively seeking permits for their Indigenous workers, and illegally lending them firearms for use during the hunting season, there were few whites that would have vouched for Indigenous ownership of firearms. Townsfolk, pastoralists, missionaries and miners all wanted Aborigines disarmed. An incident was reported at Oenpelli where an Aboriginal man shot another who he was allegedly displeased with for lagging behind. The aggressor then disposed of the deceased in what appeared to be a ritual dismemberment. It led to a riot at Oenpelli with other Aboriginal people fearing that he would come and kill others who displeased him and they were 'clamouring for firearms with which to defend themselves' (NTTG Friday, 28 October 1910: 3),

This passage informs us about several important issues relating to Indigenous possession of firearms. Few Aboriginal people in the Oenpelli camp in 1910 had access to a rifle. Men were usually only officially issued with firearms during the buffalo season. However, as the above account makes clear some senior Aboriginal men did own firearms which were outside of European control and which they could use to exercise their authority. Incidents such as this reported by the local newspapers resulted in the enactment of legislation to prohibit Indigenous ownership of firearms.

Firearms, however, continued to be used by Aboriginal men throughout the 1920s and 1930s while they were engaged in the buffalo shooting industry. White buffalo shooters had to seek permits from the Administrator to authorise their use by Aboriginal men. Certainly by the late 1930s, there are fewer public records referring to Indigenous ownership of firearms. During World War II, the Australian military had a deliberate policy of disarming Aboriginal men and placed many Aboriginal people in work camps between Darwin to Alice Springs to enable managing their welfare and to provide a labour supply (Guse 2006; Saunders 1995). Therefore it is not surprising that there is currently only one recorded depiction of a post-1900 rifle in the Arnhem Land rock art assemblage (Table 3). This painting may coincide with activities from World War II. The subsequent paucity of firearm paintings from this period may also relate to the general contraction of occupation from the sandstone escarpment and movement of the Indigenous population into regional centres such as Darwin, Pine Creek, Oenpelli, Waruwu, Minjalang and Katherine

(Brockwell et al. 1995; Dewar 1992; Forrest 1985; Grant 1995; Levitus 1995; Ritchie 1998).

Conclusion

Firearms in Arnhem Land rock art illustrate a particular chapter in the Indigenous history of the Northern Territory. The meaning behind the depictions of firearms is multi-layered and contains an Indigenous narrative to which we no longer have access. On the other hand, depictions of firearms may provide an insight into ownership and the symbolic importance and social status these weapons had to Indigenous people. The history of Indigenous ownership of firearms in the Northern Territory closely mirrors the social attitudes of white Australians to Aboriginal people in the 19th and 20th centuries. For a period of time Aboriginal people were part of a productive hybrid economy in the buffalo shooting industry and firearm ownership was tolerated. Firearm ownership declined with the enforcement of new laws and the end of freely distributed firearms and ammunition from buffalo shooters by the end of the 1930s. This decline is paralleled in the rock art, and with the exception of a single drawing of a Lee Enfield, all firearms depicted are models from pre-1900.

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