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Early Pastoral Landscapes and Culture Contact in Central Australia

ABSTRACT

The arrival of British pastoralists throughout central Australia from the 1850s marked the introduction of wool production, predominantly for industrialized Britain. Pastoral industries were both capitalist and colonizing enterprises. Archaeological research and historical documents from pastoral station managers reveal how indigenous people were involved in the workings of Strangways Springs Station in northern South Australia (1860–1900). Research reveals differential Aboriginal involvement in the pastoral industry, indicated by two phases in the development of the pastoral station. Changes in pastoral work practice over time influenced cultural interaction.

Aboriginal Australians and Pastoralists in Central Australia

The results of culture contact in the southwestern Lake Eyre Basin, Central Australia, between Australian Aboriginal people and European pastoral settlers during the second half of the 19th century is investigated. Australian Aboriginal peoples were hunter-gatherers prior to permanent European settlement in A.D. 1788 when the British introduced pastoralism, although permanent British settlement in South Australia dates from 1836. The evidence presented here documents a colonial period when Aboriginal and European settler attachment to land was negotiated and defined. No previous archaeological study of colonial-period cultural interaction had been conducted in this region; however, the transition made by Australian indigenes engaged with sheep farmers and cattle ranchers (Paterson 2004, 2005) was seen elsewhere in the world. The patterning of archaeological material demonstrates the ways Aboriginal life was affected from the 1860s onwards by the establishment of a pastoral industry in the region.

Although broadly about colonialism, the research focuses on the evidence for the establishment and development of the pastoral industry. There are studies of industrial processes in Australia, most commonly of the mining industry; yet few studies exist of the physical and social aspects of pastoral stations, despite them being important and widespread industries. There are several distinct activities that characterized Australian pastoralism. The evidence for these activities reveals a landscape with technical, environmental, and social parameters, as described here for Strangways Springs Station. In summary, the 19th-century pastoral industry followed a simple formula:

> From his lambing to the day he is executed or boiled down or starved, the sheep is just a counter in his owner's wealth. His life is simple—almost boresome. He simply feeds. Once a year—if he is not wanted for meat—he is penned up and shorn … From the moment he is lambed a sheep is either so much wool or so much meat (Bean 1912:25).

Thus, the industry was a network of sites comprised of a head station with a range of residential and work functions, and related work sites, such as lambing stations, shearing stations, wool scouring (cleaning) sites, and outstations located at pasture and water sources. The outstations were required to make the use of grass pastures away from the head-station, which would be quickly consumed by the sheep. Water sources also required protection, as sheep would foul delicate environments.

Aboriginal labor and knowledge contributed to the pastoral industry in northern South Australia. The cultural processes described here were structured by seasonal and labor demands, and by the pastoralists' practice of rationing food and goods in exchange for indigenous labor. Across Australia, Aboriginal people worked for Europeans, often only for rations (commonly clothing, equipment, tobacco, and food). Government policies enshrined this inequity. Wages for Aboriginal workers only occurred after reforms in the 1960s, which saw Australian citizenship granted to Australian Aboriginals. A case study is provided here of the early years of one pastoral property to explore how these

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inequalities were structured by the European need for labor.

Research of inland Australia by historians (Reynolds 1972, 1983, 1989; Stevens 1974; McGrath 1987; May 1994; Watson 1998), economists (Rowley 1970, 1971), and anthropologists (Rowse 1987, 1998; Rose 1991; Baker 1999) chronicle the contribution of Aboriginal people, challenging "the still-popular view that pioneering was the exclusive achievement of Europeans and that the Aborigines contributed nothing to the [European] colonization of the continent" (Reynolds 1990:231); however, there is considerable scope for regional studies into Aboriginal peoples' involvement in (or not, as the case may be) colonial industries. This requires developing an understanding of how the pastoral industry was structured by cross-cultural interactions between indigenes and British settlers.

Recently, Australian archaeological studies of culture contact have been collated by Anne Clarke and Alistair Paterson (2003) and Rodney Harrison and Christine Williamson (2002). To date many studies have been place based, particularly of missions (Birmingham 1992, 2000; Murray 1993; Lydon 2002; Williamson 2002). Tim Murray (1992:6) states, "the best locations [for studying contact] are farm and station sites where Aboriginal people camped and were drawn into close relation with a particular form of white society"; however, the farms and pastoral stations were also new settlements in Aboriginal country, and Europeans were sometimes "drawn into" close relations with Aboriginal society.

Within contact archaeology or contact history there is debate over the appropriateness of the term *contact*; however, there is increasingly use of *contact* to describe processes over time, rather than singular events (Cusick 1998; Orser 2002; Clarke and Paterson 2003). The problematic focus on "first contact" was described by Carmel Schrire (1984:1): "Scholars imagine themselves standing on the interface of past and present, watching former hunters teetering on the cusp as they hurtle into modernity with no previous experience of change … ." *Contact* describes cultural interaction between Aboriginal people and Europeans from its inception and as it progressed, and *precontact* describes indigenous life before European settlement; the line between contact and precontact is blurred as presumably European settlers were preceded by diseases, new species, new objects, and stories.

Contact studies tend to be Eurocentric if they make the presence of Europeans the key defining element (Rainbird 2000); however, this is changing, as indicated by approaches that see contact as a two-way process:

> The culture change undergone by Native Americans was neither one-sided nor solely governed by European intentions and strategies. Rather it is evident … that the attitudes and actions of Native Americans played a large part in determining the impact of contact (Wilson and Rogers 1993:3).

This is the approach adopted here, and it forms the basis for an interpretation of contact-era processes as characterized by social strategies with multiple expressions of agency. The research summarized here is detailed in Paterson (2000), and the idea of "textured agency" outlined in Paterson (2003).

The Southwest Lake Eyre Basin

Environment

In the 19th century, the area discussed in this paper was known as Strangways Springs Station, located in the southwestern Lake Eyre Basin in the northern extremes of South Australia (Figure 1). This area exists in traditional country of Arabana and Kujani people (Hemming and Clarke 1992:16). Stone plains, shrublands and grassplains, dune fields, salt lakes, riverbeds, and artesian springs characterize the area. The environment is arid and harsh, with temperatures ranging from 32°F to 122°F. Rainfall tends to be infrequent and localized. Water used by humans was mostly from artesian springs or from surface waters collecting after rain between sand dunes, in waterholes, claypans, and lakes. The relative scarcity of water makes the artesian springs particularly significant for human settlement.

Archaeology of Pre-European Aboriginal Settlement

The archaeological evidence for Aboriginal life prior to Europeans provides a baseline to consider transformations in the historical period.

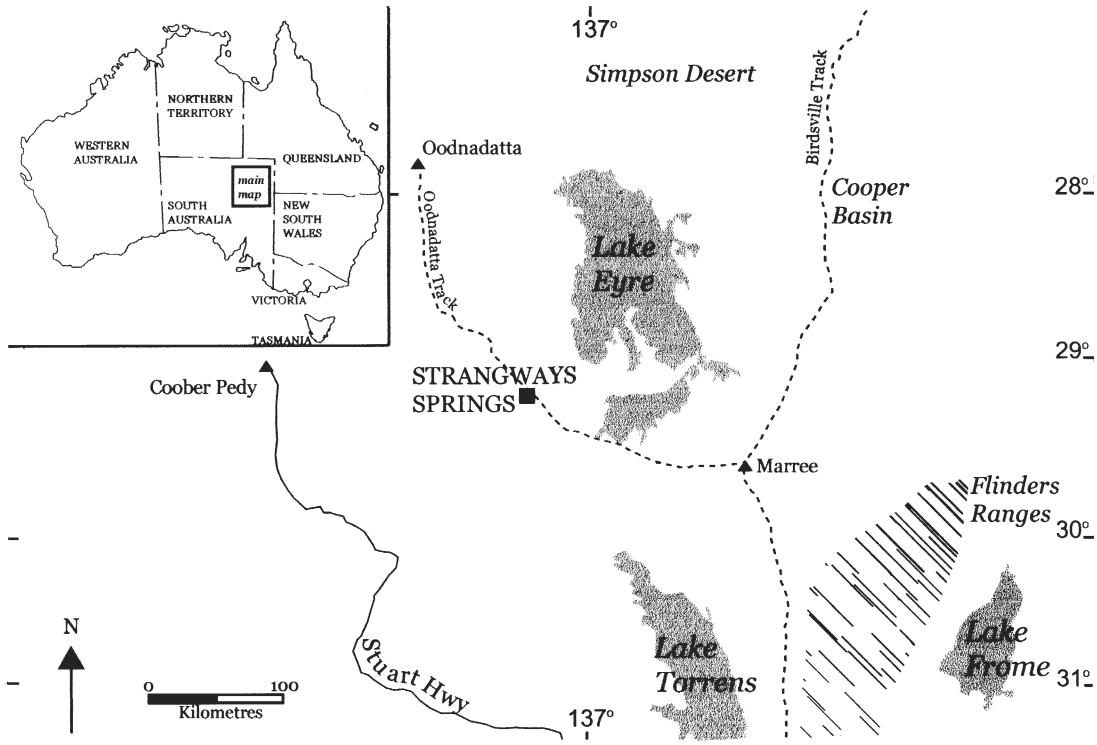

FIGURE 1. Location of Strangways Springs, southwestern Lake Eyre Basin, northern South Australia.

Archaeological evidence indicates that in the late Holocene, Aboriginal people settled the southwestern Lake Eyre Basin during the last few thousand years (Lourandos 1997:184). Aboriginal archaeological sites include campsites, knapping floors, quarries, burials, rock engravings, and stone arrangements. Archaeological surveys (Hughes and Hiscock 1981; Hughes and Lampert 1985; Florek 1993) indicate that the largest archaeological sites are campsites and stone knapping floors located on sandy surfaces adjacent to creeks and water sources, with settlements concentrated at artesian springs.

The amount of archaeological material decreases with distance from key landscape elements: water, sandy surfaces, and shelter. The exceptions are at sources of raw material, particularly stone quarries, which tend to exhibit less diversity of material compared to occupation sites.

Occupation sites near artesian springs were characterized by dense surface scatters of stone artifacts (Small Stone Tool Tradition and grinding stones), with an earliest date of 560±75 B.P. from a hearth at Strangways Springs (Florek 1993:75, table 2, charcoal). Stan Florek argues that intersite variability resulted from different subsistence tactics and that seasonality defined human use of spring and nonspring water sources. That is, human use of mound spring environments was most probable during dry periods when more ephemeral water resources would not easily support human habitation, conforming to findings elsewhere in arid Australia (Cane 1984; Veth 1993).

This provides a model for precontact Aboriginal subsistence and landscape use against which to compare changes following European settlement in the study region:

1. Late-Holocene Aboriginal settlements are most commonly found on sandy surfaces near sheltering vegetation and water. Other sites are found at resource foci, such as sources for raw materials for tool making.

2. The largest archaeological sites are found at artesian springs—the most regular water sources in the study region.
3. Intrasite variability in artifact content can be assumed to relate to distance from resources, with the least diverse sites (in terms of lithic material) being located at a source of raw material.

European Pastoral Settlement and Culture Contact

European settlers established pastoral stations in the western Lake Eyre Basin from the 1860s, where contact between Aboriginal people and pastoral settlers ensued. Little is known of the contact history of this region. Nineteenth-century ethnographers Baldwin Spencer and F. J. Gillen spent time with Arabana people in 1875 and 1898 (Spencer 1928:11) noting that at Strangways Springs Station, "all the shepherds employed on this station are Niggers [sic] ... and do as well as the whites" (Gillen 1995:49). When considering *corroborees* (an Aboriginal assembly of sacred, festive, or warlike character) Spencer and Gillen (1912) wrote that the Arabana "gathered together at the few outlying cattle stations ... where, in return for clothes and "tucker," they help in the work of the station ... [a people who have] given up the performance of their old ceremonies—even the ordinary corroborees have dwindled down to a mere nothing."

Most studies (such as Cockburn 1925) focus on pastoral industries in South Australia as European achievements. Aboriginal involvement in northern Australian pastoral industries is documented by historians and, more recently, by archaeologists (Head and Fullagar 1997; Smith and Smith 1999; Harrison 2002; Smith 2002; Paterson et al. 2003); however, less is known for 18th and 19th-century central and southern Australia (Foster 2000).

At the time of European settlement, Arabana people lived throughout the artesian spring country of the southwestern Lake Eyre Basin. Today Arabana people live in regional centers, such as Marree, Oodnadatta, Port Augusta, and Adelaide (Figure 1). Nevertheless, Arabana identity strongly connects with the artesian spring country. The region is networked with Arabana names, and religious and ceremonial sites. Oral histories demonstrate some sites are linked within extensive networks of stories (Hercus 1971). The Arabana's neighbors were the Diyari, Kuyani, and Wangkangurru who shared patrilocal totemic allegiances, knowledge, ceremonies, and trade (Shaw 1995:24; McBryde 2000). Large social and ceremonial events were held near Strangways Springs where, "they all assembled … for the big corroborees" (Horne and Aiston 1924). Arabana people call Strangways Springs *Pangki Warruna*.

The term "Aboriginal people" is used here as several Aboriginal peoples lived in the Lake Eyre Basin following contact. The term "European" described European Australians; in addition, there were small numbers of Chinese and Afghani people (Stevens 1989).

Aboriginal knowledge can help reveal continuity of behavior over time (Gosden and Head 1994; Morphy 1994; Head and Fullagar 1997, 1999; Gill et al. 2002, 2004); however, Aboriginal knowledge has not been used here as several life spans separate the study period from the present, a discontinuity exacerbated by epidemics, removal of mixed-descent children, and alienation from traditional country. This is not to suggest that Aboriginal people today have no understanding of historical events. Aboriginal histories have been able to retain much of what otherwise may not have been known (Hercus 1971, 1977, 1987, 1990; Hercus and Clarke 1986; Hercus and Sutton 1986; Gibson and Shaw 1987; Shaw 1995); however, the specific events and processes of the early colonial period are the most poorly preserved in oral histories.

Documentary Evidence

Historical documents describing Strangways Springs Station consist primarily of letters exchanged between station managers and owners, the bulk of which were restricted to the 1860s (Mortlock Library of South Australiana). These letters and memoirs describe one the most remote pastoral settlements in Australia. Other sources were 19th-century newspaper and magazine accounts, police journals and reports (State Records of South Australia), and Protector of Aborigines and Aborigines Office files. Following studies that advocate the

independence of archaeological and documentary evidence (Leone 1988; Stahl 1994) a comparative approach was adopted with the intention of highlighting continuities and dissonance between the different evidence.

Archaeological Evidence

The research described here uses archaeological data recorded by the writer 1994–1998. The archaeological investigation involved the mapping, sampling, and excavation of archaeological sites, both precontact and colonial-period (post-1850s) sites. The research focused on the evidence in Aboriginal and European sites for pastoral labor, human settlement, and cross-cultural interaction.

Field Methods

Initial surveys recorded the distribution of archaeological sites in the region (Figure 2). Recording and excavation of archaeological sites included European and Aboriginal habitation areas and pastoral work-related sites. To establish trends in the spatial distribution of archaeological deposits and to interpret activity areas, characteristics of archaeological deposits recorded included the relative ratios of "European" and "Aboriginal" artifacts and the relative extent and densities of deposits. Postcontact Aboriginal archaeological sites were defined by (1) evidence for contact-era activity and (2) the presence of "European" material culture used by Aboriginal people. Aboriginal people's glass and stone tool-making areas (knapping floors) were characterized by evidence of the reduction process, small debitage (less than 5 mm long), other waste material, and finished tools. Other postcontact tools in Aboriginal camps were metal, most commonly broken hand-held shears (Figure 3). Cooking areas were characterized by grinding stones, food remains, cooking utensils, and fireplaces. Fireplaces were the focus for campsites, surrounded by contact-period artifacts.

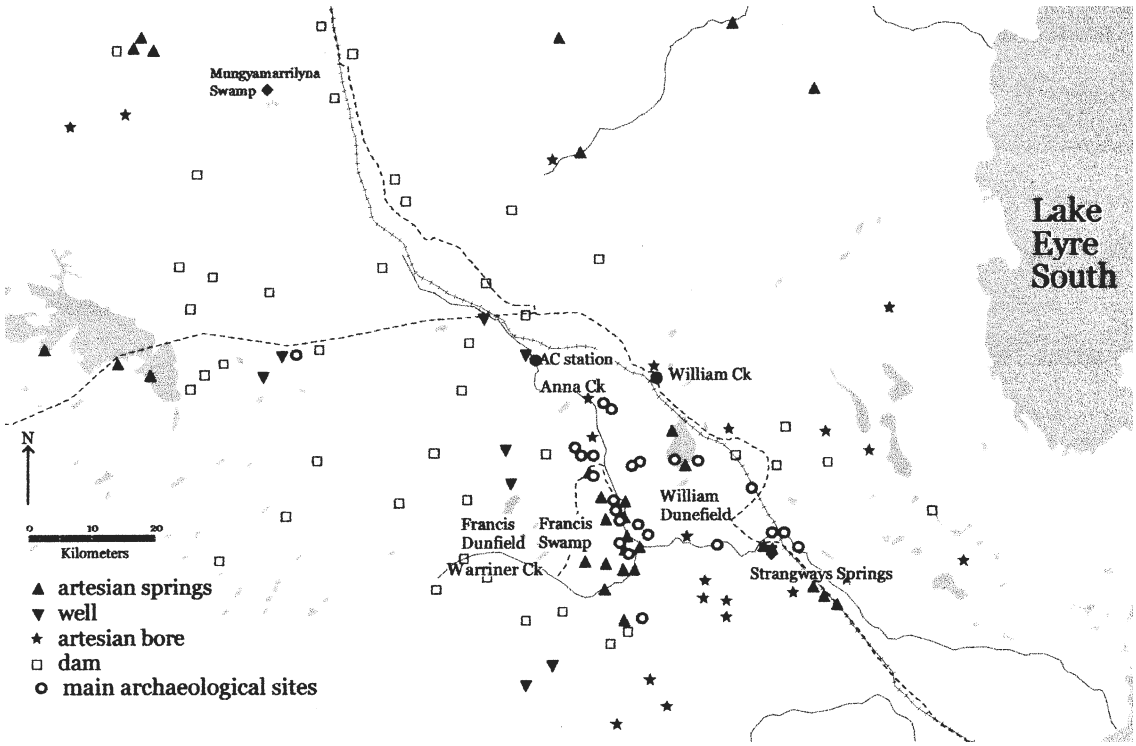

FIGURE 2. Study area: (*a*) archaeological sites in study area; (*b*) naturally occurring artesian water (mound springs); (*c*) the location of bores, wells, and dams established after 1882.

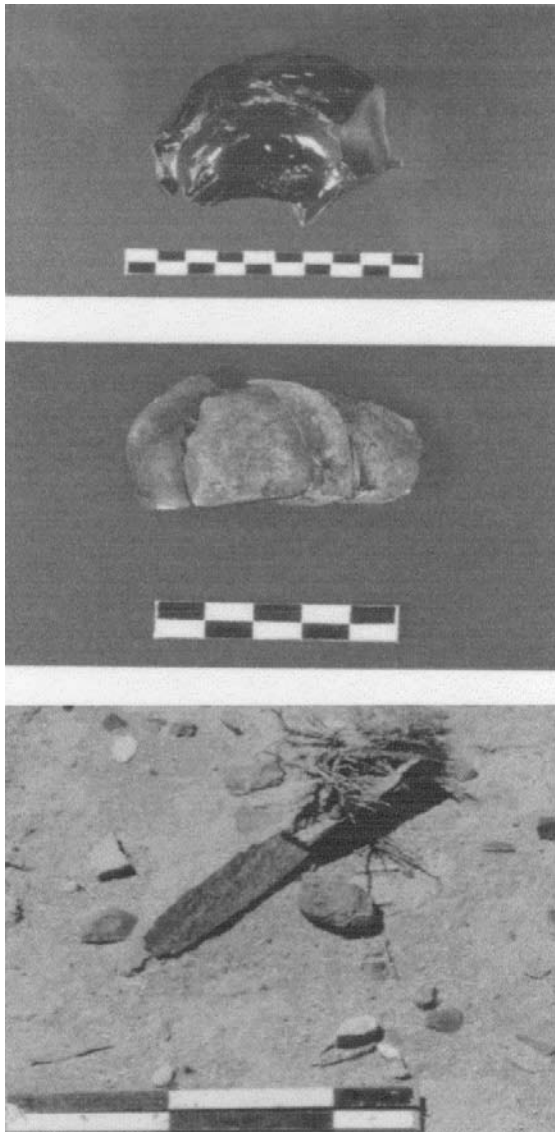

FIGURE 3. (*a*) Dark olive glass bottle base used as a core for flakes; (*b*) four conjoined glass flakes from bottle base; (*c*) one part of a hand shear in an Aboriginal site with stone artifacts.

As an example, site S240 demonstrates the evidence at Aboriginal campsites at Strangways Springs (Figure 4). This site, located 900 meters from the head station (area e in Figure 5), was a largely unstratified surface deposit, where historical Aboriginal material was initially difficult to differentiate from older artifacts presumably deriving from an older campsite at the artesian spring. In Figure 4 the older stone artifacts are largely separate from the historic-era settlements characterized by activity areas and a range of postcontact artifacts such as pipes, forks, glass bottle parts, and buttons/fasteners. All 36 pipe fragments were 19th-century British varieties; one inscription indicated pre-1857 Liverpool manufacture. Grinding stones appear at historic-era hearths; however, neighboring sites indicate that rationed flour replaced the time-consuming work of seed grinding for native flour. Glass flake production was suggested by selective quarrying of bottle parts as bottle bases suited flake production (Figure 3) were far more common than closures. Complete bottles indicate a preference for food flavorings, such as Lea and Perrin's sauce. Buttons and other fasteners indicate the introduction of manufactured clothing. Located within easy distance of the European head station, yet still out of sight, this site was presumably home to Aboriginal workers and, possibly, recipients of government rations.

The raised ridge of Strangways Springs is clear from the air (Figure 5), where the head station—a large complex of stone buildings and yards—was the focus for European occupation until 1896. The head station was central to a network of outstations, as described below.

Sites

In this analysis (Figure 2 and Table 1), 31 sites were used, located in areas referred to as Anna Creek (sites A6 and A9), Lake William and William Dunefield (sites N1 to N4), Francis Swamp (sites I2 to I5, K1, P1 to P11), Parkers Well (site C1), Warriner Creek (sites H1, G3), and Strangways Springs (sites with an 'S' prefix). For the purposes of this discussion the archaeological assemblages are summarized as presence/absence data in Table 1; however, this greatly simplifies analyses that interpreted past activities at sites (function) and the timing of occupation (chronology).

Pastoral Landscapes over Time (1860–ca. 1900)

The working of the 19th-century pastoral system at Strangways Springs Station over time is demonstrated by (1) patterns of pastoral activity, (2) material culture, (3) evidence for expenditure, and (4) types of pastoral work.

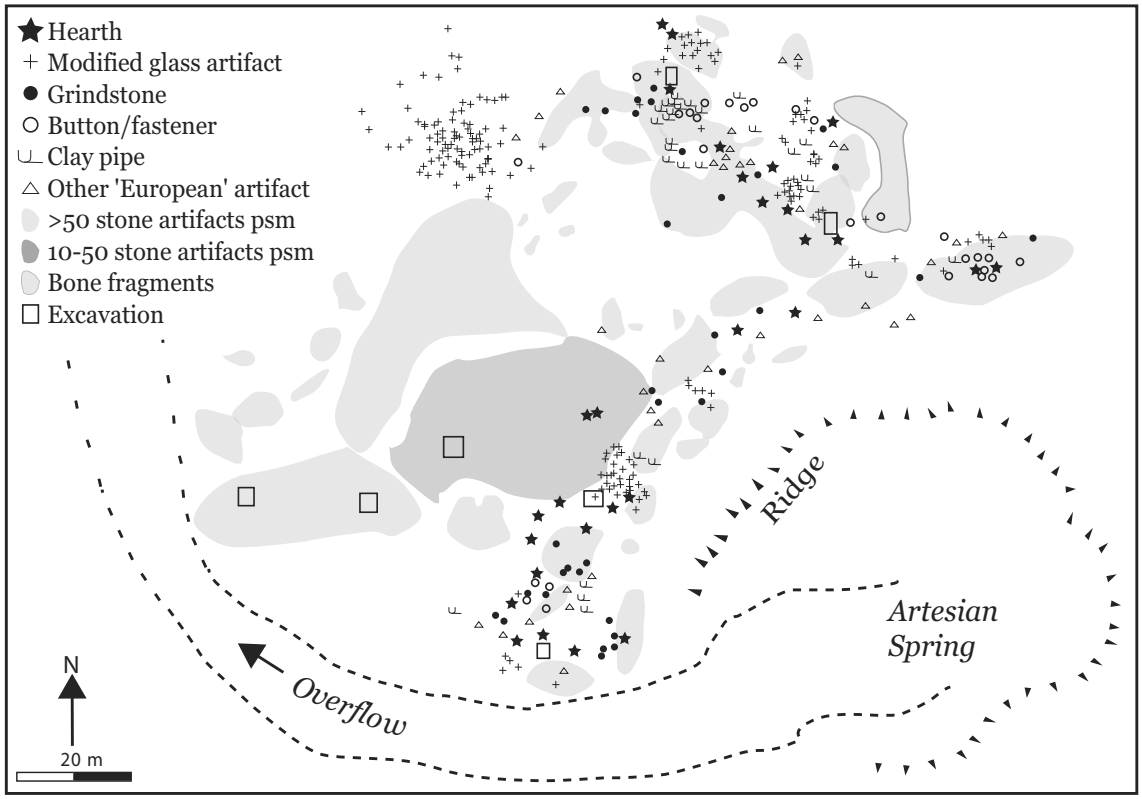

FIGURE 4. Plan of archaeological deposits at site S240.

The analysis of archaeological material defined an earlier phase (1862–ca. 1882) and a later phase (from 1882 onwards) of pastoralism.

Phase 1 (1860–ca. 1882)

The analysis of historical sources demonstrated that the earlier years of the pastoral station were regulated by the pastoralists' knowledge of local resources (often provided by Aboriginal informants) and structured by the demands of the semiarid environment, so that settlement focused initially at naturally occurring artesian waters. Field surveys demonstrated that pastoral activity was restricted to springs with associated herbage and/or grasslands. Consequently, pastoral use of mound springs was often restricted to areas such as Francis Swamp, Lake William, and Strangways Springs where artesian springs bordered reliable pastures. Supplemental to these locations were more isolated outstations in dunefields and at lakes closer to Lake Eyre. One example of an isolated outstation was site N3, consisting of a set of sheep yards made from piled mulga, the remains of a small wooden hut built with hand-wrought nails and a thatched grass roof, and a watch box at the yards. Archaeological material inside the hut included horseshoes, fragments of metal cans, the remains of a fire, two clothing buckles, buttons, a razor, a wool shear, clay pipes (one marked "Thomas White and Co." made 1825–1870), glass bottle fragments (mainly ointment vessels, and the American-produced "Perry Davis Vegetable Pain Killer"), lamp glass, and remains of butchered sheep/lamb and kangaroo/wallaby. Outside the hut's entrance were more clay pipes, ochre (imported several hundred miles from the Flinders Ranges), seed-grinding stones, and stone and glass flakes. Site N3 was interpreted as an outstation where Aboriginal people and shepherds (probably European) were camped.

Thus, in good seasons when ephemeral waters were replenished and able to sustain flocks of sheep, pastoralists accessed the more

FIGURE 5. Aerial photograph of Strangways Springs showing (*a*) remains of head-station buildings; (*b*) stone sheep yards; (*c*) stone rooms, possibly shearing shed and storage room; (*d*) direction of scour (site S201) and smithy; (*e*) general vicinity of Aboriginal campsites (including site S240). Artesian springs are raised mounds.

remote parts of the station lease. Perhaps not surprisingly, the resultant pastoral settlement pattern correlates with archaeological evidence for precontact Aboriginal settlement; however, while early pastoralist occupation was spatially close to precontact and postcontact Aboriginal sites, they rarely overlay Aboriginal occupation sites. This spatial organization may indicate an avoidance of Aboriginal settlements by pastoralists who shared the same resources.

The aseasonal pattern structured by irregular rainfalls described here captures the essence of the early phase of the pastoral industry. Station managers defined their initial pastoral management techniques in their letters. In summary, during good seasons they would keep two large flocks (ca. 2,500 sheep) at outstations on rainwater (Oastler 1868c). This required residential outstations, built from simple yet labor-intensive technologies, such as that described for site N3. This period was characterized by use of local materials, such as timbers, and locally made structural equipment, particularly hand-wrought nails. The outstations required several shifts of shepherds, including Aboriginal shepherds. During indifferent seasons the flocks were stationed at permanent waters in separate flocks. Keeping smaller numbers of sheep at separate stations avoided boxing (mixing flocks), the destruction of herbage, and consequent underfeeding; however, the large number of outstations was labor intensive.

In addition to outstations, there were specialist work camps, predominantly for scouring and shearing. Scouring involved washing the wool (either before or after shearing) to remove soil and vegetation, which reduced the weight. In Phase 1 the wool was transported overland hundreds of miles by bullocks. Any reduction in weight reduced transport costs. Scouring occurred in Phase 1 at Strangways Springs head station: "I have five men in our [employ]—King, Jones and Albert … , Maddock cooking at the Strangways, and Davis washing wool with the assistance of the blacks. I have reduced the weight sixty percent" (Jeffreys 1866a). Site

TABLE 1
SUMMARY OF ARTIFACTS AT SELECTED SITES

Area/Site	Bottles	Window Glass	Glass-Tool Making	Clothing Parts	Clay Pipe	Nails (Structural)	Metal Food Containers	Other Metal Containers	Cooking Equipment	Ceramics	Pastoral Equipment	Bullets	Horse Equipment	Miscellaneous Metal	Stone Tools	Food Remains	Food-Processing	Fireplaces	Ochre (Traded)
Anna Creek																			
A6	y		y	y	y	y		y	y	y	y			y	y				
A9	y				y		y	y		y	y		y	y	y	y			
Parkers Well	y						y				y				y		y		
Francis Swamp																			
I2	y										y				y	y	y		
I3	y		y	y	y						y	y			y	y	y	y	
I5	y		y	y	y		y				y				y		y	y	y
K1	y		y				y				y				y		y		
P1-P11														y	y				
William Dunefield																			
N1	y														y		y		
N3	y	y	y	y	y	y	y			y	y		y	y	y	y	y	y	y
N4	y		y	y											y	y		y	
Strangways Springs																			
Headstation	y	y	y	y	y	y	y	y	y	y	y	y		y	y	y		y	
Scour	y			y							y			y	y				
Smithy	y			y	y		y	y			y			y				y	
Western sites																			
S240	y		y	y	y	y	y	y	y		y	y	y	y	y	y	y	y	y
S1101	y		y	y	y		y	y	y	y	y			y	y				
S1102	y		y	y	y										y			y	
S1108	y		y				y							y	y		y	y	
S251	y	y	y	y	y	y	y	y	y	y	y	y		y	y	y	y	y	
S355	y		y	y	y	y	y			y	y			y	y	y	y	y	
S305	y		y	y	y		y	y		y				y	y	y	y	y	
S340	y		y	y				y			y			y	y	y	y	y	
S344	y		y	y	y		y	y							y			y	
S349	y		y												y			y	
S350	y				y			y			y			y	y	y	y	y	
S354	y		y	y										y	y				
S361	y		y				y	y							y				
Main northern mound																			
S512	y		y	y	y		y	y	y		y			y	y	y	y	y	
S1201	y				y				y		y			y	y			y	
North of main ridge																			
S561	y		y	y	y		y	y		y			y		y			y	
East extent of main ridge																			
S662	y		y				y	y	y	y	y			y	y	y	y	y	

Note: (*a*) Grey sites were European pastoral work sites with little evidence for cross-cultural interaction; (*b*) white sites are Aboriginal sites with 19th-century material culture; (*c*) pastoral equipment included horse saddlery, yards, fencing wire, tools and shears; (*d*) bottles included vessels for alcohol, foods, medicines, and chemicals; (*e*) ceramics included earthenware, stoneware, and porcelain; (*f*) 'y' = presence.

S021 was interpreted as a site of a scour; a low stonewall supported a wooden trough for hand-powered agitation of the fleece. Water provision and possibly recycling was indicated by the remains of an iron wheel (3 m diameter) with metal buckets on the outer rim, while stone structures indicated fireplace bases. Neighboring archaeological sites (site S355) suggested Aboriginal workers camped adjacent to the scour. The close proximity would accord with the demands of the work, as the Aboriginal and European workers spent long hard days washing wool:

> I have not got along with the washing as well as I have expected. The days are too short, too cold, too windy … I can not keep the Blacks at the tubs—they can not stand the cold. I was depending on them as my chief stay (Jeffreys 1866b).

The sheep shearing in Phase 1 occurred at the head-station buildings (site S001). The pastoralists' letters suggest shearing was a specialist job conducted by European shearers, assisted by the station shepherds. Work contracts stipulated that the shearers worked from 6 A.M. to 6 P.M. and paid for any sheep damaged by the shears. The archaeological deposits at the stockyards and the head station resulted in part from shearing (Figure 5). The stone yards and buildings indicate permanence of occupation; presumably the European workers were accommodated at the head station or camped nearby.

During the initial years of the Strangways Springs Station, the size of stock population was determined by climate, with numbers being reduced by drought and flood. An understanding of local seasons was slow in coming to the pastoralists, although Strangways Springs was never abandoned during drought (unlike every other station in the region during the 1860s). The delicate balance between available resources, human population, and pastoralism was most apparent during droughts, when the pastoralists were forced to rely solely on artesian springs. Even though the water was constant, the grasslands surrounding the springs were often quickly consumed by the stock. In severe droughts they moved sheep onto neighboring abandoned stations.

Phase 2 (1882–1900)

The year 1882 saw the first bore sunk into the massive artesian basin that would guarantee regular water (*Adelaide Stock and Station Journal* 1918). This phase saw the pattern of pastoral activity at Strangways Springs Station change. New technology, better transportation, and increased expenditure made it possible for the pastoralists to better regulate water resources and the spatial organization of pastoral industry. These changes are reflected in scale of archaeological material; Phase 2 sites such as the "Old Anna Creek" woolsheds and yards (sites A6 and A9) overwhelm in scale Phase 1 sites (N3, I2 and sites at Emily Swamp). In Phase 2 the pastoralists accessed artesian waters with wells and bores in areas remote from natural waters. They built large, fenced paddocks around these new water sources to protect the stock from predators, reducing the need for residential shepherding. The patterning of archaeological material indicates the consequent shift in the pastoral network from the locus of the mound spring country into the dunefields and semiarid pastures (Figure 2).

This shift suggests an increase in expenditure. In the first decades of the station there was little evidence for significant financial outlay, and local materials were largely used for construction of pastoral work sites. The first artesian bore sunk in 1882 indicates an increase in expenditure, as demonstrated by increased amounts of technical equipment. For example, at the woolsheds on Anna Creek (sites A6, A8, A9) were large boilers, cast-iron ranges, windmills, metal tanks, and metal troughs. This equipment would have been affordable to transport only following the construction of the railway in 1886. There is no evidence that this increase in financial outlay included increased wages or the payment of wages to Aboriginal workers.

These changes over time imply change in pastoral work. At Strangways Springs the organization of pastoral practice initially mimicked British sheep husbandry, being reliant on shepherds; however, predators and the harsh environment meant more workers were required than in Britain, especially during the lambing. As recent immigrants, the station managers had limited experience with raising sheep in Australia, especially arid Australia. The 1860s' letters suggest that during Phase 1 the station manager and his senior European and Aboriginal shepherds were responsible for running outstations without supervision for extended

periods. In Phase 2, following the construction of large, protective, fenced paddocks, there was a shift away from the network of shepherds' outstations. This later period is not covered in the pastoralists' surviving letters. The loss of shepherds was observed across Australia:

> Even the tradition of them had almost gone from the "inside" country. And yet most of us who were children in the [eighteen] eighties have some forgotten childish recollection of a tall gaunt figure in a half frayed overcoat, a shabby felt hat half riding the sunken cheeks, a thin grey beard, and hard lines drawn as with a ruler across his face. One can see the round backs of a hundred sheep on the hill there, the ragged edges of his overcoat showing against the yellow sky, with his stick and his pipe and his dog—the old man himself. With no companions, he lived year in and year out—twenty, thirty, forty miles from the homestead. Once in three weeks or more a cart would turn up with his rations. But seeing men so seldom, he came not to wish to see them—a "hatter" they called him for his madness. The man was the Shepherd (Bean 1912:50).

Bean's description of a "solitary shepherd" does not accord with the Strangways Springs evidence. The shepherds at outstations often numbered three or more, working in shifts to keep flocks separate, and often included a hut keeper, mainly described as males, sometimes with their wives. A handful of letters indicate that shepherds were also Aboriginal boys and girls. The pastoralists describe training Aboriginal youths during the 1860s, some of whom became "trusted henchmen" (Oastler 1908). Accounts indicate the importance of women's work, which included shepherding smaller flocks near the head station of goats, fine-wool sheep, rams, and sheep intended for butchering. These descriptions reveal that "station" Aboriginals were trusted and admired for their handling of sheep, goats, bullocks, and horses, despite the animals being recently introduced to the desert environment. Apart from being places where Europeans and Aboriginal shepherds lived, the outstations were also the sites of seasonal work, most importantly lambing. Thus, the archaeological evidence supports Bean's observation of the demise of the shepherd over time, indicating changes in pastoral work practices.

Few of the bores and wells that facilitated the shift from mound spring country into the dunefields had evidence for ancillary settlement, except at Leonards Bore/Spring (site K1) and Parkers Well (site C1), which was a remote work camp, probably for both European and Aboriginal workers. Importantly, there was no evidence for residential structures for shepherds in the later sites. The focus of late-19th-century station work was the wool shed on Anna Creek (sites A6 and A9). Here, the scale of improvements was evident, as were small associated residential camps. Although shepherds were not as vital in the later phases of 19th-century pastoralism, there would have been other pastoral work, in particular for boundary riders, animal husbandry, wool scourers, shearers, fencers, and dingo killers. In the 1880s an article in the *Pictorial Australian* (1891:30) describes the work of an Aboriginal worker who had been a shepherd in the 1860s: "Kalli Kalli has a monopoly of the Anna Creek fencing, and he does it well."

During the period 1860–1900, the pastoral landscape saw environmental change. New species were introduced, competing with native animals and altering delicate habitats. Fences attempted to keep sheep, cattle, and horses on the "inside"; while rabbits, dogs, and foxes were ideally on the "outside." Artesian mound springs were damaged by stock, the water outflow was manipulated, and eventually artesian water outflow was reduced by the extensive use of bores.

Not all aspects of change in the pastoral industry over time were measurable, in particular the evidence for the rate of change from sheep to cattle industries; however, station records indicate increasingly larger herds of cattle from the late-1880s onwards, meeting demands for beef from railway construction workers. The archaeological correlates are cattle yards located close to the now abandoned railway line.

This suggests that an understanding of pastoral industries can benefit from a multiple-site regional approach. The notion of landscape provides an interpretive space to situate links among environment, seasons, movement of people and animals, material remains, and phases of pastoral practice. Despite interest in pastoral heritage (Australia ICOMOS 1995), studies of head-station buildings and shearing sheds have overshadowed those of outstations, simple residential structures and yards, isolated bores and windmills, and fences. These elements can reveal changes in technology, expenditure, the pattern of pastoral industries, and

changing relationships with natural resources and labor demands.

Work and Cultural Interaction at *Pangki Warruna*/Strangways Springs

A growing interest in the recognition of agency characterizes historical archaeological research in Australia and elsewhere (Dobres and Robb 2000). Considering labor at Harpers Ferry, Maryland, Paul Shackel (2000:232) states,

> Recognizing individuals, households, or other small units of a cultural system as active agents that contribute to the archaeological record is one way to go beyond the particularism and positivism that dominates historical archaeology. Under the premise of agency, actors know the way society operates, and individuals act within a pre-existing structure.

This potential is taken up here while exploring the evidence for and implications of transformations in the "structure" of labor, power relations, rationing, and the pastoral industry. The ways that people interacted in the 19th century in this study were "textured" varying according to a range of circumstances, such as time, location, season, climate, individual decisions, pastoral practice, work roles in the pastoral domain, and access to rations distributed by the pastoralists and on behalf of the government. It has been argued elsewhere that "textured agency" describes this evidence (Paterson 2003). The analogy to texture finds resonance with studies that perceive colonial-period interaction as complex and plural or characterized by differential forms of cultural interaction, such as Susan Kent's (1983) study of Navajo historical contexts where, using concepts of "traditional" and "non-traditional" as baselines, different individuals within cultures were found to change at different rates. These types of results do not easily support any overarching theory of the contact period. In fact, the use of unilinear models of cultural interaction may obscure or distort social strategies. This is not to say that some aspects of the evidence presented here could not be explained through theories such as dominance and resistance, creolization, acculturation, or cultural accommodation.

Nevertheless, the results indicate a level of cooperation between some Aboriginal and European people resulting from interdependencies, which were strongest between the pastoralists and local Aboriginal residential groups. The term *cooperation* should not be read as only implying mutually beneficial and positive outcome for different parties; however, an important finding of this study is that Aboriginal people were involved in the pastoral industry from its inception and provided knowledge and labor that, in part, guaranteed the longer-term success (in terms of monetary profit for the pastoralists) of the pastoral venture based at Strangways Springs. The benefits for Aboriginal people are less clear. The documentary evidence describes that Aboriginal workers were not paid but were provided with minimal rations:

> I do not think there is anything wanted immediately except rations—my stock of flour, tea and sugar will not spin out longer than August on account of the large number of Blacks I had to employ and consequently to feed during the lambing season. I had to do so or lose the lambs. I have discharged all the natives we can possibly manage without and put the white men on allowance of rations so I hope we shall not run short of provisions before the wagons arrive (Oastler 1868b)

Fresh meat was provided during demanding work periods, as described by the station manager in 1868: "I am also going to get three Bulls … and they will do as well as the best beef for the Blacks at lambing time" (Oastler 1868a). An analysis of Aboriginal campsites within 3 kilometers of the head station indicates the same range of material culture as at the head station (Table 1), indicating access to not only food (shown in cooking and eating utensils) but also to tobacco, and clothing. Metal and glass objects were modified to new purposes, such as food and water containers, or to form modified objects, such as glass flakes (Figure 3).

Another benefit for Aboriginal people may have been negotiated access to their traditional country, as the European pastoralists monitored the boundaries of the pastoral domain. Access to country was presumably central to the chance for maintenance of Aboriginal society in a period of cultural, economic, and environmental upheaval.

Key elements characterized and structured Aboriginal and European life in the 19th century in the study area: Aboriginal knowledge, natural resources (in particular water), seasons, pastoral labor, degrees of capital investment by

Europeans in the pastoral domain, rationing, and law. Using oral testimonies, Richard Baker (1999:160) shows that in contact contexts before Aboriginal people "came in" to pastoral stations, European people "went out" and "establish[ed] their early settlements at locations that were already the focus of Aboriginal life." Similarly, at Strangways Springs the Europeans arrived at an Aboriginal landscape, immediately acquiring Aboriginal workers (either by negotiation or force) to serve as agents, facilitating access to and communication with local residential groups. Consequently, the pastoralists perceived a spatial and social distinction between Aboriginal pastoral workers and Aboriginal "outsiders." This binary distinction has permeable boundaries, as people moved in and out of the pastoral system. It appears that initial negotiations were cooperative, as Aboriginal workers consistently arrived to work at outstations and the head station. Local Aboriginal people quickly stopped hunting sheep, which helped stabilize frontier relations. The presence of Aboriginal people at early European outstations and settlements can be viewed in two ways. Firstly, these were places where they already lived and were the best places to guarantee survival in the semiarid environment. Secondly, the evidence indicates that European places increasingly became the focus for Aboriginal settlement. This accords with precontact decisions regarding subsistence, by which people lived proximate to resources, as described earlier in this paper.

The pastoralists provided new foods and goods that Aboriginal people obtained through work. This resource-based explanation, in which Aboriginal people follow Europeans, was demonstrated in 1886 and 1896, when Aboriginal people elected to move from Strangways Springs to the relocated head station at Anna Creek to obtain rations and to be near kin (*Pictorial Australian* 1891). However, a resource-based explanation is too simplistic and does not accommodate individual and group decisions.

An important transforming step in cross-cultural relations was the introduction of new food sources and commodities through rationing regimes. Tim Rowse (1998:7) proposes that rationing is "learnt" by pastoralists in the early colonial period, becoming a "pervasive institution of Central Australian colonialism" that attempted to "render cross-cultural relationships peaceful and predictable." Documents and the contents of sites reveal that the pastoralists rationed Aboriginal people in exchange for labor and that over time demand for rations grew. Increased government-supplied rations during 1860s' droughts were intended for the sick and elderly. Rationing enforced the central position of the head station in the colonial landscape, with large campsites established along the western ridge at Strangways Springs. These campsites are not described by the pastoralists, but are present as extensive archaeological assemblages (such as site S240). Rations did not herald the end of traditional subsistence; for example, during good seasons in the 1890s the Aboriginal population at nearby Peake Station survived off "bush food" when the government stopped the distribution of rations. Malnutrition was sometimes a consequence of Aboriginal reliance on rations; however, government reports suggest that this was not a problem at Anna Creek Station, at least in the 1890s (Protector of Aborigines 1896). The evidence here suggests that rationing was used to feed local residential Aboriginal laborers, and government rations augmented the pastoralists' distribution of rations, and seemingly reinforced the pastoral domain. Rowse (1998:5) argues that the transfer of goods did not require "congruity of understanding between donors and receivers"; at Strangways Springs Europeans provided rations to maintain a workforce. For Aboriginal people the attraction to rations was in part a subsistence strategy.

Pastoral labor demands were seasonal, with the greatest demand for pastoral work being during the lambing and shearing, normally between February and August (Table 2). This left the hotter and drier parts of the year free, times when Aboriginal people (and the pastoralists) presumably relied heavily on the artesian waters, and large camps would be rarer. Evidence shows that rationed work camps attracted larger groups of Aboriginal "outsiders," and presented opportunities for ceremonies during the cooler seasons, but there were clashes between labor and societal obligations:

> last night a bitter disappointment occurred ... Some wild blacks came in [to Strangways Springs where the wool washing was in progress] … They have taken away our boy Kalli to cut him. He screamed to me

TABLE 2
TIMING OF PASTORAL WORK DESCRIBED BY PASTORALISTS (1865–1868)

	1865	1866	1867	1868
January			22	14, 2, 5, 19
February			22, 19	14, 2, 5, 19, 9
March		1, 29, 22	23, 24, 25	2, *15*, *16*, *9*, *15*
April		**22**	23, 24, 25, 1	2, 15, 16, 9, 15
May		**22**, 1	23, 24, 25	12, 2
June	11, 3	22, 26, 1	23, 24, 25, 25	14, 12, 2
July		***26***	**1, 17**, 23, 24, 25	
August		26, 28, 1	23, 24, 25	
September		28	23, 24, 25	
October	2, 12, 13, 4	27	23, 24, 25	
November	8	**17, 19**, 27	24, 22, 7, 8, 1, 7	
December	19, 14, 6, 2	22, 1	8, 19	

Note: Each number denotes a work site described in the pastoralists' letters. (*a*) plain text: period of lambing; (*b*) italics: lambing station; (*c*) underline: shepherding outstation; (*d*) bold: Aboriginal camps at labor sites (not for Aboriginal pastoral workers); (*e*) double underline: wool-washing camps.

> for assistance. If they intended killing our boy I would have fired into them at once but I considered I had no right to interfere in their religious ceremonies. Jacky, our ram shepherd, Kalli's sister and all our useful washing blacks have gone to see the operation. I don't expect them back for a week. In the meantime it will cause us delay (Jeffreys 1866b).

Other elements of Aboriginal agency are suggested by the archaeological record, which demonstrates Aboriginal access to European goods, maintenance of long-range trading expeditions for ochre, adaptive use of new materials, and selective decisions regarding value of commodities in the contact period (such as the apparent decrease in seed grinding). Despite the evidence for Aboriginal work, while some material culture in Aboriginal camps related directly to work (such as hand shears), most material culture was unrelated to work, for example, deriving from food preparation and consumption, alcohol and tobacco use, or from clothing.

Europeans through necessity required Aboriginal people. Robert Foster (2000:2, citing South Australian Parliamentary Papers 1899) described that in 1899 a sheep farmer at Strangways Springs stated, "that the pastoral industry [in that region] would have to be abandoned if the Aborigines 'died out'—unless 'coloured immigration' [to Australia] was introduced." The organization of pastoral labor processes structured the interaction of Aboriginal people and the pastoralists. The analysis demonstrated that early pastoral work involved constant shepherding, punctuated by lambing, shearing, and scouring. Seasonal patterns can be reconstructed using the pastoralists' letters (Table 2). By providing labor, Aboriginal life had to fit with the seasonality of the pastoral work process. In part this must have been accommodated within the seasonality of Aboriginal subsistence. How did one accommodate the other? It appears that Aboriginal people met the demands of the pastoral work process and were always present in sufficient numbers to provide work. In fact, during periods of drought more Aboriginal people sought work than there was work available.

Other than work, Aboriginal people also provided local knowledge. As described, the spatial organization of the pastoral domain initially resembled Aboriginal subsistence patterns. This perhaps resulted from Aboriginal information about rainfalls, which helped the pastoralists survive drought and flood during the earlier years of the station. Perhaps not surprisingly, over time the pastoralists' dependence on Aboriginal knowledge (if not labor) decreased. This becomes particularly noticeable when (from the 1880s onwards) the pastoralists transform the pastoral landscape by organizing the industry around newly constructed artesian bores (Figure 2). By 1901

the Aboriginal population at the station was 85; they would have outnumbered the Europeans, indicating the ongoing importance of Aboriginal labor at the end of Phase 2 (Foster 2000, citing Protector of Aborigines 1901). The construction of large, fenced areas allowed the pastoralists to regulate the distribution of new and native animal species. Aboriginal people participated in this widespread program of environmental manipulation and control by hunting rabbit and dingo in return for rations.

The pastoralists understood their role in transforming colonial society. Station manager John Oastler (1908) described his program in the 1860s: "To break these wild tribes into something like obedience, and to teach them the law of ownership and property, and that their laws must give way to the white mans' law, were the most difficult task." Years later, Oastler (1908) used Rudyard Kipling's words to describe his own contribution, and that of others like him, to colonial Australia:

> There's a Legion that never was 'listed,
> That carries no colours or crest,
> But, split in a thousand detachments,
> Is breaking the road for the rest (Rudyard Kipling [1895], *The Lost Legion*).

The colonial administration handed this power to pastoralists on the "frontier." The Crown Solicitor wrote that the pastoralists: "may hear and determine in a summary way charges against aboriginal natives for the Commissioner if offences to which the punishment of death is not attached and sentence to imprisonment for twelve months" (Jeffreys 1866). It was in the interest of the pastoralists to protect Aboriginal labor: for example, manager Oastler attempted to protect Aboriginal workers from outside threats and offered protection from tribal law. He was known as *Narcoo Noocamarunda* and *Mootabata*, which he understood to mean "the spirit of a black chief come back in a white man" and "Father" (Oastler 1908). The Aboriginal workers indentured as youths, both men and women, seemed to be the main points of access to greater Aboriginal society for the pastoralists. The points raised here presumably are the tip of the iceberg in terms of contact-period social networks and power relations.

Conclusions

These results contribute to culture-contact studies in Australia and beyond and to literature describing pastoral-indigenous interaction in Australia. The contact period resulted in continuities and shifts in Aboriginal people's patterns of settlement and subsistence in the study. Most clear changes were Aboriginal residency at ration depots and pastoral work sites, confirming that changing settlement patterns related to work were similar to those described elsewhere. For example, archaeology at Fort Ross, California, demonstrates that indigenous life was impacted by the establishment of industry and associated settlements (Lightfoot et al. 1993). At Strangways Springs continuities in residency were maintained, with some Aboriginal communities living during nonworking periods separate from pastoralists, at areas used previous to European settlement, particularly artesian springs. In the case study, the pastoral industry was a strong structuring principle in terms of patterns of Aboriginal settlement. The evidence from multiple sites throughout the study area provided greater insight into change and continuities in settlement and subsistence than would have been provided by isolated sites. This is particularly relevant to studies based on surface archaeological sites, where trends in the patterning of archaeological material need to be measured at several sites to become clear. This implies that archaeological research of historical-period contexts in Australia should continue to attempt to move beyond place-based studies to examine regional trends.

It has been shown that in northern Australia Aboriginal involvement in pastoral work was punctuated by periods removed from the pastoralists, termed "going bush" (Rose 1991; Head and Fullagar 1997). This provided opportunities to maintain associations with places, and fulfill social obligations. In northern Australia the off-season for pastoral work is the wet season. The organization of pastoralism in relation to monsoonal weather patterns acted to limit the demands of work and allow time for Aboriginal people to maintain attachments to important places (Head and Fullagar 1997). In the Lake Eyre Basin, involvement in pastoral work was similarly punctuated, and Aboriginal people "returned" to care for sheep flocks

during the lambing period and to wash and pack wool (Table 2). The timing of pastoral work depended on rainfall, meaning there was much less opportunity for work during the driest summer months. These were the months when competition for resources would have been greatest, remembering that there were very limited water resources. This apparently resulted in conflict between the pastoralists and Aboriginal people, at least during the 1860s along the peripheries of the station. The periods of pastoral work overlapped with the periods when traditionally Aboriginal people could visit more remote parts of their country and maintain larger camps for intergroup gatherings. Unlike the conditions described for northern Australia, where the off-seasons provided an opportunity to visit traditional places, in this study the periods of pastoral work at outstations provided an opportunity to visit more remote parts of the station lease. Additionally, rationed camps appeared to gain a ceremonial momentum, attracting large groups and allowing a chance to fulfill societal and ceremonial obligations. In later years, new forms of work that replaced shepherding—such as fencing, hunting dingo and rabbit—maintained access to country but probably only for a select few.

The role of European material culture helped interpret the chronology of contact-period sites, supporting previous studies (Allen 1969; Birmingham 1992; Murray 1993; Harrison 2002). Yet, these chronologies need to be tested by further research, especially given the scarcity of material-culture studies of pastoral work sites. Like J. Gasco's (1992, 1993) study at Ocelocalco, new materials were used to make objects in indigenous forms. For example, glass tools were made using technology common to stone tool manufacture and with similar spatial arrangement of working areas. As demonstrated by Schrire (1984, 1995), the material culture of contact provides insight into the technologies and practices of groups of people who are rarely described in documentary sources. Research into material indicators of Aboriginal practice, such as glass- and metal-modified tools (Allen and Jones 1980; Freeman 1993; Cooper and Bowdler 1998; Harrison 2000, 2002), provides new tools for archaeological inquiry of the contact period. With these indicators, it is impossible to explore the variation in adaptation to new materials. Similarly, material culture studies need to take into account variations between different evidence (Stahl 1994; Head and Fullagar 1997). In this study for example, ochre appears to have remained important, even having to be traded several hundred miles, whilst other indigenous equipment—such as seed-grinding equipment—was used much less following contact. The implication of changes in assemblage contents provides insight into new technologies and practices. Dietary changes and the popularity of new foods, tea, and tobacco were demonstrated by the presence of related paraphernalia. Other artifacts were more difficult to interpret—for example, did clothing parts indicate Aboriginal people wearing clothes, and if so, under what circumstances? Such questions require future research.

The evidence presented here for Aboriginal involvement with the pastoral domain indicated different types of involvement, ranging from the "trusted henchmen" to seasonal workers. These results are comparable to those reported by Rowse (1987) regarding the role of Aboriginal intermediaries in pastoral domains. The cumulative evidence indicates a complex range of interactions between Aboriginal people—particularly those within the pastoral domain—and the European pastoralists. Reciprocity and responsibility were demonstrated by the pastoralists' occasional protection of their workers and by Aboriginal people meeting work demands and providing information to pastoralists. Like elsewhere (Wolf 1982; Fitzhugh 1985; Trigger 1985, 1990; Rogers and Wilson 1993; Rose 1998), the colonial "frontier" was linked into wider social and economic networks. The pastoral station was driven by commercial demands, sufficient to maintain the station. Continued demand for wool and meat resulted in increased levels of expenditure at Strangways Springs Station. The provision by Aboriginal people of a cheap, local workforce presumably assisted the success of the station. Unlike the condition reported by Watson (1998) where Aboriginal workers filled gaps left by European workers leaving pastoral stations (such as during the gold rush or war), this study indicates the involvement of Aboriginal workers from the earliest years of the station and a deliberate process of using Aboriginal labor to reduce the number of European workers. This accords with observations by Jeans

(1988) regarding the provision of cheap labor and, in addition, demonstrates that the types of pastoral work conducted by indigenous people changed over time.

Like studies that explore the role of indigenous people's explanations and responsive strategies to culture contact (Trigger 1985; Wilson and Rogers 1993), the engagement between Aboriginal people and European settlers in this study was characterized by diversity. People became involved in the pastoral domain in different ways. Certainly decisions to work (if made available) resulted in increased access to valued new foods and goods and the chance to maintain—in the form of rationed camps—links with other members of Aboriginal society. The evidence suggests that in the study region many Aboriginal people cooperated with the settlers, establishing a pastoral domain that was in some ways mutually beneficial.

The cooperation described here has a utopian feel compared to the brutality described in literature detailing more recent aspects of indigenous-pastoral contact (Rowley 1970, 1971; McGrath 1987; Mattingly and Hampton 1988; Rose 1991; May 1994). This results in part from the absence of Aboriginal people's narratives in the analysis. It should not be assumed that the study area differed significantly from other contexts of colonialism, which Deborah Rose (1991: 2) describes as the "great Australian holocaust known as colonialism." It may be that frontier violence was perpetuated by European settlers and Aboriginal people defending their country, although there was very little archaeological or documentary evidence for this.

Despite this lack of evidence, there were indications that the pastoral system provided an essentially stable domain, with cooperation between some Aboriginal people and the pastoralists during a period of transformation. The British accessed inexpensive labor and were keyed into a much wider network of knowledge regarding available resources in the environment. Aboriginal people were provided with a colonial-period enclave in which they had access to rations and opportunities to maintain connections between country and members of Aboriginal society outside of the pastoral domain. During the 20th century, Anna Creek Station was a center for Aboriginal settlement, and Aboriginal people remember their pastoral work proudly (Shaw 1995). The evidence presented here documents a period during which elements of Aboriginal attachment to land in colonial contexts was negotiated and redefined. For Arabana people, the cultural and spiritual importance of the study region continues today.

In the end, in this region, this industrial experiment with imported ideas and animals faltered; by 1910 the historian C. E. W. Bean could write, "There, around Lake Eyre, and over some part of Central Australia you may see them today—deserted homesteads standing out from the desert with the marks of old settlement around them. That is what sheep mean to Australia" (Bean 1912:16).

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