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# Playing with the long strings: a structural analysis of Arandic string figures

by

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## ABSTRACT

*Australia is home to a rich and diverse range of Indigenous narrative practices and verbal art forms. These are highly valued and part of the ‘intangible cultural heritage’ of Indigenous Australians. Making string figures is one such practice, and early records from across the continent suggest that the tradition has a time span that stretches back, at least to the early days of colonization. In this paper we outline some of the sociocultural contexts of Arandic string games from central Australia, and then give a structural analysis of the figures recorded. We look at both similarities and differences in figure construction, comparing the Arandic figures to other records of string figures, both from within Australia and further afield in parts of Oceania. We then apply a formal analysis, in the string figure tradition, to our collection of Arandic string figures and highlight some figures and methods of construction that appear to be unique to central Australia.*

*Keywords: string figures, Australian Indigenous languages, Arrernte, Anmatyerr, Arandic languages, verbal arts, children’s games*

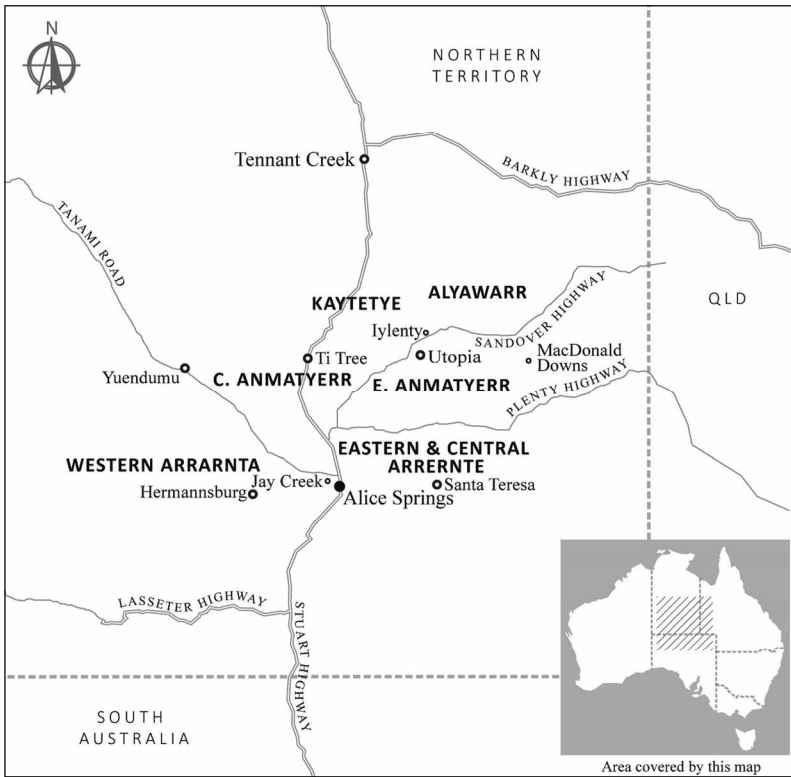
## 1. INTRODUCTION<sup>1</sup>

This paper draws on a corpus of string figures filmed in central Australia with Eastern & Central Arrernte and Anmatyerr speaking peoples. These spoken languages are part of the Arandic group of languages, found in an area of central Australia roughly centering on Alice Springs (see fig. 1).<sup>2</sup> Australian Indigenous spoken languages have suffered profound loss – only an estimated 12 of the original 250-300 languages are still considered ‘relatively strong’ (*National Indigenous Languages Report* 2020:49). While some of the Arandic languages are regarded as being under less threat compared to other Australian Indigenous languages, they are nevertheless endangered, as is knowledge of the verbal arts and narrative practices such as string figure games. In his review of records of string figures on the Australian mainland and in the Torres Strait Edwards (2011) lamented that “there is almost no remaining evidence of string figures within ongoing Aboriginal and Torres Strait Islander cultures, even in isolated areas where some degree of traditional lifestyle may still exist” (Edwards 2011:1). However, this paper adds to the evidence of contemporary knowledge of the string figure tradition in central Australia. It is the only published analysis of these traditions to be based on filmed records of the processes of figure construction, and as such provides a glimpse of how the final figures are achieved. As McKenzie writes, “the constituency or ‘place of being’ of the string figure is in the animation of the string, and its transformation through movement or manipulation” (McKenzie 2011:194).

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<sup>1</sup>First and foremost, our thanks go to all of those in central Australia who have contributed to the string games recordings. In particular we thank Veronica Perrurle Dobson (VD), Josie Douglas (JD), April Pengart Campbell (AC), Eileen Pwerrrel Campbell (EC), Clarrie Kemarr Long (CL), Helen Kemarr Long, Marie Kemarr Long, Violet Petyarr (VP) and Peggy Mpetyan (PM). Thanks also go to Ti Tree School, the Central Land Council and Margaret Carew. Three Anmatyerr women, April Pengart Campbell, Clarrie Kemarr Long and Emmanisha Kemarr Pepperill, presented a paper (with Green and Claassen) at the Second International Workshop on String Figure-Making Practices 19–21 June 2019 at The Australian National University. Their travel was supported by RUIL (the Research Unit for Indigenous Language) at the University of Melbourne. We also acknowledge support from the Australian Research Council (DP110102767, DE160100873). All formal analyses of the figures, and their visual representations as they appear in this paper, were undertaken by Stephan Claassen. We thank Joseph D’Antoni from Queens, New York for checking the transcribed construction methods against the films, and Robyn McKenzie for providing feedback on a draft of this paper. Images and photos are reproduced with permission.

<sup>2</sup>The term ‘Arandic’ is used as a matter of convenience to refer to this language group as a whole. There are some orthographic differences within the group, for example the spelling ‘Arrernte’ for the language name is used for the Eastern & Central dialects, whereas ‘Arrarnta’ is preferred by Western ‘Arrernte’ speakers. The spelling ‘Arunta’ appears in some records (for example Davidson 1941). In this paper we follow the spelling systems used in published dictionaries of these languages (Henderson & Dobson 1994; Green 2010; Kenny 2018).



**Fig. 1** - Some Arandic languages, and the communities in central Australia where string figure documentation took place (Map: J. Green)

We begin with a brief overview of some early documentations of string figures, with a focus on records from the Arandic region (§2). In §3 we profile the Arandic string figure makers who contributed to the corpus, the recording techniques used, and some of the terminologies and techniques that apply to the practice. The fine detail of the construction methods for the 21 Arandic figures is in §4. We conclude with some comparative remarks about the Arandic string figures and their construction techniques, situating them in the context of records of string figures from other regions of Australia and from Oceania, and highlighting some of their unique features. Appendix 1 provides a long sequence of variations and permutations of a string figure series (Arandic 15). Appendix 2 describes some additional defined movements. Appendix 3 details the sources for comparisons made between string figures from Australia and Oceania. An index to the string figure recordings in our Arandic collection is found in Appendix 4.

## 2. EARLY DOCUMENTATION OF AUSTRALIAN STRING FIGURES

The first substantial collections of string figures in the world were made on the Australian mainland and on the islands of the Torres Strait (McKinty 1997:13, McKenzie 2016:129). Although direct evidence for the time-depth of knowledge of string figures and their patterns of diffusion is scant, some early records suggest that Indigenous Australians could well have played string games prior to European colonization.<sup>3</sup> One example comes from Victoria where the British botanist Daniel Bunce described a game he observed that was “played by two individuals” in which string made from local plant materials was used:

“This morning we observed that they practiced some little amusements among themselves, and some were playing with a puzzle made of string “cudgi, cudgick” – made from the fibre of a tree (*Sida pulchella*) common on the banks of mountain streams, as well as occasionally on the banks of the Yarra. This puzzle was played between two individuals and required two pairs of hands, in the same manner as the juvenile game of cat’s cradle, common to our own country.” (Bunce 1857:75)

Between 1840-1850 Thomas Petrie, explorer, goldminer, and grazier, observed Indigenous people in the Brisbane area of Queensland playing a string game they called *warru warru* where “An aboriginal held the string on his hands, while another took it off, and so on till they worked it into all sorts of shapes and forms” (Petrie 1904:111).<sup>4</sup> Another record, published at the very beginning of the 20th century, was made by W. E. Roth, a physician, and at times government official who had a keen interest in anthropology. He reported that string games were played by Indigenous women and children, and sometimes men, in North Queensland and the Torres Strait (Roth 1901:10-11, 24-27). Roth made detailed drawings of 74 string figures, but lamented that “...the diagrams of course only attempt to make a record of the finished article” (Roth 1901:11). This sentiment, about what is lost if attention is paid only to the final figures rather than to figure construction processes as well, was later echoed by Davidson (1941:770-771).

The earliest record of string figures in the Arandic region of central Australia comes from Carl Strehlow, a Lutheran missionary who was stationed at Hermannsburg to the west of Alice Springs between 1894 and 1922. In his

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<sup>3</sup>See Appendix 3 and McKenzie (2016:129-139) for an overview of the study of string figures in Australia. For bibliographies of records of string games in Australia and the Torres Strait see Edwards 2011 and Probert (1999-2003) <<http://mp.guineaflower.org/archives.html>>, accessed 1 September 2020.

<sup>4</sup>See also Davidson (1941:789).

monumental manuscript on the languages and cultural practices of Arrarnta and Luritja peoples, *Die Aranda- und Loritja-Stämme in Zentral-Australien*, Strehlow wrote that the Arrarnta “knew of the string-game *altjinka* before the arrival of whites” (Strehlow 1913:6). He suggested that the game, played by women and children, had come to Hermannsburg from the Southern Arrernte. Strehlow lists around a dozen named figures, although to date we have been unable to source written or visual records of the details of their construction.<sup>5</sup> According to Strehlow the *Knulja tnonta* ‘pregnant dog’ was the “most beloved string figure”.

- *Kwatja ngantja* ‘water source’, *Kwatja roa* ‘flood water’. These probably refer to the string figure series Arandic 01, which carries similar names.
- *Ara* ‘kangaroo’ (Red Kangaroo, *Osphranter rufus*)
- *Aroa* ‘rock-wallaby’ (Black-Footed Rock-Wallaby, *Petrogale lateralis*). Possibly referring to Arandic 17.
- *Iwuta* ‘type of bandicoot’ (probably Crescent Nailtail Wallaby, *Onychogalea lunata*)
- *Tjilpa* ‘native cat’ (Western Quoll, *Dasyurus geoffroii*)
- *Atnunka* ‘kangaroo-rat’ (Burrowing Bettong, *Bettongia lesueur*) (?)
- *Antana* ‘possum’ (Common Brushtail Possum, *Trichosurus vulpecula*)
- *Ilia* ‘emu’ (Emu, *Dromaius novaehollandiae*)
- *Tmeljara* ‘curlew’ (Bush Stone-Curlew, *Burhinus grallarius*)
- *Knulja tnonta* ‘pregnant dog’

In the expeditions of the Adelaide Board for Anthropological Research between 1928-1939 Norman B. Tindale collected mounted string figures, a secondary activity alongside the primary purpose of these expeditions, which was to collect physiological data from Indigenous peoples. In 1929 he collected 78 string figures at Hermannsburg from people of Arrarnta and Kukatja origin (Davidson 1941:886-888; McKenzie 2016:131). In 1930 he went to Macdonald Downs, where the Arandic language Alyawarr is spoken, and observed string games being played by Alyawarr girls (Tindale 1938-1956:24). He further recorded the construction methods for four string figures at Jay Creek and in Alice Springs, although details of the methods used have not been published. Mounted on paper, these figures are now at the South Australian Museum in Adelaide.<sup>6</sup> Daisy Bates reported that Aboriginal children from central Australia knew many varieties of string games, each with a special name and taught to them by their mothers and elder sisters (Bates 1929:213-

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<sup>5</sup>*Spellings and identification of species are from Kenny (2018).*

<sup>6</sup>*Norman Tindale Collection: AA338/2/24, AA338/2/27. South Australian Museum Archives.*

214, cited in Edwards 2011). D.S. Davidson collected string figures in many regions of Australia and reviewed the collections of others (he visited in 1930–31 and again in 1938–40), yet he only describes the method of construction for one figure that was collected from someone of Arandic origin (1941:828–829, nr. XXIII Spear).<sup>7</sup>

### 3. THE ARANDIC STRING FIGURE COLLECTION AND ITS MAKERS

The Arandic collection detailed in this paper is based on string game sessions that were filmed in 2007 and in 2012 with Arrernte and Anmatyerr women from central Australia. It was part of a broader project recording narrative practices and verbal arts, including sand drawing (Green 2014). The focus of the documentations of these practices was on understanding how various semiotic repertoires or systems – speech, song, sign, gesture and drawing – work together as “embodied kinaesthetic experience” (McKenzie 2016:140) in dynamic instances of narration. The women suggested that we make films of string figures in addition to the recordings of sand stories. A total of 21 distinct figures were identified from just over 100 examples of string figure makings in around two hours of recordings.<sup>8</sup> In the course of this project six women took part: five speakers of Central Anmatyerr, and one of Eastern & Central Arrernte (see figs. 2 & 4). These women are acknowledged experts in their spoken languages as well as in storytelling practices such as sand drawing. All have been authors of, or contributors to, dictionaries of their languages and to other published works about their languages and culture (for example, Henderson & Dobson 1994; Dobson 2007; Dobson & Henderson 2013; Campbell, Long, Green & Carew 2015).

The recordings were made by Jennifer Green in Alice Springs, in the Hansen River near Ti Tree community, at Iylenty outstation in the Utopia homelands, and in Victoria (where a group of Anmatyerr women were on vacation) (see Figure 1).<sup>9</sup> The string figure makers were all women, and at the time of making the recordings all, with one exception, were in their 60s and hence regarded as elders of their communities. We do not know if young girls in central Australia have taken up the skill of string figure making, but some were on-lookers and occasional participants in the recording sessions. In an attempt to do justice to the dynamic properties of the games and their procedural intricacies the meth-

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<sup>7</sup>*This figure is not represented in our collection of Arandic string figures, and we do not know who collected it.*

<sup>8</sup>*We do not claim that this represents the total number of distinct figures currently known in these communities.*

<sup>9</sup>*The recordings are archived at AIATSIS (<<https://collection.aiatsis.gov.au/>> Archival session titles STR-20070814; STR-20120620; STR-20120622; STR-20121222).*



Veronica Perrurle Dobson



Violet Petyarr



Eileen Pwerrerl Campbell



April Pengart Campbell



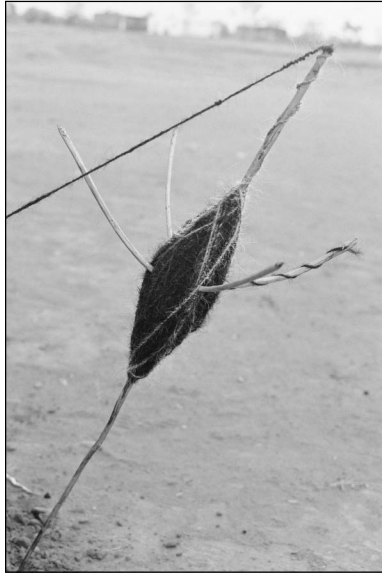
Clarrie Kemarr Long

**Fig. 2 - The string figure makers**

od used for filming sand drawing (Green 2014) was adopted for the documentation of the string figures. Two viewpoints, with one camera facing downwards and another capturing a side-on perspective, allowed for an integrated view of the dynamics of the figures as each step in the construction took place (see also Hoenigman 2020:612).

#### *Terminologies and making practice*

As Hoenigman has so eloquently pointed out for the string figures of the Awiakay in Papua New Guinea, “the way people talk about string figures also provides insights into the way people think about string figures” (2020:627). Several of the Arandic names for the string game practice are based on the terms that are otherwise used to refer to the notion of tying things up, or to species that commonly occur in bunches or bundles, for example the fruits of the bush banana plant (*Marsdenia australis*). *Aljinka*, the Western Arrarnta term for the game recorded by Strehlow and mentioned above, refers both to ‘blossoms strung together’ and to tails ‘tied together’ (Kenny 2018:164). In Eastern & Central Arrernte one of the names for the practice of making string



**Fig. 3** - Hair string on a wooden spindle  
 (Photo: J. Green, Anwengerrp, Utopia region c. 1990)

figures comes from the phrase *arrwe-iltyingke* (*arrwe* ‘rock wallaby’; *iltyingke* ‘bunch or bundle’). *Arrwe-iltyingke* is also the name of one of the commonly-made string figures that represents “rock wallabies carried held by their tails” (Henderson & Dobson 1994:271; see Arandic 17 below). Another name for the practice is *atyepe arrkene* (*atyepe* ‘belt, carrying strap; a person’s waist’; *arrkene* ‘fun, for amusement’).

In the desert regions of central Australia hair string (fig. 3), which has a range of ceremonial and everyday uses, was traditionally used to make the figures. Nowadays wool is more readily available, and using several colors enables contrasts in designs that are not possible if hair string is used. The designs are formed by the continuous threading and looping of the string on the fingers. If a person does not have another to assist with the construction of the figures they may use their own feet to secure the ends of the string. The mouth is also used to hold the string in place as it undergoes a series of elementary operations. One of the features of the way the women play the string figure games is the collaborative construction, using very long strings, of large figures that involve several women. By doubling or quadrupling the string loop the women are able to adjust the loop size to fit the requirements of the intended figure. This of course also increases the thickness of the string loop. The lengths of the strings used vary considerably, in our corpus between (approximately) 2.6 and 7.2 meters.

According to Veronica Dobson, the string, like the story wires used in sand storytelling, would be worn around the neck or wrapped around the arm to keep it close at hand in between play sessions. She recalls how the Catholic Sisters at the Santa Teresa Mission to the east of Alice Springs would confiscate the string, and then either cut it up or burn it. “You shouldn’t be playing cat’s cradle. Give us that string”, they used to say.<sup>10</sup>

As indicated by the descriptor *arrkene* ‘fun, for amusement’ above, the string figure game was largely played for entertainment, with women and girls the main practitioners (see also Davidson 1941:782). Violet Petyarr recalls how she played the game when she was young:

*“This is how we used to enjoy ourselves, little girls, in the cubby houses that we built. We all used to take it in turns to tell [the string stories] to distract ourselves and take our minds off things. We copied the designs from the olden time wells and windlasses [devices used for lifting things].”* (translation from Anmatyerr)<sup>11</sup>

Some suggest that string games fall within the scope of the broader meaning of *tyepety*, a term used in some Arandic languages to refer to multimodal narrative practices, such as storytelling in the sand (Green 2014, 2016, 2018). As is the case with string figures, these sand narratives may include small songs or sung repeated texts. For example, the figure (Arandic 13a) represents *wirlpirlope*, the Bush-Stone Curlew (*Burhinus grallarius*), a nocturnal bird that makes eerie screaming sounds at night. This string figure includes a short sung text: “*Wirlpirlope wirlpirlope ntewirreme ntewirreme*” (‘The curlews are knocking each other down, knocking each other down’). A figure called ‘The curlew’ also features in Strehlow’s records of string figures.<sup>12</sup>

A small repertoire of string figures seems to be widely recognized, and there is some semantic consistency in their interpretation across several of the Arandic languages, as well as variation. As Davidson reports of string figures in general, the majority are “named after animals or objects” (Davidson 1941: 782). For example, one string figure (Arandic 17 below) may be interpreted as *anatyē antharle* ‘the young tubers of bush potato plants (*Ipomoea costata*)’, as a ‘parachute’, and as the signature *arrwe iltyingke* ‘group of wallabies’. It is possible that the figure that represents the bush potato plant (also known as ‘rock morning glory’) alludes to the ‘string-like’ roots that connect the young tubers to the main one, which is called ‘the mother’ in several Arandic languages. As has been documented elsewhere (Damon 2017; Hoenigman 2020; Huffman 2019) the species replicated in string represent a small snapshot of the ecological knowledge of the string figure practitioners. In the case of the

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<sup>10</sup>Archival session name: STR-20070814.

<sup>11</sup>Archival session name: STR-20120620 (String20120620-VPety-02T.mov).

<sup>12</sup>In other regions of Australia recordings of ‘string figure songs’ accompany some collections of string figures mounted on card (See McKenzie 2011:192).



**Fig. 4 -** *Ti Tree women lead a making session at the International Workshop on String Figure-Making Practices, Canberra, June 2019. From left to right: Ivã Filho, [ ], Manfred Wkeng Aseng, Inge Riebe, Céline Petit, Judy McKinty, Clarrie Kemarr Long, Emmanisha Kemarr Pepperill, and April Pengart Campbell (Photo: J. Green)*

species named by Strehlow well over a hundred years ago and listed above, this gives a somewhat poignant perspective as half of these are now either extinct in the Northern Territory or highly endangered. As we will discuss below, some of the figures are also indicative of post-contact cultural environments – the use of non-Indigenous animals for food (the Killer, Arandic 12); and the construction of the accoutrements of the cattle industry in traditional lands (wells, windlasses, windmills and beds or bunks, see Arandic 01, Arandic 08). As Hoenigman suggests of Awiakay string figures, in their thematic content the figures are “like vignettes” of a lifeworld (Hoenigman 2020:607).

Some of the younger string figure makers are enthusiastic about teaching children about the practice and about incorporating string figures into language and culture curricula in local schools. Anmatyerr educator April Pengart Campbell recognizes the value of string figures as a way of teaching practical skills in relation to some spatial concepts in Anmatyerr. As April puts it, the process of making string figures is like a kind of “hands-on maths” (see Vandendriessche 2015). The rich terminologies that are involved in the practice of the collaborative construction of string figures – including the ways that instructions are issued and mistakes in manipulations corrected – are an important source of understanding of the interactional significance of the practice

and the spatial calculations it entails, and as such can make an important and useful contribution to language documentation (Hoenigman 2020).

#### 4. THE FIGURES

In what follows we describe the construction of the various string figures that were made during these sessions. When a figure was made more than once, one example is described in full and variations are noted. In two cases (Arandic 01 and Arandic 02) some makings differed from each other to such an extent that they have been described separately (Arandic 01a/b etc.). As one figure (Arandic 13) was made in three different ways these have also been described separately. One of the women performed a long sequence of variations and permutations of a string figure series (Arandic 15). This sequence is given separately in Appendix 1. In some instances, a clear final string figure was not displayed, although it was sometimes possible to identify a figure that may have been intended. These makings are not described in the present paper. Each construction method is followed by comparative remarks, in which the figure and its construction is compared with known recordings from other parts of Australia and other Oceanic regions. The terminology used to describe the construction methods is the verbalized rendition of Thomas Storer's symbolic nomenclature, introduced by Joseph D'Antoni and explained at the end of this Bulletin. In this paper some additional defined movements are used, and these are described in Appendix 2. In the following sections we refer to the string makers by their initials (VD, AC, VP, PM, EC and CL).<sup>13</sup> Not all the figures identified were named in the current phase of research. Where the names for figures vary we have indicated alternatives.

##### ARANDIC 01 <not named>

###### (i) Construction

Although the basic construction principle among the Anmatyerr and the Arrernte is the same, construction details differ to such an extent that the construction in each tradition is presented separately here.

##### ARANDIC 01a <not named>

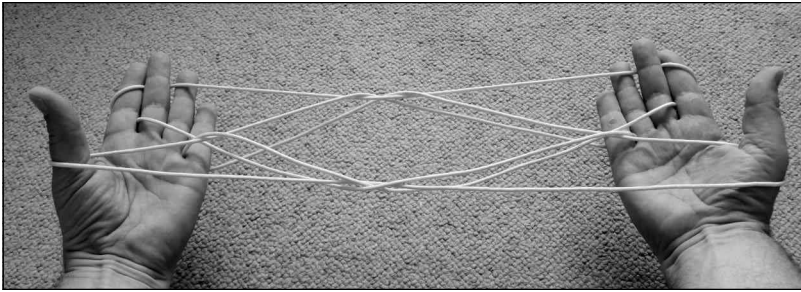
*The instructions below describe Making VP2. Differences with other makings are noted in the remarks.*

1. *Opening A\**.
2. With the mouth over all intermediate strings, grasp 5f and bring it over all intermediate strings to the near side of the figure.

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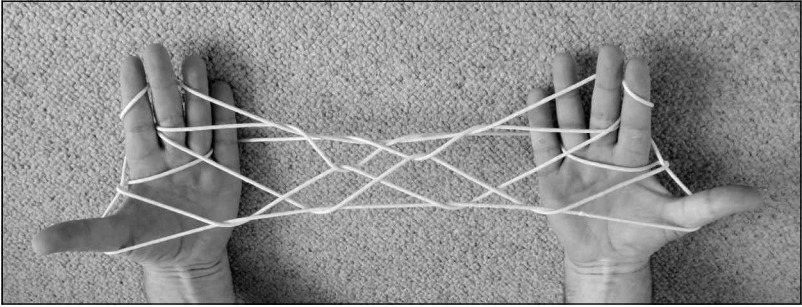
<sup>13</sup>See Footnote 1.

3. With R2, over the right mouth string, pick up the left mouth string; With L2, under the left mouth string, pick up the right mouth string. Release grip of mouth.
4. Release 1 loop and extend.
5. With 1, under all intermediate strings, pick up 5n.
6. With 1 pick up upper 2n and keep strings on 1 well separated.
7. Pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1.
8. Remove 3 from the figure.
9. Allow the upper 2 loop (of which 2n continues to 1f on the same hand) to slip off 2. Extend.
10. With 3 pick up 2n and extend, palms pointing away from the ground, fingers pointing away from the body (fig. 5).

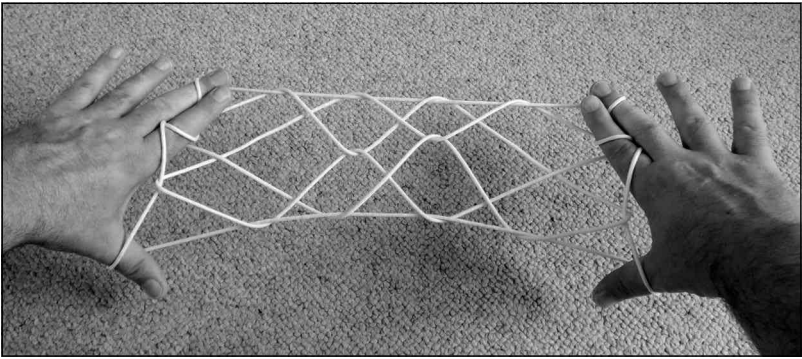


**Fig. 5** - *Arandic 01a* after movement 10

11. Remove 3 from the figure.
12. With 2 from below remove 1 loop.
13. Movement 5-6.
14. Pass R3 over all intermediate strings towards the near side of the figure, down along the near side of upper R1n, then pick up lower R1n and lift this string over upper R1n and off R1. Remove R3 from the figure.
15. Movement 14 with L3 on L1.
16. With 3 pick up (TV) 2n and extend, palms pointing away from the ground, fingers pointing away from the body (fig. 6).
17. Release 5 loop, then keeping tension in the figure turn palms towards each other then away from the body and extend, 23 pointing upwards, 1 pointing towards the ground (fig. 7).
18. Move the figure slightly up and down several times.
19. The figure is dissolved by placing it (with its far side) on the lap, removing the hands from the figure, then separating both framing strings exactly in their middle.



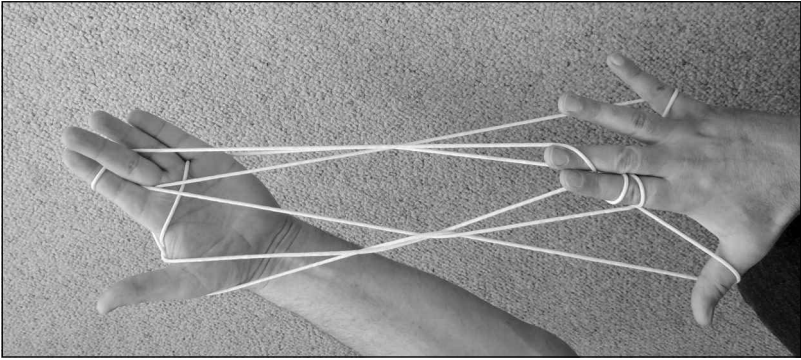
**Fig. 6 - Arandic 01a after movement 16**



**Fig. 7 - Arandic 01a after movement 17**

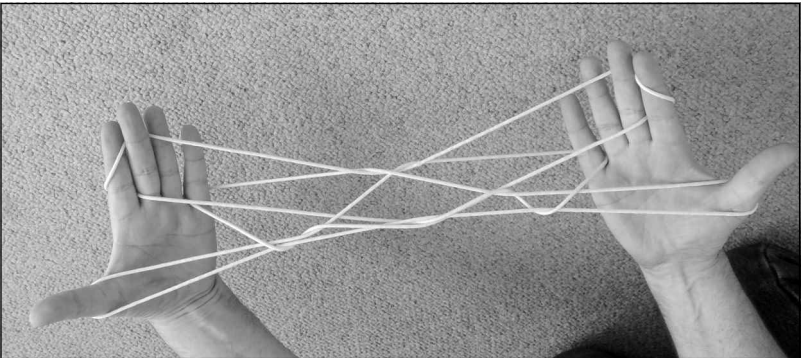
Remarks:

- Movement 1. AC (Makings AC1-6) uses Opening A here.
- Movements 2-3. PM (Makings PM1 and PM2) does not use the mouth here, but performs different movements:
  - 2'. With R3 pick up R5f.
  - 3'. With L2, over all intermediate strings, pick up R3f, and with R2 from above remove R3 loop.
- Movements 7-8. In Makings VP3 and AC1-6 these movements are replaced with:
  - 7'. With mouth Navajo 1.
- Movement 9. In Makings AC1-2 and AC4-6 the mouth helps to do this.



**Fig. 8** - *Arandic 01a after movement 9': Tumbled Hands Display*

- Movement 9. In Making AC3 AC uses a different extension (what we here call the Tumbled Hands Display), after which the construction is halted:  
9'. With 3 pick up 2n and spread fingers of each hand as far away from each other as possible, then display in a horizontal plane, 2345 of both hands pointing left, LH palm pointing away from the ground, RH palm pointing towards the ground (make sure that R3f remains on R3) (fig. 8).
- Movement 14-15. In Making AC1 these movements are replaced with:  
14'. With mouth Navajo 1.
- Movement 16. In Making AC1 prior to this movement the upper 2 loop is released with help of the mouth. This results in a different figure after movement 16 (fig. 9).



**Fig. 9** - *Arandic 01a after movement 16 in Making AC1*

- Movement 17. In Making CL2 CL displays with palms facing each other.
- Movement 18. CL does not move the figure up and down and sing a chant during the display of the final figure, neither does VP in other makings.
- Movement 18-19. PM has a different continuation here (Making PM2), where movements 25'- 28' could be an experiment, since no final figure is obtained.

18'. Bring hands to Normal Position.

19'. Pass L345 over intermediate strings to the near side of L1n and hook down all intermediate strings, closing L345 to the palm. With L12 remove R1 loop by grasping R1n, then with R5, over all intermediate strings, from the far side remove loop hanging down from L12 (R5 thus enters former R1 loop from the opposite side). Remove R3 from the figure.

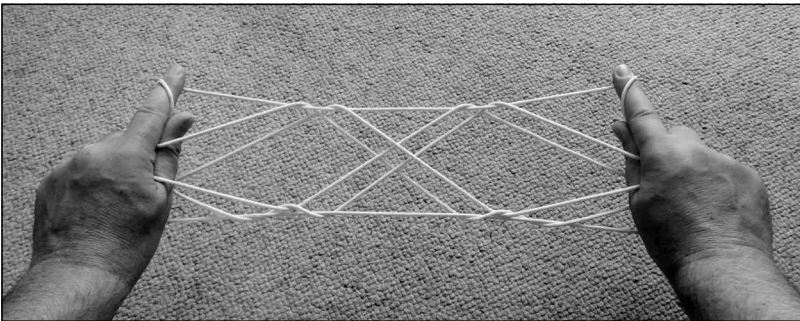
20'. With L12 remove double R2 loop by grasping double R2n close to R2, then with R1, from the far side remove double loop hanging down from L12 (R1 thus enters former double R2 loop from the opposite side).

21'. Release intermediate strings held down with L345. With R12 remove L1 loop by grasping L1n, then with L5, over all intermediate strings, from the far side remove loop hanging down from R12 (L5 thus enters former L1 loop from the opposite side). Remove L3 from the figure.

22'. With R12 remove double L2 loop by grasping double L2n close to L2, then with L1, from the far side remove double loop hanging down from R12 (L1 thus enters former double L2 loop from the opposite side).

23'. Bring hands to Normal Position.

24'. Caroline Extension (fig. 10).



**Fig. 10** - *Arandic 01a, Making PM2 after movement 24'*

25'. Remove 1 from the figure.

26'. With 1 from above remove 2 loop.

27'. With 1 pick up 5n.

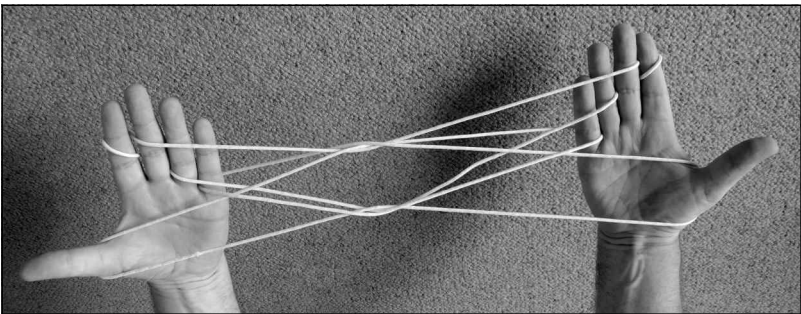
28'. Caroline Extension. This does not result in an actual figure. The construction is halted.

### **ARANDIC 01b *Argentye* 'soakage'; *Kwatye urewe* 'running water'**

*The instructions below describe Making VD2.*

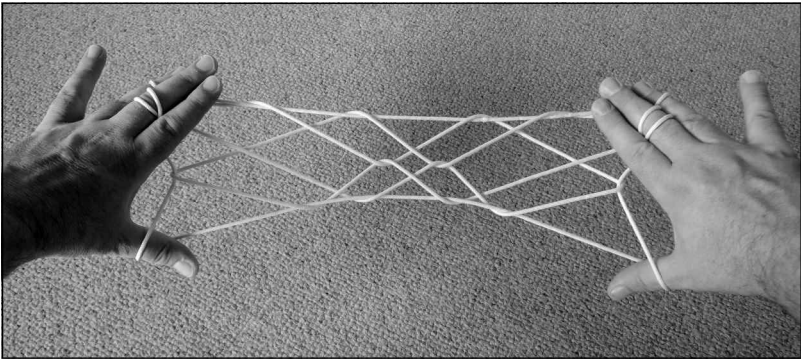
Use a doubled string, here treated as a single string.

1. *Opening JA.*
2. With mouth, over all intermediate strings, grasp 5f and bring it over all intermediate strings to the near side of the figure.
3. With R2, over the right mouth string, pick up the left mouth string; With L2, under the left mouth string, pick up the right mouth string. Release grip of mouth.
4. Release 1 loop and extend.
5. With 1, under 2 loop and 3 loop, pick up 5n.
6. With 1 from below remove 2 loop.
7. Pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1; allow the string just lifted off 1 to slip off 3.
8. Pass 2 from above in 3 loop and hook up 3n, turning 2 down, towards the body and up.
9. Display with palms pointing away from the ground, fingers pointing away from the body (fig. 11).
10. Remove 2 from the figure and bring hands to Normal Position.



**Fig. 11** - *Arandic 01b* after movement 9

11. With 3 from below remove 1 loop.
12. With 1, under both 3 loops, pick up 5n.
13. With 1 pick up upper 3n.
14. Movement 7.
15. With 4 over upper 3f pick up lower 3n (a string running through the figure straight to 3n on the other hand).
16. Release 5 loop, then keeping tension in the figure turn palms towards each other then away from the body and extend, 34 pointing upwards, 1 pointing towards the ground (fig. 12).



**Fig. 12** - *Arandic 01b* after movement 16

Remarks:

- In Making VD1 and VD4 a single string is used. Note that both these makings have a different movement 11 (movement 11', see below) after which the construction is halted.
- Movement 11. In Making VD2 movements 8-10 are repeated prior to this movement.
- Movement 11. In Making VD1 & VD4, this movement is replaced with:  
11'. With 1 pick up 3n; pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1; allow the string just lifted off 1 to slip off 3. Then the woman with 3 tries to pick up a string. The construction is then halted.
- Movement 14. In Making VD3, this movement is replaced with:  
14'. With help of the mouth Navajo R1; with help of the mouth Navajo L1.

**(ii) Interpretation and comparisons**

VD comments during Making VD3. “*Floodwater, when the river floods, the floodwater is in the creek, cleaning it all there properly, it cleans the creek bed, and everyone goes to the creek looking for grubs, and digging out the soakage, like that, after the floodwater has cleaned everything out.*”

Within the Arandic group there is variation as to the interpretation of this figure. VD calls it a well, rockhole, *angentye* ‘soakage’, *kwatye urewe* ‘running water, floodwater’. Although we cannot be certain that the actual figure is the same, this appears to align with Strehlow’s records where one of the figures is known as *ngantja* ‘spring water’ or *kwatja roa* ‘floodwater’ (Strehlow 1913:6). VP says the figure represents a well or windlass, and PM that it is a bed or bunk.

VD (Arrernte) in her construction of the figure (01b) uses the middle finger substantially, already in the opening (*Opening JA*).

All Arandic recordings present the intermediate figure after movement 10 (Arandic 01a) or 9 (Arandic 01b), with palms facing the body, or, in one case (AC, Making AC3), with the Tumbled Hands Display. Because VD constructs the figure somewhat differently, she has to use a slightly different extension here. In all Arandic constructions the 1 loop is released after the upper 2 loop has been formed (movement 4 in both Arandic 01a and 01b); three of the four women use the mouth to create the upper 2 loop (movements 2-3 in both Arandic 01a and 01b; only PM uses the fingers here).

PM only in one making presents a continuation after the final figure (Arrernte 01a, movements 18’-28’).

The figure/series has in Australia been recorded in northern and western Australia (Davidson 1941:844-846, nr. XXXIV Devil-devil’s Anus/Mouth of a Fish, XXXV Crocodile and XXXVII Gate). The intermediate figure after movement 10 (Arandic 01a) or 9 (Arandic 01b) is displayed and named among the Ngainman (Ngarinyman) (Devil-devil’s Anus) and in Queensland (Mouth of a Fish) (Davidson nr. XXXIV); there also palms are turned so that they face the body to extend, but the middle finger is not used to improve the extension. In Davidson’s figure XXXIV the 1 loop is released after the upper 2 loop is formed, and the fingers are used to create this upper 2 loop (by a movement which Davidson calls “Movement Z” (1941:839-840). This “Movement Z” is closely related to the movements PM performs to create the upper 2 loop (Makings PM1 and PM2, remark at Movement 2-3 in Arrernte 01a). In southwestern Australia (Davidson nr. XXXVII) the mouth is used in creating the upper 2 loop, and the 1 loop is released prior to this. Davidson does not specify how the Navajo movement is performed at a particular location; he only describes the various possibilities to achieve it (1941:799), but mentions that in

Western Australia at Southern Cross and Kellerberrin it is always done with the mouth (1941:847).

Davidson additionally describes a continuation for the figure after movement 17 (Arandic 01a) or movement 16 (Arandic 01b), found in northern and western Australia (845-846, nr. XXXVI Crocodile's Eye); this continuation is, however, completely different from the Anmatyerr continuation of PM.

The figure is also found in Yirrkala (Maude & Sherman 1995:123-124, nr. 53 Parrot, 54 Women's Crocodile and 55 Ripples on a Pool); here the intermediate figure after movement 10 (Arandic 01a) or 9 (Arandic 01b) is not displayed as a figure. In Yirrkala the 1 loop is released before the upper 2 loop is formed, and Davidson's "Movement Z" is used in forming the upper 2 loop. In the construction of the Yirrkala figures Navajo is executed by the mouth (McCarthy 1960:464-465).

Stanley gives a closely related series of two figures for northern Queensland (1926:80, Mouth of a Fish & Fish), which is, curiously, constructed upside-down when compared to the other Australian (and Oceanic) recordings. He does, however, also describe his equivalent of the intermediate figure after movement 10 (Arandic 01a) or 9 (Arandic 01b) displayed with its name Mouth of a Fish.

The figure after movement 17 (Arandic 01a) or movement 16 (Arandic 01b) is common in many parts of Oceania. Displaying the intermediate figure after movement 10 (Arandic 01a) or 9 (Arandic 01b), however, has, outside Australia, been recorded only once, in Fiji (Hornell 1927:43-44, *Vasua nggamu-nggamu* 'giant clam opening and shutting'); there it is an action figure (by turning the hands outward then inward the 'clam' is opened or shut), and the middle finger is not used to improve the extension.

Continuations of the figure after movement 17 (Arandic 01a) or movement 16 (Arandic 01b) occur in several places in Oceania; the continuation of PM (movements 18'-28' of Arandic 01a) has, however, not been recorded previously.

A study on construction variants of this figure in Oceania can be found below in the Analysis part (Section 5) of this paper.

## ARANDIC 02

Although the basic construction principle used by the Anmatyerr and the Arrernte is the same for Arandic 02, construction details differ to such an extent that the construction in each tradition is presented separately here.

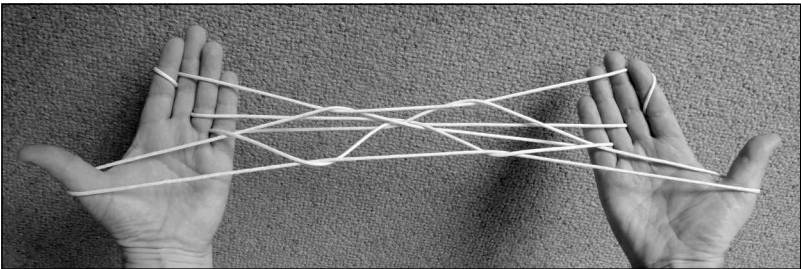
### (i) Construction

#### ARANDIC 02a. *Irretye* 'eaglehawk'; A mother eagle and two chicks

*The instructions below describe Making VD2.*

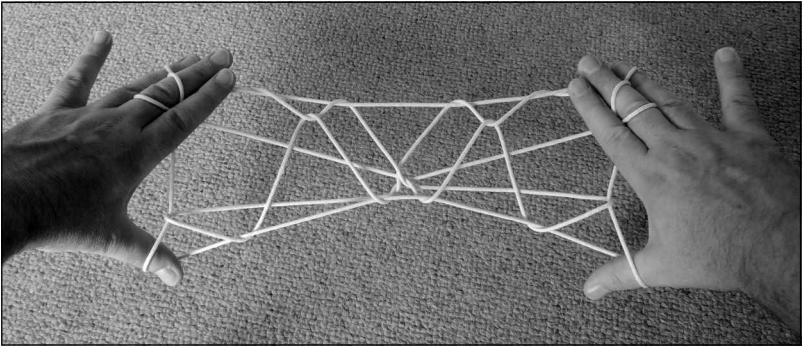
Use a doubled string loop, here treated as a single loop

1. *Opening JA.*
2. With mouth from above enter 3 loop, then pass mouth under 3f and 5n and grasp 5f; return through 3 loop and bring mouth towards the body, so that a mouth loop is formed.
3. With R2, over the right mouth string, pick up the left mouth string; With L2, under the left mouth string, pick up the right mouth string. Release grip of mouth.
4. Release 1 loop and extend.
5. With 1, under 2 loop and 3 loop, pick up 5n.
6. With 1 from below remove 2 loop.
7. Pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1; allow the string just lifted off 1 to slip off 3.
8. Pass 2 from above in 3 loop and hook up 3n, turning 2 down, towards the body and up.
9. Display with palms pointing away from the ground, fingers pointing away from the body (fig. 13).



**Fig. 13** - *Arandic 02a after movement 9*

10. Remove 2 from the figure and bring hands to Normal Position.
11. With 3 from below remove 1 loop.
12. With 1, under both 3 loops, pick up 5n.
13. With 1 pick up upper 3n.
14. Movement 7.
15. With 4 over upper 3f pick up lower 3n (a string running through the figure straight to 3n on the other hand).
16. Release 5 loop, then keeping tension in the figure turn palms towards each other then away from the body and extend, 34 pointing upwards, 1 pointing towards the ground (fig. 14).



**Fig. 14 - Arandic 02a after movement 16**

Remarks:

- In Making VD3 and VD5 VD uses a single string loop.
- Movement 11. In Making VD1 and VD3 this movement is replaced with:  
11'. With 1 pick up 3n; pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1; allow the string just lifted off 1 to slip off 3. Then the woman with 2 tries to pick up or hook up a string. The construction is then halted.
- Movement 14. In Making VD4 & VD5 (chronologically following each other) this movement is replaced with:  
14'. With help of the mouth Navajo R1; with help of the mouth Navajo L1.

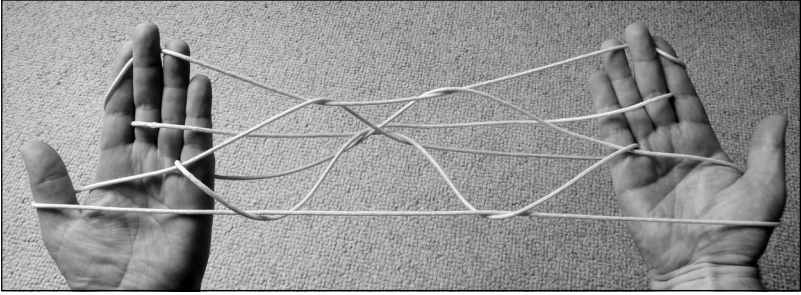
**ARANDIC 02b <not named>**

*The instructions below describe Making CL2*

Use a doubled string, here treated as a single string.

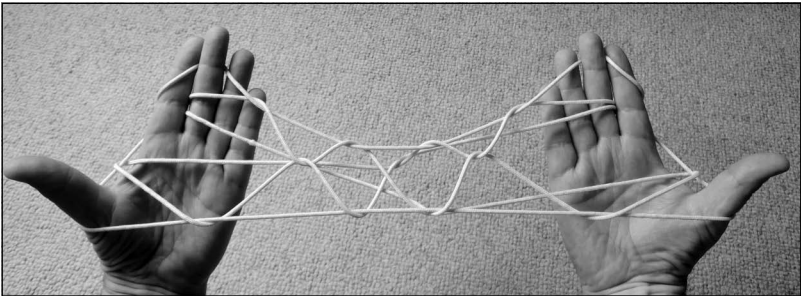
1. *Opening A\**.
2. With mouth from above enter 2 loop, then pass mouth under 2f and 5n and grasp 5f; return through 2 loop and bring mouth towards the body, so that a mouth loop is formed.
3. With R2, over the right mouth string, pick up the left mouth string; With L2, under the left mouth string, pick up the right mouth string. Release grip of mouth.
4. Release 1 loop and extend.
5. With 1, under all intermediate strings, pick up 5n.
6. With 1 pick up upper 2n and keep strings on 1 well separated.
7. Pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1.

8. Remove 3 from the figure.
9. Allow the upper 2 loop (of which 2n continues to 1f on the same hand) to slip off 2. Extend.
10. With 3 pick up 2n and extend, palms pointing away from the ground, fingers pointing away from the body (fig. 15).



**Fig. 15** - *Arandic 02b* after movement 10

11. Remove 3 from the figure.
12. With 2 from below remove 1 loop.
13. Movement 5-6.
14. Pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1. Remove 3 from the figure.
15. With 3 pick up (TV) 2n, release 5 loop and extend, palms pointing upwards, fingers pointing away from the body (fig. 16).



**Fig. 16** - *Arandic 02b* after movement 15

### (ii) Interpretation and comparisons

VD comments: “An eagle and chick are in a nest. And when the two small ones get bigger, the mother leaves them and goes, and then they fly off.”

She interprets the figure after movement 9 as an *irretye* ‘eaglehawk’ sitting in a nest, and the figure after movement 16 as an eaglehawk mother in the middle and two babies/chicks on the side.

The figure is made by VD and by CL. It is a variation on Arandic 01, a figure that both woman also make. Only movement 2 differs from that of Arandic 01: here 5f is picked up under the 3f (or 2f) and 5n strings, instead of over all strings as in Arandic 01. All other movements are the same. It results in slightly different figures after movement 9 and movement 16. This variant has, as far known, not been recorded elsewhere in Australia, nor in other parts of Oceania.

It is interesting to note that VP (Anmatyerr) attempts a (different) figure whose construction uses similar opening movements (1-3) as the above figure (this different figure is not described here).

### ARANDIC 03 <not named>

#### (i) Construction

Use a very long doubled string, here treated as a single string.

1. Opening A.
2. With 2 from below remove 1 loop.
3. With R1, under 2 loops, pick up R5n and return under 2 loops; with L1, under 2 loops, pick up L5n and return under 2 loops.
4. With 1 pick up upper 2n.
5. With mouth Navajo R1; with mouth Navajo L1.
6. With help of mouth remove upper R2 loop (of which R2n runs to R1f); with help of mouth remove upper L2 loop (of which L2n runs to L1f).
7. With 3 from above enter 2 loop and pick up 2n.

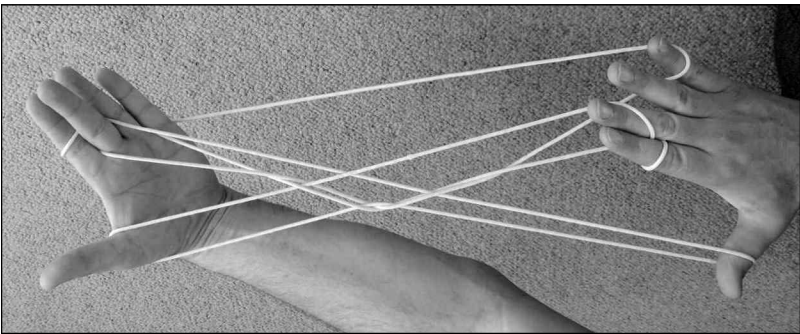


Fig. 17 - Arandic 03

8. Spread fingers of each hand as far away from each other as possible and display in a horizontal plane, 2345 pointing left, LH palm pointing away from the ground, RH palm pointing towards the ground (fig. 17).

### **(ii) Interpretation and comparisons**

Arandic 03 is only made by AC, and she constructs it only once. It is a small variant of the first part of Arandic 01a, a figure that AC also makes. Here the upper 2 loop is created in a different way at movement 2, resulting in a slightly different final figure. AC displays the figure in the Tumbled Hands Display: it seems as if the hands have “tumbled” sideways from Normal Position.

Movements 1-6 above are identical to the first part (movements 1-5) of a figure recorded by McCarthy at Yirrkala (Maude & Sherman 1995:140, nr. 90 Butterfly); the Yirrkala figure is, however, not displayed at this point. We did not find this variant figure in the other collections studied for Oceania.

## **ARANDIC 04 <not named>**

### **(i) Construction**

*The instructions below describe Making PM1.*

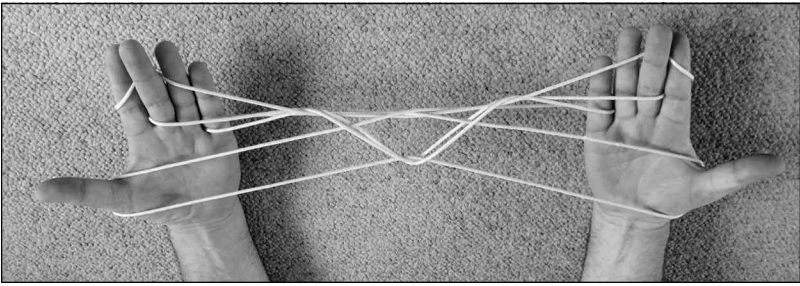
1. *Opening A\**.
2. With R3 pick up R5f.
3. With L2, over all intermediate strings, pick up R3f, and with R2 from above remove R3 loop.
4. Release 1 loop and extend to absorb the slack.
5. Pass 1 between upper and lower 2n, then under both 2f, and pick up 5n; return under both 2f and between upper and lower 2n.
6. With 1 from below remove upper 2 loop.
7. Pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1. Remove 3 from the figure.
8. With 3 pick up 2n and extend, palms pointing upwards, fingers pointing away from the body (fig. 18).
9. Remove 3 from the figure. The construction is halted.

Remark:

- Movement 9. Prior to this movement 2 from below removes 1 loop, then 1 from below removes upper 2 loop.

### **(ii) Interpretation and comparisons**

Arandic 04 is yet another variation on (the first part of) Arandic 01(a). It is only made by PM, who constructs it only once on the film; PM also knows



**Fig. 18 - Arandic 04**

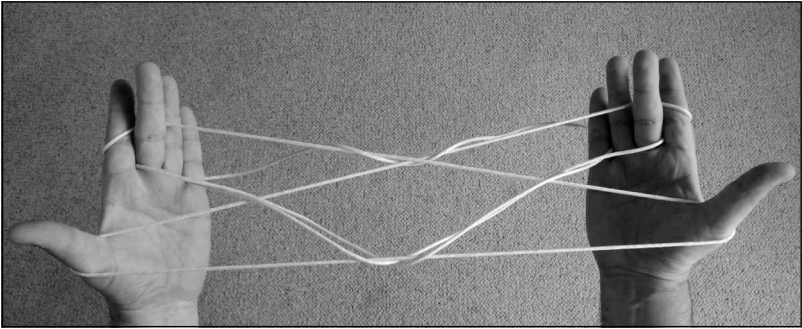
Arandic 01a. The construction differs from that of Arandic 01a at movement 5, where 5n is picked up between upper and lower 2n instead of under both 2n, as in Arandic 01, resulting in a slightly different final figure. Since the figure was only made once and has not been recorded elsewhere in Australia nor in other parts of Oceania, it is possible that it was an experiment.

**ARANDIC 05 *ngenty* ‘soakage’; *arengk* ‘dog/dingo’**

**(i) Construction**

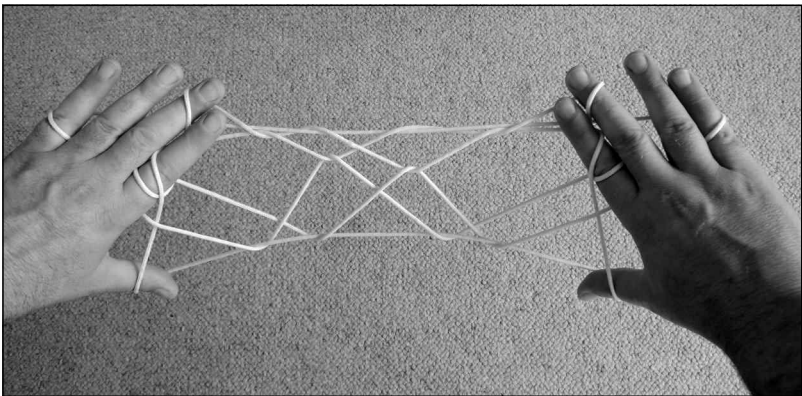
*The instructions below describe Making VP1.*

1. *Opening A\**.
2. With 1, over intermediate strings, pick up 5f.
3. Pass 23 from above in upper 1 loop, then pass 2 towards the body between upper and lower 1n, and pass 3 towards the body under lower 1n, pinch lower 1n between tips of 23, then turn 23 down, away from the body under upper 1n and up through upper 1 loop. Separate tips of 23.
4. Remove 1 from the figure.
5. With 1, under 2 loops, pick up 5n.
6. With 1 from below share upper 2 loop.
7. Pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1.
8. Remove 3 from the figure.
9. Release upper 2 loop.
10. With 3 pick up 2n and extend, palms facing the body, fingers pointing away from the body (fig. 19).



**Fig. 19** - *Arandic 05* after movement 10

11. Remove 3 from the figure.
12. With 2 from below remove 1 loop.
13. With 1, under intermediate strings, pick up 5n.
14. With 1 from below share upper 2 loop.
15. Movement 7-8.
16. With 3 pick up (lower) 2n.
17. Turn palms away from the body and out, fingers pointing upwards, 1 pointing towards the ground, to extend (fig. 20).



**Fig. 20** - *Arandic 05* after movement 17

Remark:

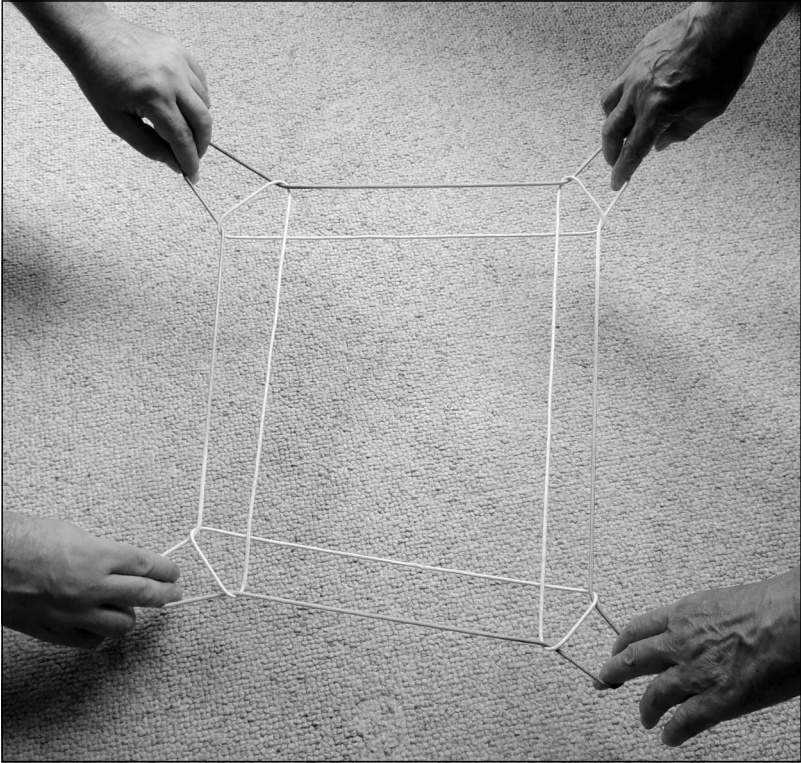
- Movement 14. Prior to this movement VP accidentally releases upper L2 loop, but restores this afterwards.

**(ii) Interpretation and comparisons**

VP (Anmatyerr) calls the figure after movement 10 *ngenty* ‘soakage’ and the figure after movement 17 *arengk* ‘dog/dingo’. The first name is the same as that given by VD (Arrernte) to the first figure of Arandic 01b, although the spellings differ slightly.

Arandic 05 is a variant of Arandic 01a. VP is the only one who makes the figure, and she makes it only once on the film; she also is familiar with Arandic 01a. Arandic 05 differs from Arandic 01a at movements 2-3, where the upper 2 loop is created in a way that differs from that of Arandic 01a, and resulting in different figures after movements 10 & 17. The figure has, as far as we could find out, probably not been recorded before in Australia nor in Oceania.

**ARANDIC 06 Small house**



**Fig. 21** - *Arandic 06*

**(i) Construction**

*The instructions below describe Making EC&CL3.*

Two players, labelled A and B, are sitting opposite each other. They use two large loops (labelled Loop 1 and Loop 2) to make the figure.

1. Both players: With both hands from above enter Loop 1, then bring hands towards the body and up, picking up the loop. There is now a TV far wrist string; each near wrist string runs along the palmar sides of the wrist, under the far wrist string, towards the other player.
2. Both players: Spread Loop 2 untwisted, perpendicularly over the strings running between both players.
3. Player A: With tips of 123, over intermediate strings, but under the near string (respective to A of Loop 2) grasp the far string (respective to A) of Loop 2 and bring it towards the body.
4. Player B: With tips of 123 grasp the original far string (respective to B) of Loop 2 and bring it towards the body.
5. Both players: With help of the other hand remove wrist loop and drop it on the strings of Loop 2.
6. The figure can be displayed vertically, and the shape improved (fig. 21).

Remark:

- Movements 3-4. In Making EC&CL2 Player A grasps the far string over the near string. This does not influence the final figure (although no final figure is achieved in this making).

**(ii) Interpretation and comparisons**

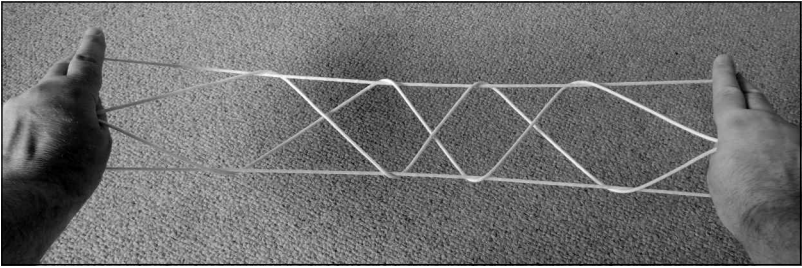
The figure represents a small house. The final figure of Arandic 06 is identical to the final figure that was probably intended by VP and PM at Iylenty outstation, Utopia in 2012, although the construction method used is very different. A closely-related construction method (for two players and two strings) was recorded by Davidson among the Wardaman of Northern Territory (1941:877-879, nr. LXVIII House), leading to a somewhat similar final figure. The construction method of Arandic 06 has probably not been recorded before in Australia or other parts of Oceania.

**ARANDIC 07 Three women dancing****(i) Construction**

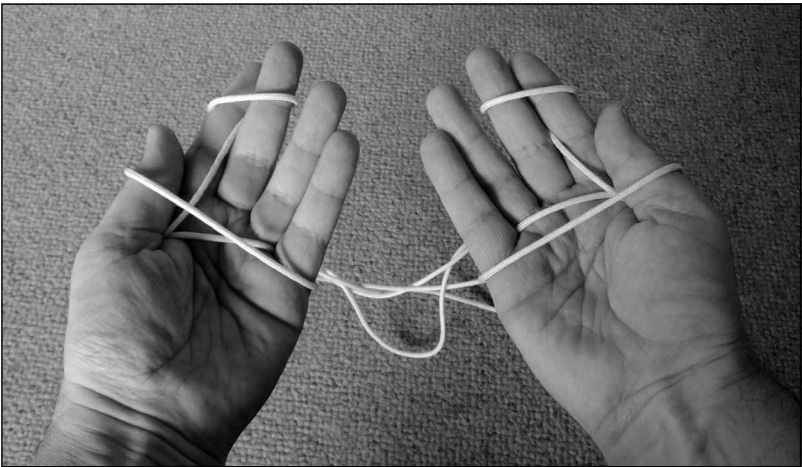
*The instructions below describe Making VDI.*

1. *Navajo Opening I.* Hold hands with palms pointing away from the body, 2 pointing upwards, 1 pointing down.
2. Place the figure, palms pointing towards the ground, 2 pointing away from the body, on the lap and remove hands from the figure. There is a *near loop* (closest to the body) and a *far loop* (farthest away from the body).

- With hands towards the ground enter *near loop* then pass hands under the near string of the *near loop* and slightly up, so that a wrist loop is formed.
3. Pass 1 away from the body over far wrist string then from above in near loop and from below in *far loop*, picking up the two strings of the connecting point between *near loop* and *far loop*.
  4. Raise hands to Normal Position.
  5. With 5 pick up TV 1f.
  6. With the help of L123 remove R wrist loop and place it over R3.
  7. Movement 6 with R123 on LH.
  8. Release 1 loops.
  9. With 1 from below remove 3 loop.
  10. With 1 pick up 5n.
  11. Caroline Extension, using 3 instead of 2. You have a four-diamond figure (fig. 22).



**Fig. 22** - *Arandic 07* after movement 11



**Fig. 23** - *Arandic 07* after movement 12

12. Keeping tension in the figure turn all fingers away from the body, down, towards the body under TV 5f and up, then turn hands around the wrist until the palms face the body (fig. 23).
13. A small 3 loop now encircles the tip of each 3. With mouth grasp both 23 palmar string segments, remove 1, 2 and 3 from the figure, then return hands, bringing them down, away from the body under TV 5f and up until they are in Normal Position.
14. With 1 from below remove respective mouth loop.
15. Movements 10-11. The figure now contains more, but distorted, diamonds (fig 24).

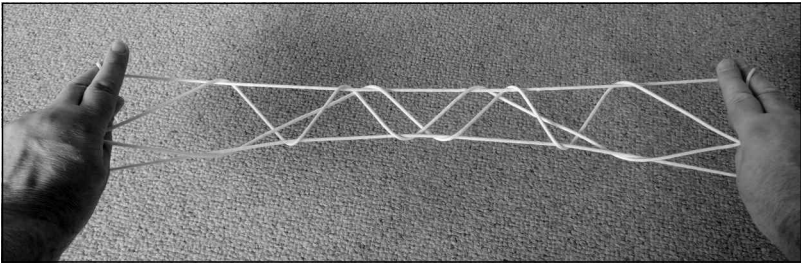


Fig. 24 - *Arandic 07 after movement 15*

Remarks:

- In Making VD2, VD3, VD6 and VD8 a doubled string loop is used.
- Movement 1. In Making VD1 VD starts with Opening A, then releases the 1 loop, after which she places the figure, fingers pointing towards the ground, on her lap.
- Movement 6-7. In Making VD2, the wrist loops are first released between the hands, then picked up by 3.

### (ii) Interpretation and comparisons

VD comments during Making VD6 that “*You can keep going like that and make more and more ... if you have a bigger string*” referring to the possibility of repeating movements 12-15 after movement 15, where each repetition adds two diamonds at the sides of the figure (fig. 25).

The figure after movement 11 is called ‘three women dancing’ and the figure after movement 15 is interpreted as ‘more of them dancing’.

The way in which VD makes the first figure (the figure that appears after movement 11 above) is almost identical to the construction of a figure recorded at Yirkala (Maude & Sherman 1995:136-137, nr. 82 Pregnant Woman & nr. 83 Gecko, of which nr. 83 is the same as nr. 82 but displayed upside-down). The Yirkala recording does not contain the continuation after movement 11 above, and also VD sometimes omits the continuation (Makings VD7-8). In

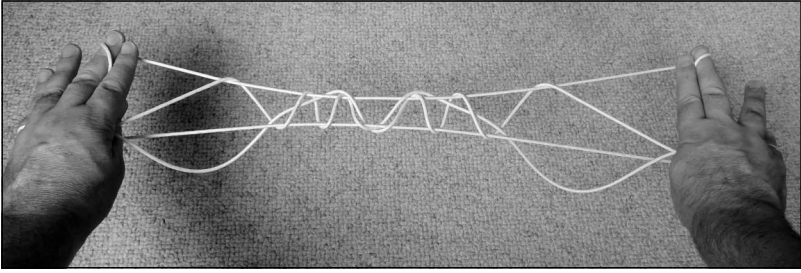


Fig. 25 - *Arandic 07, suggested continuation*

1933 Norman Tindale recorded a figure in Alice Springs that is identically constructed to the one at Yirkkala; he describes also a small variant, in which the figure is displayed differently.<sup>14</sup>

Note that movements 1-8 are almost identical to movements 1-7 of Arandic 08 below, a figure that is made only by VP (Anmatyerr).

The characteristic action of movements 12-14 (bringing the hands down then up with palms facing the body, then with mouth removing the palmar string segments on the index fingers, returning the hands then with the fingers removing the mouth loop) has been recorded several times in PNG (see i.e. Camps & Claassen 2010:137-138, Ilaga 1 movements 23-27), although there usually the hands are brought down inside a loop and not outside and around the figure, as in the Arandic figure.

The construction principle of making the four-diamond figure after movement 11 is commonly applied in Oceania, but the exact implementation can differ considerably. Most closely related to Arandic 07 are two recordings from PNG (Noble 1979:28 nr. 11 *Tiabe* 'bush hen' and Jenness 1920:305, nr. VIII *Mwa'mo* 'the yam', somewhat related to Arandic 07), in which the construction also starts from Opening A, after which the thumb loop is released (resulting in a string configuration more or less identical to that after the Navajo Opening), then placing the figure on the lap. A recording from Fiji also starts from Opening A after which the 1 loop is released, but the next movements are considerably different (Hornell 1927:34 *Tevoro* 'the devil').

Sometimes the construction starts with a large loop hanging down from the mouth, as on the Solomon Islands (Maude 1978:146, nr. 99 *Aparau*), in Kiribati (Maude & Maude 1958:12-13 nr. 1a *Na Ubwebwe* 'Mr. Ubwebwe'), on the Caroline Islands (Jayne 1906:260-264 Caroline Islands Diamonds), and on the Ellice Islands (Hornell 1927:78-79 *Teuila* 'lightning'). In a film with two ladies from western Arnhem Land a similar opening starts with the string placed over the head (Noble, this volume).

<sup>14</sup>Norman Tindale Collection: AA338/2/27. South Australian Museum Archives.

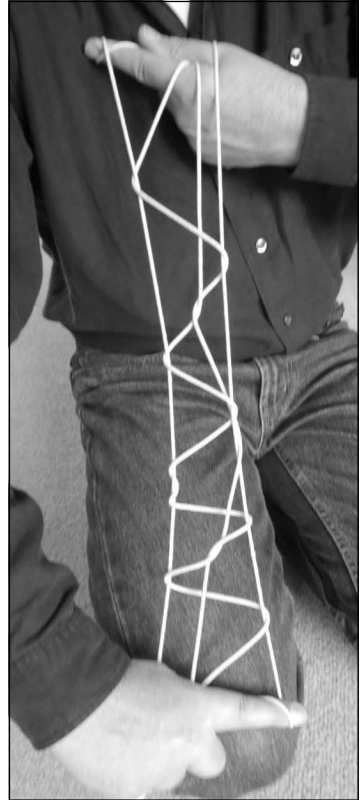
Other recordings start with the two hands holding a piece of the string loop and making a small loop in it, as on Nauru (Maude 2001:45, nr 22a *Emor* 2 ‘Flying fish’), the Solomon Islands (Maude 1978:147, nr. 100 *Te manini* ‘a reef fish’) and New Caledonia (Maude 1984:49-50, nr. 45a *Ūaèn* ‘periwinkle shells’).

## ARANDIC 08 Windmill

### (i) Construction

*The instructions below describe Making VP2.*

1. *Navajo Opening 1.* Hold hands with palms pointing away from the body, 2 pointing upwards, 1 pointing down.
2. Place the figure, palms pointing towards the ground, 2 pointing away from the body, on the lap and remove hands from the figure. There is a *near loop* (closest to the body) and a *far loop* (farthest away from the body). With hands towards the ground enter *near loop* then pass hands under the near string of the *near loop* and slightly up, so that a wrist loop is formed.
3. Pass 1 away from the body over far wrist string then from above in *near loop* and from below in *far loop*, picking up the two strings of the connecting point between *near loop* and *far loop*.
4. Raise hands to Normal Position.
5. With 5 pick up upper (TV) 1f.
6. With help of RH remove L wrist loop and place it untwisted over L2; with help of LH remove R wrist loop and place it untwisted over R12.
7. Release L1 loops and remove R1 from the figure.
8. Pass 1, under 2 loop, from below in 5 loop and return under 2n, picking up 5n and 2f.
9. Release 2 loop.
10. Remove 1 from the shared 15 loop.
11. With 1, over 5n, pick up 5f.
12. Caroline Extension using L23 and R3 instead of L2 and R2. Keeping tension in the figure bring LH towards the body and down until its palm faces



**Fig. 26** - *Arandic 08* as seen by an observer facing the maker. Displayed here with 2 instead of L23/R3

the body, LH fingers pointing towards the right, and bring RH up and turn it so that its palm points away from the body, fingers pointing towards the left. The figure is now displayed vertically. Then, keeping tension in the figure, invert the figure by moving the RH in a half circle, bringing it away from the body and down under the LH, until its palm faces the ground (fig. 26).

Remarks:

- Movement 6. In Making VP1, the R wrist loop is placed over R2 only (as on the LH).
- Movement 7. In Making VP1, this movement is replaced with:  
7'. The 2n passes under double (TV) 1n then forms a *small string segment* until it crosses a horizontal string segment originating in 2f of the same hand. With 2 pick up *small string segment* of respective hand. Remove 1 from the figure. The construction is halted.
- Movement 10. Prior to this movement, VP tries twice to perform a Caroline Extension (first with 2, then with 3), but this does not lead to the correct figure.

### (ii) Interpretation and comparisons

Movements 1-7 of Arandic 08 are almost identical to movements 1-8 of Arandic 07 above, a figure that is only made by VD (Arrernte). These movements are also closely related to the beginning of figures recorded at Yirrkala (Maude & Sherman 1995:136-137, nr. 82 & nr. 83 Gecko). Figures identical to or closely related to Arandic 08 have, as far as we know, not been recorded in Australia nor in other parts of the world.

The final figure shows rotational symmetry (around an axis in the middle of the figure), which is recognized and confirmed by the name 'windmill' that VP gives to the figure. The large triangular shapes closest to the hands might represent the blades of the windmill.

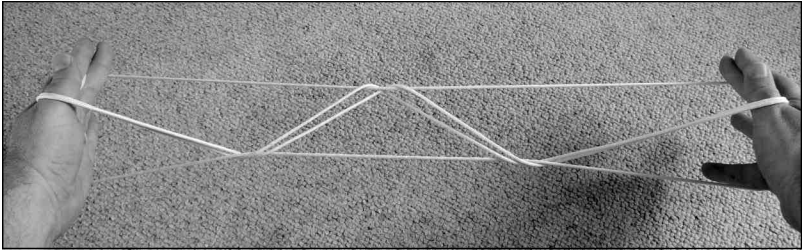
## ARANDIC 09 Ritual avenger or *kurdaitcha*

### (i) Construction

*The instructions below describe Making VP1.*

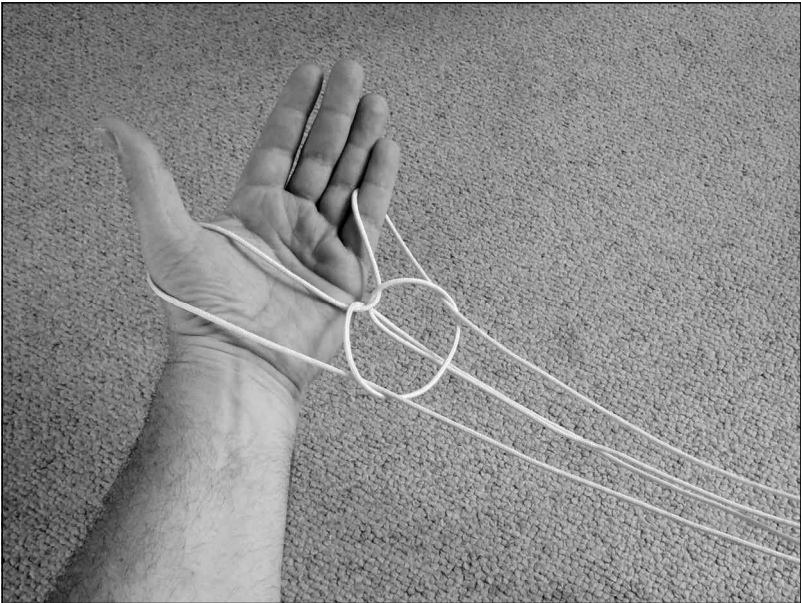
1. *Navajo Opening I.*
2. With 1 (over 2n) pick up 2f.
3. With 5, over 2n, pick up lower (TV) 1f.
4. Display, palms facing each other, fingers pointing away from the body.
5. Remove 1 from the figure.
6. Pass 1 under 2 loop from below in 5 loop, then with 1 from the far side and from above remove 2 loop. Keep 1 in the 5 loop.

7. With 3, over palmar string, pick up 1f and keep it on the tip of 3. Press 2 against 3 to keep the 3 loop at the tip of 3.
8. Extend, palms facing each other, fingers pointing away from the body. Make sure that there is tension in the 3f and 5f framing string, so that the figure is strung up nicely (fig. 27)

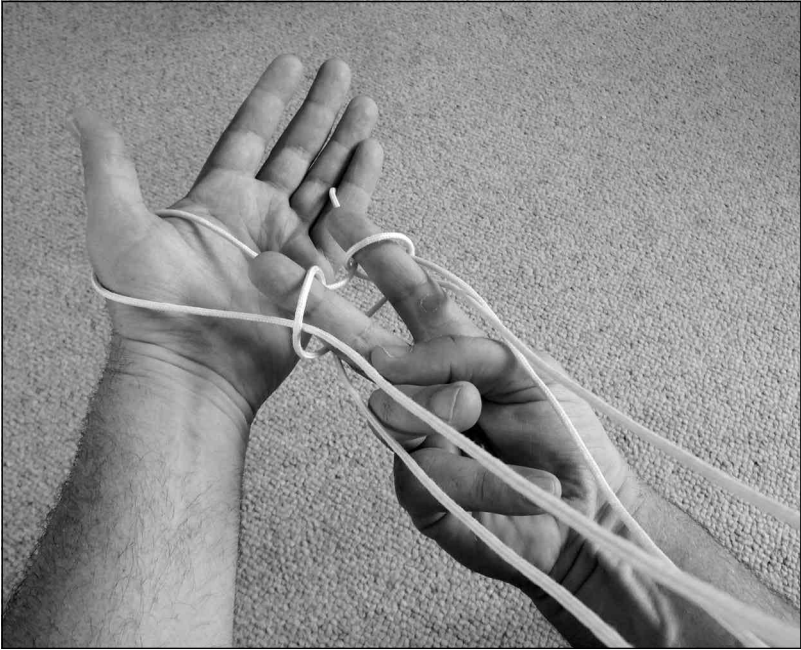


**Fig. 27** - *Arandic 09* after movement 8

9. In the figure a double-walled *triangle* can be seen, strung up between TV 3f and 5f. Bring hands towards the mouth and with the mouth grasp both strings of the apex of the *triangle* where they cross TV 3f.
10. Keeping tension in the figure bring hands away from the body. Remove 1 from the shared 13 loop, release 3 from the figure, then pass 1 away from



**Fig. 28** - *Arandic 09* after movement 11

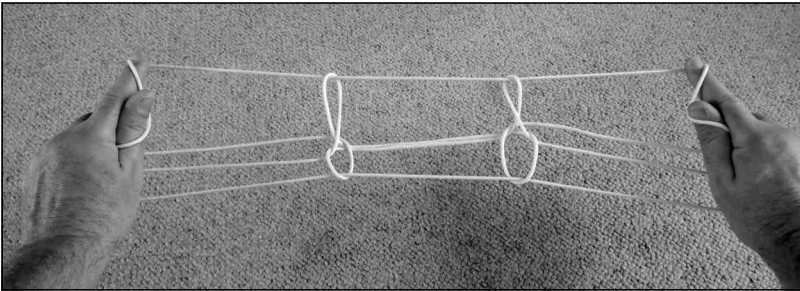


**Fig. 29** - *Arandic 09* during movement 12

the body over TV 5f, down, towards the body under 5n only and up. Release 5 loop and extend.

11. With L5 from below remove R1 loop (fig. 28).
12. Four (more or less) *parallel strings* run from the mouth towards the LH. Close to the LH a *triangle* can be distinguished with its apex pointing away from the body, and its *base* crossing the middle *parallel strings* perpendicularly on their upper side. Bring RH, its palm facing the body, under the figure and insert R2 and R3 from below between the two middle *parallel strings* at the body-side of the *base* of the *triangle*, then bring them towards the LH over the *base* of the *triangle*; pass R2 and R3 (their palmar side still pointing towards the body) under the *left and right side* of the *triangle* respectively (fig. 29), then bring these *sides* in their bend towards the body over the *base* of the triangle. Release strings held in mouth and allow these to pass over R2 and R3.
13. Bring R2 and R3, their palmar sides pointing towards the body, towards the mouth, then with the mouth grasp the string segments on their palmar sides (R2 palmar segment in the right part of the mouth, R3 palmar segment in the left part of the mouth), and remove R2 and R3 from the figure.
14. With R5 from below remove L5 loop.

15. With L5 remove L1 loop, and bring hands away from each other.
16. With 123 of each hand grasp the respective side of the respective mouth loop close to the mouth, 1 passing under, 23 over the string of the loop. Release strings held by mouth.
17. With 3 towards the ground enter the former mouth loop, at the same time releasing the grip of 123. Straighten 3 by rotating it towards the body and up.
18. With 1 from below remove 3 loop and bring hands away from each other.
19. Caroline Extension with 1n (fig. 30).



**Fig. 30** - *Arandic 09* after movement 19: *ritual avenger* or *kurdaitcha*

The figure is dissolved by placing it on the lap (the far side of the figure touches the lap) and removing the hands from the figure. In the middle of the figure (between the two *vertical segments*) four parallel strings can be distinguished, of which the near and the far string were TV framing strings. Between them two parallel strings are close together and form a *double parallel string*. With 2 towards the ground enter the space between the far parallel string and the *double parallel string*, and with 1 towards the ground enter the space between the *double parallel string* and the near parallel string. Separate hands.

#### Remarks:

- Movement 4. EC (Makings EC1-4) does not display this figure separately.
- Movement 5. In Making EC2 prior to this movement EC with 3 picks up 2n after it has passed under the palmar string segment and turns palms slightly outwards to reveal a W-shaped pattern. She then removes 3 from the figure and continues with the construction.
- Movement 7-8. EC (Makings EC1-4) uses 2 instead of 3 for the extension.
- Movements 17-19. In Makings EC3-4 these movements are replaced with:
  - 17'. With 1, away from the body, enter former mouth loop, simultaneously releasing grip of 123.
  - 18'. Caroline Extension with 1f after it has passed under 1n of the same hand.

## (ii) Interpretation and comparisons

VP (Anmatyerr) calls the figure *inenty* or *kurdaitcha* and gives a further explanation: ‘*Kurdaitcha* that travel at night, walk around night time. Two men, two *kurdaitcha*, *Atham-areny* ‘spirits’ that travel around at night, two men’. *Inenty* or *kurdaitcha*, glossed as ‘ritual avengers or executioners’, are much feared and take various traditional and contemporary forms (Green 2010: 322).

Arandic 09 is made by VP and EC. Except for the display of the final figure there are no substantial construction differences. The first intermediate figure (after movement 8 above) was also recorded in South Australia (Haddon 1918:126-127 & Plate XXI, nr. 4 *Ekeli* ‘a Water Rat’, where it is displayed using a Caroline Extension with the index finger; *Ekeli* has a short continuation that is very different from the continuation of Arandic 09). The construction of Arandic 09 is almost identical to a recording from the Wardaman of Northern Territory (Davidson 1941:856-858, nr. XLV Blackfellow Steals a Lubra). Opening movements (movements 1-4 above) of the Wardaman figure are identical to those of Arandic 09, but then a somewhat different intermediate figure is formed, on which the same principle as the Arandic movement 9 is performed, leading to an identical string configuration. In the Wardaman figure strings are distributed somewhat differently in the movements prior to the final extension, so that a regular Caroline Extension can be used to display the figure, instead of a Caroline Extension with 1n (movement 19 above) in the Arandic figure. The final figures of Arandic 09 and the Wardaman recording are, however, exactly the same.

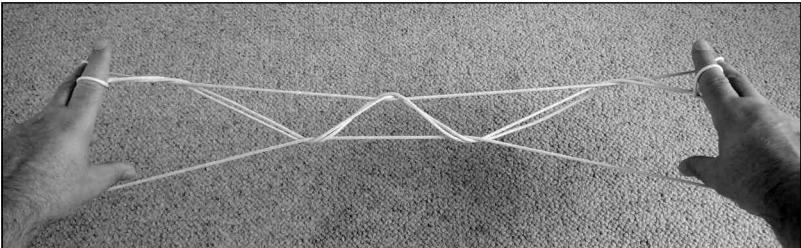
We did not find recordings of this figure in other parts of Oceania.

## ARANDIC 10 <not named>

### (i) Construction

*The instructions below describe Making PMI.*

1. *Navajo Opening II.*
2. With 1, over 2n, pick up 2f.
3. With 5, over 2n, pick up (TV) 1f.
4. With 3, over 1f -5n palmar string segment, pick up 2n.



**Fig. 31** - Arandic 10 after movement 6

5. Extend, fingers pointing upwards, palms pointing away from the body.
6. Gently release 1 loops then with 1 press down TV 5f (fig. 31).
7. Return hands to Normal Position, remove 1 from the figure, then with 1 from above remove 3 loop.
8. Pass L1 from above in R2 loop close to R2, then pinch together R2f and R5n between tips of L12. Remove R1 and R2 from the figure. From the tips of L12 hang down *two loops* (a small one, and a larger one that is shared with R5). With R1 from the near side enter *two loops* and release grip of L12.
9. *Two strings* span L1 loop. Gently remove L1 from its loop, pass L1 under the former L1 loop and under the *two strings* so that L1 now shares L5 loop, then with L1 from the far side and from above remove L2 loop. Use R12 to facilitate this movement.
10. Caroline Extension (fig. 32).

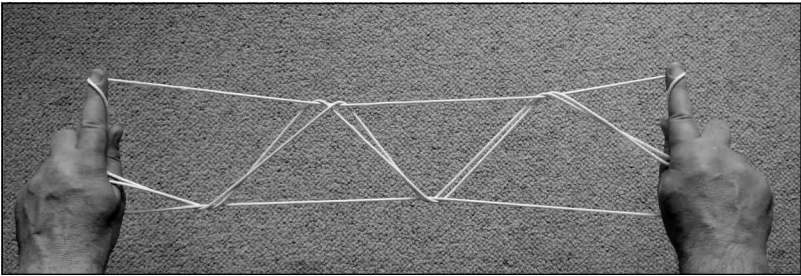


Fig. 32 - *Arandic 10* after movement 10

11. Remove 5 from the figure then with 5 from below remove 2 loop.
12. Caroline Extension (fig. 33).

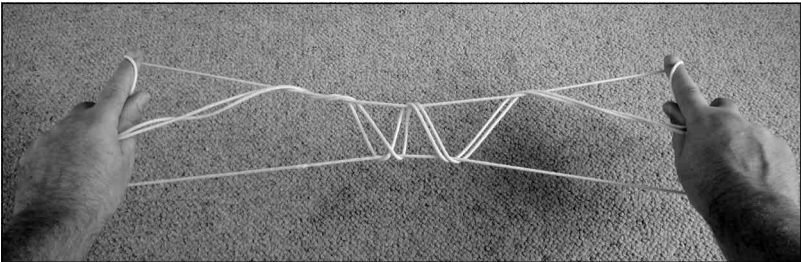
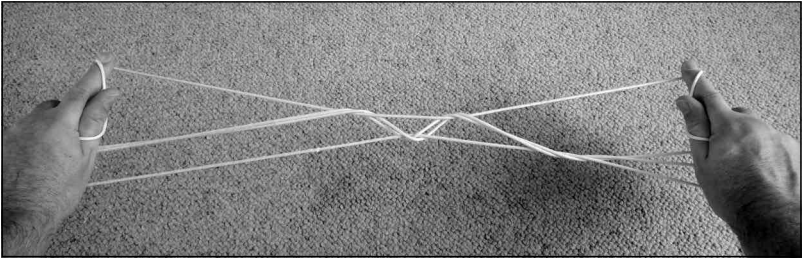


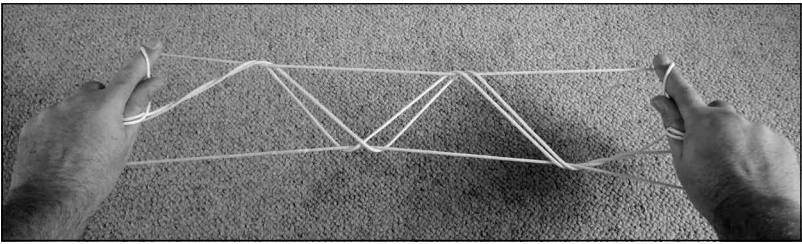
Fig. 33 - *Arandic 10* after movement 12

13. Remove 2 from the figure, then with 2 from above remove double 1 loop.
14. With 1 pick up 2n (the string running towards 2n of the other hand), and remove 2 from the figure.
15. Caroline Extension with 1n (fig. 34).



**Fig. 34** - *Arandic 10* after movement 15

16. Remove 2 from the figure.
17. With 1 pick up 5n.
18. Caroline Extension. This does not result in a correct figure.
19. Caroline Extension with lower 1n (over upper 1n) (fig. 35).



**Fig. 35** - *Arandic 10* after movement 19

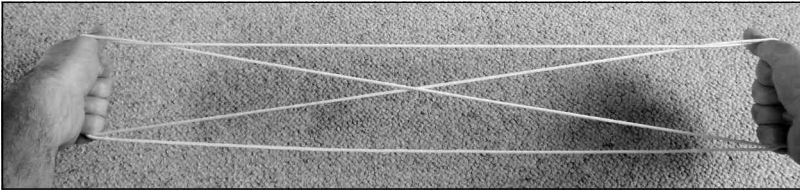
### **(ii) Interpretation and comparisons**

This series of figures is only made by PM, and she makes the whole series only once on the video footage. Movements 8 and 9 in her construction are asymmetric, and this results in the construction of figures with rotational symmetry (around an axis through the center of the figure) after movements 10, 15 and 19. The series has probably not been recorded before in Australia, although the construction of the first figure in the series (movements 1-6) can be seen on a YouTube video from Yirrkala (a figure named Goanna, made by Nonggirnga). Although we did not find recordings of the figure after movement 6 that start from the Navajo Opening in other places of Oceania, recordings starting from the Murray Opening are quite common (see Noble & Claassen 2012:175-176, North Fly 15 Owl's Eyes for comparative details, where recordings from several places in PNG, New Caledonia, Vanuatu and Fiji are listed).

**ARANDIC 11 <not named>****(i) Construction**

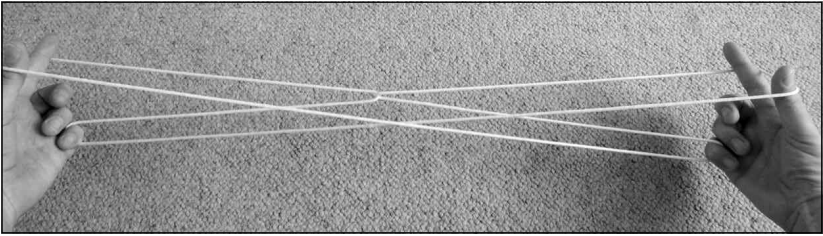
*The instructions below describe Making PM1.*

1. *Navajo Opening II.*
2. With 1, under 2n, pick up 2f; release 2 loop, then with 2 from below remove upper 1 loop.
3. With 1, under 2n, pick up 2f; release 2 loop.
4. With 2345 from above enter double 1 loop and hook down double 1f, closing 2345 to the palm.
5. Adjust hands until an hourglass-shaped structure appears between the hands between TV 1n and 5f (fig. 36).



**Fig. 36 - Arandic 11 after movement 5**

6. Keeping tension in the figure bring both hands towards the right, and (with 1 pointing towards the ground, crooked fingers pointing upwards) drop figure on right upper leg.
7. Hold hands with palms pointing away from the ground. With L5 from the near side over all intermediate strings hook former TV 1n, slightly raise LH and bring it slightly towards the body. With R5 under newly formed L5 loop but over other intermediate strings, from the far side hook former TV 5f, slightly raise RH and bring RH slightly away from the body.
8. With R12 from above (= towards the ground since R5 is crooked) enter R5 loop, then with R12 from the far side pick up former L1n-R5f string (the upper string forming the hourglass-shape), bringing it slightly towards the far side. With L1 from above (= towards the ground since L5 is crooked) enter L5 loop, then with L1 from the near side pick up former R1n-L5f string (the lower string forming the hourglass-shape). With L2 from below share L1 loop.
9. Raise hands, thus picking up the figure from the right upper leg, and extend, 1 and 2 pointing away from the ground, 5 being crooked. Separate 1 and 2 on each hand as far away from each other as possible (fig. 37).



**Fig. 37 - Arandic 11 after movement 9**

Remarks:

- Movement 1. While extending the hands the R1 string slips off R1. The woman restores the string configuration by removing the RH from the figure, then with L1 and L2 from below sharing respective RH loop and extending.
- Movement 4. Prior to this movement, the woman manipulates the string configuration in several ways, but each time returns to the string configuration that appears after movement 3.

**(ii) Interpretation and comparisons**

This figure is only made once during the recording session. It is possible that it was an experiment. It has not been found in other Australian recordings, nor in string figure collections from other parts of Oceania.

**ARANDIC 12 A ‘Killer’**

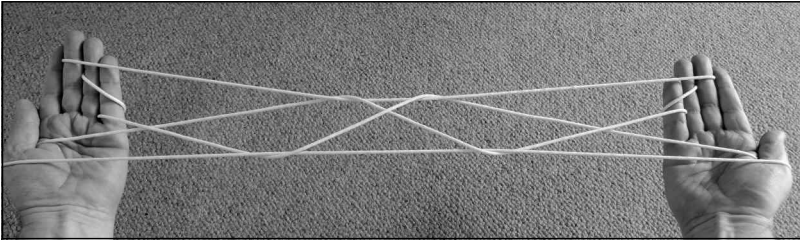
**(i) Construction**

*The instructions below describe Making VD2.*

Use a doubled string loop, here treated as a single loop.

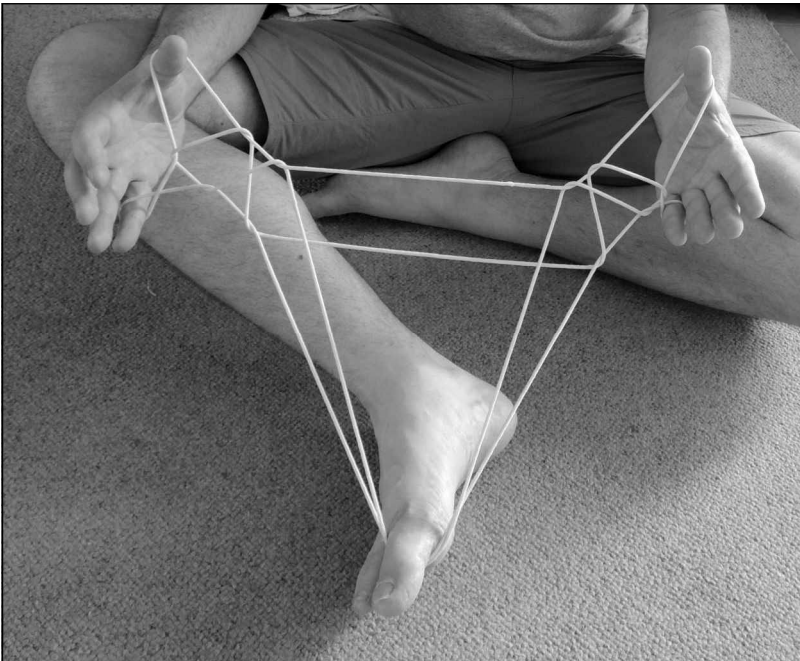
1. *Navajo Opening I.*
2. Give 2 loop a whole twist in the following way: Turn 2 away from the body and down, then turn 2 towards the body over 1 loop and up. This is facilitated by temporarily pressing tips of 1 and 2 together to avoid the 2 loop slipping off.
3. With 1 from below share 2 loop.
4. With 5, over 2f, pick up lower 1f.
5. Remove 2 from the figure.
6. Allow the 1 loop, of which 1f becomes a palmar string segment on the same hand running to 5n, to slip off 1, by turning 1 down over the 1f that runs to the middle of the figure, under the 1f-5n palmar string segment and up.
7. With 3 pick up 5f.

8. Display with palms pointing away from the ground, fingers pointing away from the body. A *two-diamond* figure appears (fig. 38).



**Fig. 38** - *Arandic 12* after movement 8

9. In the figure, between the two diamonds, two triangular shapes can be seen. The *near triangle* has  $1n$  as its base, the *far* (upside-down) *triangle* has  $3n$  as its base. Pass the figure (palms pointing away from the ground) over the right foot, then pass the connecting point of the two diamonds over the right big toe, by passing toe from below (away from the ground) in the *near triangle* then from above in the *far triangle*. Return hands over the foot towards the body. A double toe loop is formed.



**Fig. 39** - *Arandic 12* after movement 11

10. With 1 from below remove 3 loop.
11. Pass 3 over all intermediate strings towards the near side of the figure, down along the near side of upper 1n, then pick up lower 1n and lift this string over upper 1n and off 1; allow the string just lifted off 1 to slip off 3 (fig. 39).
12. On its upper side each 1 loop is closed by a *near crossing segment*, which, after crossing 1f, continues to become a *far crossing segment*, crossing 5n and 1n. Both *crossing segments* are parallel to each other, and are close to each other. Pass 3 to the far side of the *far crossing segment*, bring this *segment* along in its bend towards the body over the *near crossing segment*, and hook up the *near crossing segment* by turning 3 away from the body under the *far crossing segment* (which slips off 3) and up.
13. Release double toe loop and extend, palms facing each other, 1 pointing towards the body, 3 pointing away from the body (fig. 40).

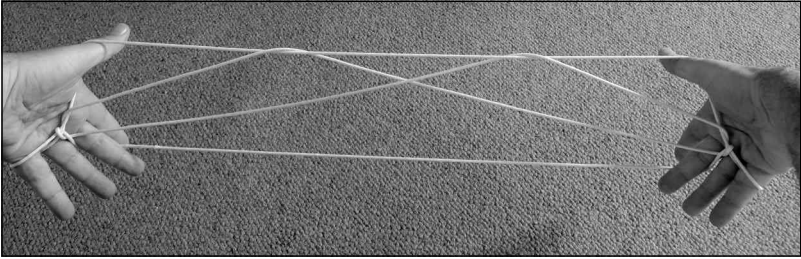


Fig. 40 - *Arandic 12* after movement 13

Remarks:

- Movements 9-13. In Making VD1 VD does not use the toe but spreads the figure, palms facing upwards, over the right upper leg. She states that “somebody holds the middle there in” and then tries to perform similar movements as when using the toe, using 5 under the figure to temporarily hold the middle crossing held by the toe in Making VD2. She does not achieve a correct final figure.
- Movement 9. In Making VD3 this movement is skipped and movements 10-11 are performed, after which the construction is halted.

**(ii) Interpretation and comparisons**

VD comments: “*This is a killer* [a cow that is marked for slaughter for local consumption]. *Hanging, on those windlasses or whatever they used to call them, when they used to kill bullocks. In the early days. That’s supposed to be the bullock in the middle, hanging up. You see them still, those things. And somebody’s supposed to hold the middle of that, and then you do it. But it is a bit hard.*”

The figure is called the ‘Killer’ by both VD (Arrernte) and VP (Anmatyerr). They both explained how the figure represented the way that beef carcasses were hung after being slaughtered. The figure has probably not been recorded in Australia before, nor did we find it in recordings from other parts of Oceania.

## ARANDIC 13

### (i) Construction

Arandic 13 can be made by two players, of which one only holds the string at the start of the construction (13a), but it can also be made by one player, arranging and folding the string loop on the lap (13b). The construction principle of these two methods is the same. CL (Anmatyerr) makes an identical figure using a very different construction method (13c).

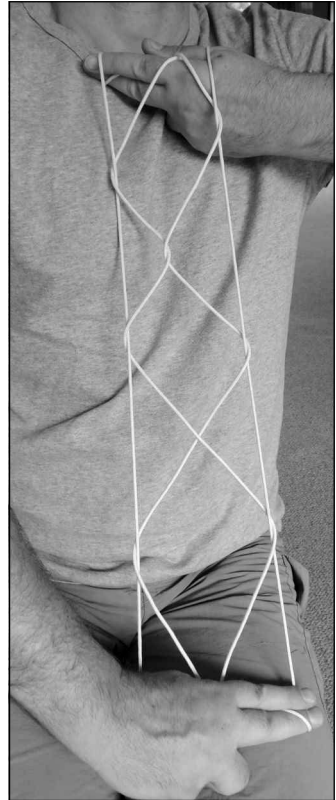
### ARANDIC 13a *Wirpirlope* ‘curlew’

*The instructions below describe Making VDI.*

A doubled string loop is used, here treated as a single string.

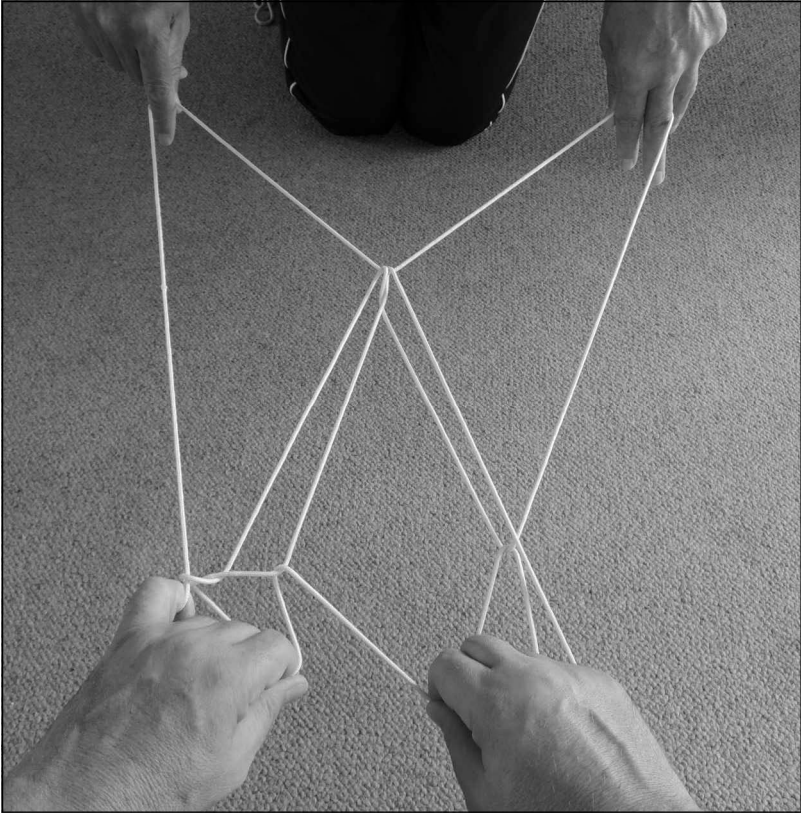
Two players (here labeled A and B) are sitting opposite each other. VD is Player B, JD is Player A.

1. Player B: *Navajo Opening I*.
2. Player A: Hold hands with palms pointing away from the body, 2 pointing upwards, 1 pointing towards the ground. Take over B’s figure in the following way: with R2 towards player B from above remove B’s L2 loop and with R1 towards player B from above remove B’s L1 loop; with L2 towards player B from above remove B’s R2 loop and with L1 towards player B from above remove B’s R1 loop.
3. Player B: TV 2n of A forms the base of an *inverted triangle*, and TV 1f of A forms the base of an *erect triangle*. 1n and 2f of A cross in the center of the figure to create the apex for each triangle. Hold hands with fingers pointing towards A, palms pointing away from the ground. Pass RH, towards A, between A’s L1n and L2f, and LH towards A between A’s R1n and R2f, then with the dorsal side of



**Fig. 41** - *Arandic 13a after movement 8*

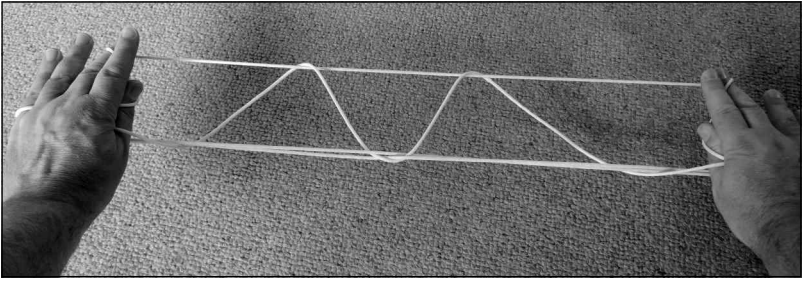
- 2345 slightly drag away from A's body A's 1n; with 2345 grasp A's 1f and allow A's 1n to slide off the back of 2345, bringing hands towards the body. Keep track of A's 1n (the string that just slid off). With 1 from below share 2345 loop.
4. Player B: With palms still pointing away from the ground with 2345 from above (from A's perspective) enter A's 2 loop, grasp A's TV 2n and pull this towards the body through (B's) 12345 loop, which slips off. Remove 234 from the shared 2345 loop, then turn palms towards each other and down, making sure that 5 maintains its loop in its bend.
  5. Player B: With 1, at A's far side of the figure, hook up A's 1n, passing 1 down behind A's 1n, towards the body and up.
  6. Player A: Release all loops.
  7. Player B: Bring hands to Normal Position. With 1 pick up 5n.
  8. Player B: Caroline Extension, using 3 instead of 2. Keeping tension in the figure bring RH above LH, RH palm pointing away from the body, LH palm pointing towards the body, then, still keeping tension in the figure and maintaining the extension bring RH away from the body and down below LH until its palm faces the body, simultaneously raising LH (fig. 41).
  9. Player B: Keeping tension in the figure and maintaining the extension, bring the figure in a horizontal plane, LH palm pointing away from the ground and L3 pointing towards the body, RH palm pointing towards the ground and R3 pointing away from the body.
  10. Player A: Closest to A's body a *TV framing string* runs from B's L5f to B's R3f. Close to B's R3 it forms a *R triangular space* of which the B's R3 is a side. In B's figure three *diamonds* can be distinguished. With L23 from above hook B's *TV framing string* in B's *R triangular space*; With R2 hook B's *TV framing string* at the place between B's left and middle *diamond*. Press L1 below B's *TV framing string* against L23 and press R1 below B's *TV framing string* against R2.
  11. Player B: Closest to the body a *near TV framing string* runs from B's L3f to B's R5f. Remove R23 from the figure, then with R23 from above hook B's *near TV framing string* between B's right and middle *diamond*; remove L1 and L23 from the figure then with L23 from above hook B's *near TV framing string* between B's middle and left *diamond*. Remove R1 from the figure, then on each hand press 1 against crooked 23.
  12. Both players: Alternately tumble the figure to B's right side, then to B's left side. Do this several times and sing: "*Wirldpirle wirldpirle ntewirreme ntewirreme.*" ("The curlews are knocking each other down") (fig. 42).



**Fig. 42** - *Arandic 13a* after movement 12

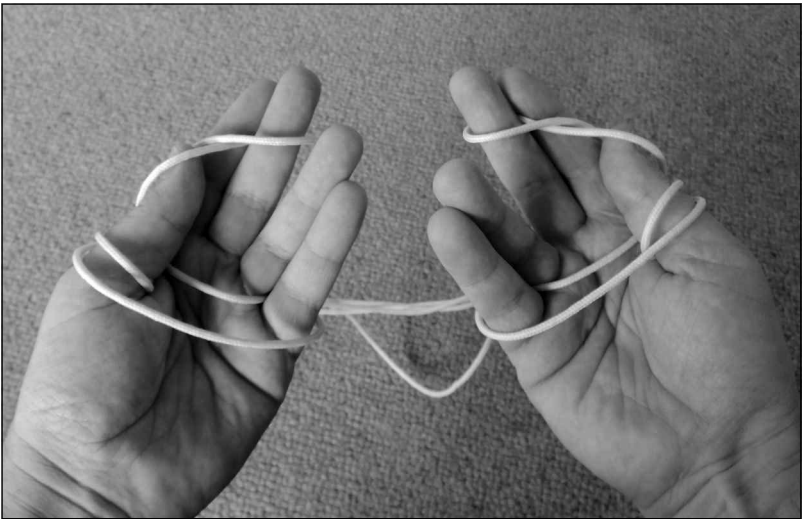
Remarks:

- Movement 2. This movement is probably performed because JD does not know how to make the Navajo Opening; she only assists by holding the figure for VD.
- Movement 4. In Making VD3 this movement is performed slightly differently:
  - 4'. Player B: Bring hands upwards and turn them around the wrists until palms face the ground. Bring them towards A over A's TV 2n, then with 2345 grasp A's TV 2n and pull it towards the body through (B's) 12345 loop, which slips off. Keeping palms facing the ground, remove 5 from the loop held by 2345, then with 5 from above (= away from the ground, since 2345 are crooked) remove 234 loop.



**Fig. 43 - Arandic 13a after movement 8'**

- Movement 8. In Making VD3, very different movements are performed from this point:
  - 8'. Player B: Caroline Extension, using 3 instead of 2, on upper 1n (fig. 43).
  - 9'. Player B: Keeping tension in the figure turn all fingers away from the body, down, towards the body under TV 5f and up, then turn hands around the wrist until the palms face the body (fig. 44).



**Fig. 44 - Arandic 13a after movement 9'**

10'. A small 3 loop now encircles the tip of each 3. With mouth grasp both 23 palmar string segments. The base of each 1 is surrounded by a string loop. Press 1 against 2 to keep this loop on 1, then extend

hands and release all other strings off the hands. Turn hands towards the body, down, under the double strings that run from the dorsal sides of the hands towards the middle of the figure, and up, until hands are in Normal Position. There are now two mouth loops and on each hand a 1 loop.

11'. With 1 from below remove respective mouth loop.

12'. With 3 pick up upper 1f.

13'. Keeping tension in the figure, turn palms towards the ground to extend. This does not result in a good extension. Construction is halted.

- Movements 9'-11' are similar to Arandic 08, movements 12-14, made only by VP.
- Movement 10. In Making VD2, Player A with R2345 over B's *TV framing string* hooks the upper right side of B's leftmost *diamond TV framing*, instead of with R2 hooking B's *TV framing string*.

### ARANDIC 13b *Wirtpirlpe* 'curlew'

Here VD makes the first figure (after movement 8) of Arandic 13a without the help of another person. Because there is no second player, the continuation of Arandic 13a (movements 9-11) is not performed here.

*The instructions below describe Making VD8.*

1. *Navajo Opening I.*
2. Turn palms outwards, 2 pointing upwards, 1 pointing down, then with palms pointing towards the ground place the figure on the lap (fig. 45).

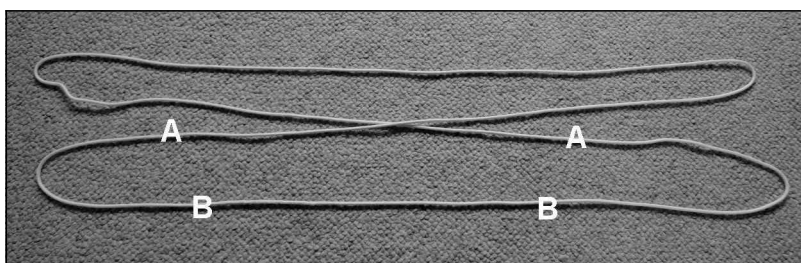


Fig. 45 - *Arandic 13b* after movement 2

3. With tips of 123 place each string segment marked "A" in fig. 45 over the string marked "B" and drop it there (fig. 46).
4. With tips of 123 raise each string segment marked "B" in fig. 46, bring it over the figure over string marked "C" and drop it there (fig. 47).

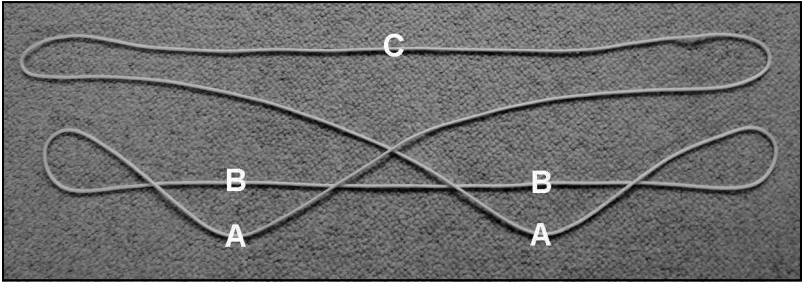


Fig. 46 - Arandic 13b after movement 3

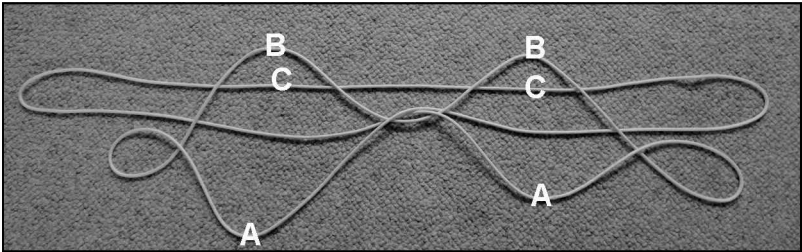


Fig. 47 - Arandic 13b after movement 4

5. With 123 raise respective segment of “C” between the string segments of “B” just dropped there. With 5 away from the body enter the small loop held by 123, and release grip of 123 (fig. 48).

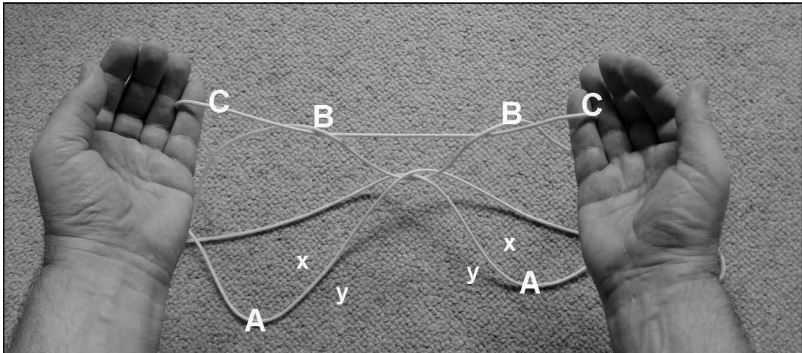


Fig. 48 - Arandic 13b after movement 5

6. Pass 1 towards the body over the figure to pick up string segment marked "A" in fig. 4, passing 1 into the figure at "x" and out at "y" (fig. 49).

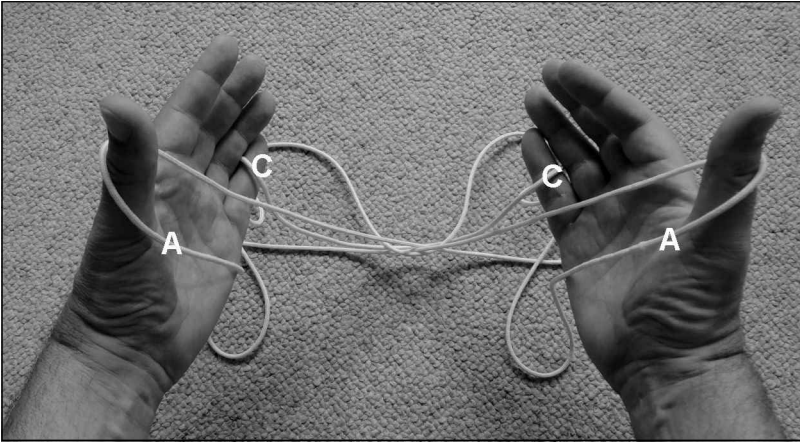


Fig. 49 - Arandic 13b after movement 6

7. Bring hands to Normal Position and extend.
8. With 1 pick up 5n.
9. Caroline Extension, using 3 instead of 2. Keeping tension in the figure bring RH above LH, RH palm pointing away from the body, LH palm pointing towards the body, then, still keeping tension in the figure and maintaining the extension bring RH away from the body and down below LH until its palm faces the body, simultaneously raising LH. Apparently this does not lead to the figure desired (probably an incorrect string has been picked up at movement 6). Construction is halted.

Remarks:

- In Making VD1, VD2, VD6 and VD9 a doubled string loop is used.
- Movement 2. In Making VD1, VD first transfers the 2 loop then the 1 loop to the big toes. She attempts to perform movements similar to movements 3-7 above, but apparently mistakes are made, and the construction is halted. VD here explains that if you didn't have anybody to hold the string for you, you could use to use your own toes.

**ARANDIC 13c <not named>**

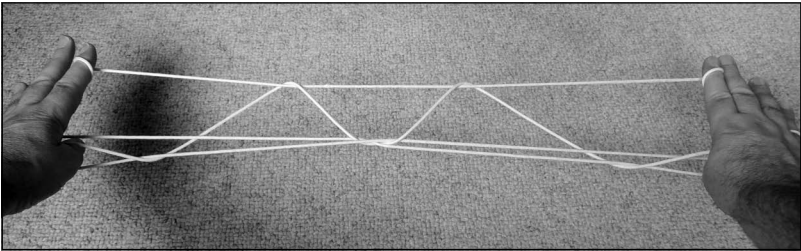
*The instructions below describe Making CL3.*

Use a doubled string, here treated as a single string.

1. *Navajo Opening I variant:* Hold LH with palm facing the body, fingers pointing to the right, and insert L23 into a string loop, so that a *pending*

*loop* hangs down from L23. With RH grasp far string of the *pending loop*, and twist it once around L23 in a clockwise direction (when looking at tips of L23), then, the RH keeping its string, pass R2 from below (= towards the right side of the body) behind dorsal L23 string segment, then turn L23 and R2 down, away from the body and up; remove L3 from the shared L23 loop. Simultaneously pass 1 away from the body through the *pending loop* and away from the body, releasing grip of RH (which held the far string of the *pending loop*). Bring hands to Normal Position. There is a 1 loop and a 2 loop, and 1f and 2n are TV strings.

2. With 1, over 2n, pick up 2f.
3. With 5, over 2n, pick up (lower) 1f (a string running towards the other hand).
4. Remove 1 from the figure, then with 1 from below remove 2 loop.
5. Pass 2 over 5 loop, hook up 5f, turn palms so they point away from the body, and with 1, simultaneously, under intermediate strings press down 1f. Pass R1 under R2f to the near side of R5n and press down R5n. Display (fig. 50).



**Fig. 50** - *Arandic 13c* after movement 5

6. Release 2 loop and upright 1 (under intermediate strings).
7. With 1 (over 5n) pick up 5f.
8. Caroline Extension, then, keeping tension in the figure, turn LH down until its palm faces the body, L2 pointing towards the right, and turn RH up until its palm points away from the body, R2 pointing towards the left. Display vertically, RH over LH (fig. 51). A three-diamond figure appears. Keeping tension in the figure, bring RH away from the body and down under LH until the RH palm faces the body.

Remarks:

- Movement 5-6. In Making CL1 & CL2 these movements are omitted.
- Movement 7. In Making CL1, CL at first with 1 picks up 5n, after which she has difficulty to display the figure. She corrects this then with 1 picks up 5f, after which the intended figure can be displayed.

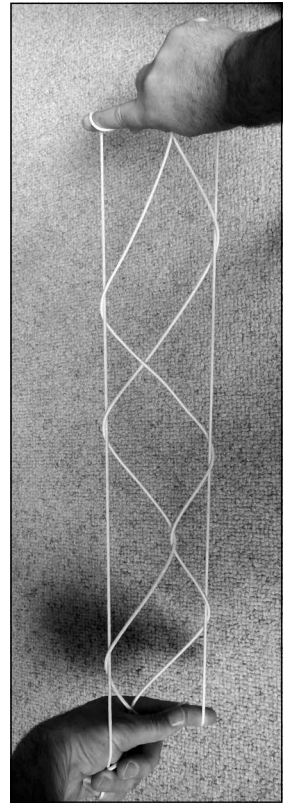
**(ii) Interpretation and comparisons**

VD (Arrernte) calls the figure *wirlpirlepe* ‘Bush-Stone Curlew (*Burhinus grallarius*)’, a nocturnal bird that makes eerie screaming sounds at night. Apparently curlews ‘throw’ each other about as they play at night. VD makes the first figure (after movement 8) of Arandic 13a without the help of another person in Arandic 13b. She places string loops on her toes, but she then fails to produce the desired figure. Placing the string loop on her lap then re-arranging and folding the strings works, although several attempts go wrong because the wind is disturbing the string arrangement.

The construction principle for the first figure in Arandic 13a and 13b is the same. Because in Arandic 13b there is no second player, the continuation of Arandic 13a (movements 9-11) is not performed there. The first figure of Arandic 14 (see below, movements 1-8), made by VP and PM (Anmatyerr), is identical to the first figure of Arandic 13a, except that in Arandic 14 the index finger is used in the Caroline Extension instead of the middle finger in Arandic 13.

The first figure of Arandic 13a/b is also in the collection of Davidson (1941:851-852, nr. XL Bunk), recorded among the Djaru and Kidja [Gija/Kija] in Western Australia, but there, because *Navajo Opening II* is used at the start, L and R have to be exchanged in movement 8 and the figure is thus displayed the other way around; the upper hand is subsequently not lowered to place part of the figure along the dorsal side of the lower hand, and the index finger instead of the middle finger is used in the Caroline Extension. A similar construction and display can be seen on the video from Yirrkala, where the figure is called *Goanna*.<sup>16</sup> Since *Navajo Opening I* is used, the figure is displayed as Arandic 13 (RH above LH), but the RH is afterwards not lowered.

McCarthy recorded a similar first figure in Yirrkala (Maude & Sherman 1995:175, nr. 167 Opossum in a Hole in a Tree, first figure after movement 2 there), where the middle finger is used in the Caroline Extension. Display is as Arandic 13a/b, but no subsequent lowering of the upper hand is performed.



**Fig. 51** - Arandic 13c during movement 8

<sup>16</sup><<https://www.youtube.com/watch?v=S-EPzyrts5s>>, accessed 10<sup>th</sup> of June 2020. The construction of *Goanna* starts at 1:41; the figure is made by Marrnyula (on the right) and Mulkun (on the left). A doubled string is used.

Such lowering, thus, appears to be typically Arandic (it is also found in the first figure of Arandic 14). Opossum in a Hole in a Tree has a continuation that is similar to Arandic 14; it will be discussed below.

Two women from western Arnhem Land make the figure of Arandic 13a after movement 8 at the start of a longer take-over series for two players (recorded by Judy McKinty in 2005; for transcripts see Noble, this volume). In Yirrkala McCarthy also found a construction method almost identical to Arandic 13b, in which the first figure is made by folding the strings (Maude & Sherman 1995:170, nr. 163A Male Opossum); although the string configuration after the Navajo Opening is placed on the ground in a slightly different way, the principal construction method is (*mutatis mutandis*) identical.

We have not been able to find construction methods exactly identical to that of Arandic 13c in the literature studied, nor in Australia, or in other parts of Oceania. The three-diamond figure displayed vertically occurs regularly in the region, but very different construction methods are used (see comparative notes in Claassen 2014:210-216, Wame 28 *Puitere* (<a bird species>) for a general impression). The construction methods that are most closely related to that of Arandic 13c come from Australia (Davidson 1941:849-850, nr. XXXIX *Goanna*, from various parts of Australia; Maude & Sherman 1995:134-135, nr. 79 Forehead Band; Tindale field notes).<sup>17</sup>

The characteristic move of Arandic 13a movements 3 and 4 was also found on Saibai Island (Maude 1987:24-26, nr. 21 *gagai* ‘bow’) and probably in the North Fly District of PNG (Noble & Claassen 2012:143-147, North Fly 1 Fish and Fronds Passing; actual movements not recorded but reconstructed), but not as a take-over movement: in the end, Player B presents the string obtained to Player A.

## ARANDIC 14 <not named>

### (i) Construction

*The instructions below describe Making VP&PM2.*

Two players, here labeled A and B, are sitting opposite each other. A (VP) sits on left and B (PM) sits on right

1. Player A: *Navajo Opening I*.
2. Player B: TV 2n of A forms the base of an *inverted triangle*, and TV 1f of A forms the base of an *erect triangle*. 1n and 2f of A cross in the center of the figure to create the apex for each triangle. Hold hands with fingers pointing towards A, palms pointing away from the ground. Pass RH, towards A, between A’s L1n and L2f, and LH towards A between A’s R1n

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<sup>17</sup>Norman Tindale Collection, AA338/2/27. South Australian Museum Archives.

and R2f, then with the dorsal side of 2345 slightly drag away from A's body A's 1n; with 2345 grasp A's 1f and allow A's 1n to slide off the back of 2345. Keep track of A's 1n (the string that just slid off). With 1 from below share 2345 loop.

3. Player B: With palms still pointing away from the ground with 2345 from above (from A's perspective) enter A's 2 loop, grasp A's TV 2n and pull this towards the body through (B's) 12345 loop, which slips off. Remove 234 from the shared 2345 loop, then turn palms towards each other and down, making sure that 5 maintains its loop in its bend.
4. Player B: With 1, at A's far side of the figure, hook up A's 1n, passing 1 down behind A's 1n, towards the body and up.
5. Player A: Release all loops.
6. Player B: Bring hands to Normal Position. With 1 pick up 5n.
7. Player B: Caroline Extension. Keeping tension in the figure display vertically, RH above LH, RH palm pointing away from the body, LH palm pointing towards the body.
8. Player B: Keeping tension in the figure and maintaining the extension bring RH away from the body and down below LH until its palm faces the body, simultaneously raising LH (fig. 52).
9. Player A: In B's figure three *diamonds* can be distinguished strung up between two vertical framing strings, a *L2n-R5f framing string* and a *R2f-L5f framing string*. Pass R5 towards B in the triangular space just above B's R2 (to the left (relative to A) of B's *R2f-L5f framing string*), and pass L5 towards B in the triangular space just above the base of B's R1 (to the right (relative to A) of B's *L2n-R5f framing string*), bring hands upwards along B's framing strings, then with R1 towards B enter the triangular space just below B's L1 (to the left (relative to A) of B's *R2f-L5f framing string*), and with L1 towards B enter the triangular space just below B's L2 (to the right (relative to A) of B's *L2n-R5f framing string*).
10. Player B: Release all strings.
11. Player A: Bring hands to Normal Position. Display vertically, RH above LH, fingers pointing away from the body (fig. 53).
12. Player B: With R5 from above (relative to A) enter A's L1 loop, with

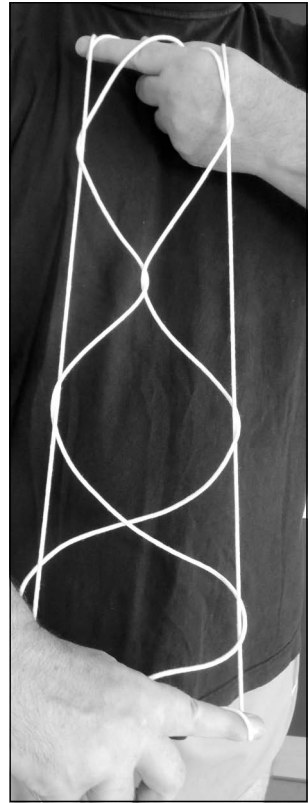


Fig. 52 - Arandic 14 after movement 8

- R1 from above (relative to A) enter A's R1 loop. With L5 from above (relative to A) enter A's L5 loop, with L1 from above (relative to A) enter A's R5 loop.
13. Player A: Release all strings.
  14. Player B: With 1 pick up 5n.
  15. Player B: Caroline Extension. Keeping tension in the figure display vertically, RH above LH, RH palm pointing away from the body, LH palm pointing towards the body. This does not result in a correct figure. Undo Caroline Extension (release 2 loop) and bring hands to Normal Position.
  16. Player B: Release upper 1 loop. With 1 pick up 5f.
  17. Player B: Caroline Extension. Keeping tension in the figure display vertically, LH above RH, LH palm pointing away from the body, RH palm pointing towards the body.
  18. Player B: Keeping tension in the figure and maintaining the extension bring LH away from the body and down below RH until its palm faces the body, simultaneously raising RH (fig. 54).
  19. Player A: B's figure consists of a structure strung up between two vertical framing strings, a *R2n-L5f framing string* and a *L2f-R5f framing string*. Pass L5 towards B in the triangular space just above B's L2 (to the left (relative to A) of B's *L2f-R5f framing string*), and pass R5 towards B in the triangular space just above the base of B's L1 (to the right (relative to A) of B's *R2n-L5f framing string*), bring hands upwards along B's framing strings, then with L1 towards B enter the triangular space just below B's R1 (to the left (relative to A) of B's *L2f-T5f framing string*), and with R1 towards B enter the triangular space just below B's R2 (to the right (relative to A) of B's *R2n-L5f framing string*).
  20. Player B: Release all strings.
  21. Player A: Bring hands to Normal Position. The R5 loop slips off, so that the construction is halted.

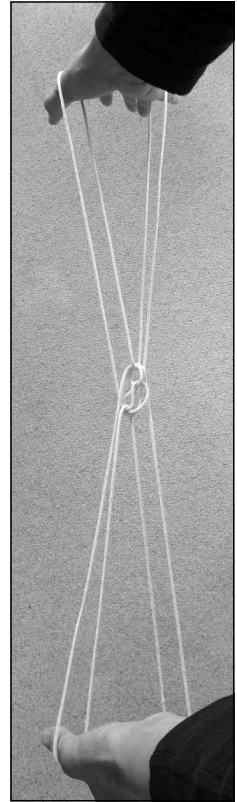
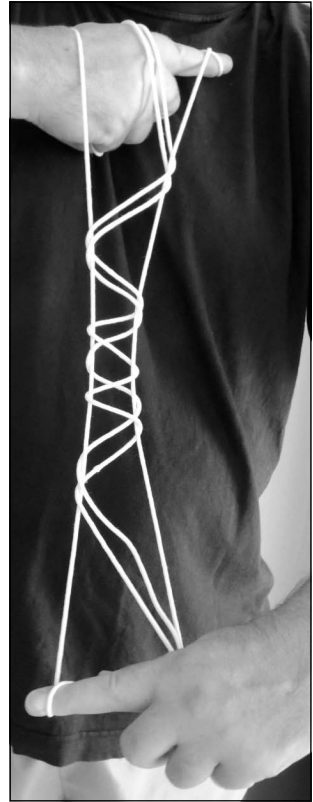


Fig. 53 - Arandic 14  
after movement 11

#### Remarks:

- Movement 1: In Making VP&PM2 Player A (VP) actually does not remove L3 from the shared L23 loop while constructing *Navajo Opening I*, but for symmetrical reasons, since she removes L3 from the shared L23 loop in Making VP&PM1, this is also described in the instructions for Making VP&PM2.

- Movement 12: In Making VP&PM1, player B substitutes 2 for 5 in this movement.
- Movement 14: In Making VP&PM1, this movement is replaced with:  
14'. Player B: Display with palms pointing away from the body, 2 pointing upwards, 1 pointing towards the ground. The figure appears to be incorrect, and construction is halted.
- Movements 14-16. These movements show how PM tries to find the right string to obtain a good extension. In similar cases usually picking up 5n with 1 works best, and thus PM attempts this, but she finds that this does not work. She undoes the movement, then picks up 5f. This does work, although she has to find the correct way to rotate the figure to be able to display vertically.
- Movements 19-21. The players attempt to continue along the same principles as movements 9-18, but do not succeed because the R5 loop slips off player A's hands. In principle such a continuation is possible.



**Fig. 54 - Arandic 14 after movement 18**

### **(ii) Interpretation and comparisons**

The first figure (after movement 8) is identical to the first figure of Arandic 13 (except, of course, the use of the index finger here instead of the middle finger of Arandic 13 in its Caroline Extension), and comparative remarks for this part of the series can be found above.

The figure after movement 11 above has been recorded by McCarthy in Yirkkala, where it is called 'Opossum in a Tree' (Maude & Sherman 1995:175, nr. 167). There the figure is held with the index finger instead of the thumb. In Yirkkala it is also an intermediate (unnamed) figure in another figure recorded by McCarthy (Maude & Sherman 1995:171, nr. 163B Female Opossum) where the intermediate figure (cf. the figure after movement 11 above) is held with the index finger instead of the little finger.

It is possible that the figure with the rotational symmetry after movement 18 was not planned beforehand. In other recordings of the series, the taking over at the point similar to movement 12 above is performed slightly differently (2 taking the place of 1 and 1 sharing the 5 loop, after which the 2 loop is placed

on 1 and a Caroline Extension is performed, resulting in the same three-diamond figure that was obtained after movement 8 above, but now displayed horizontally; this can also be seen in a film on which two women from western Arnhem Land perform a closely related series, recorded by Judy McKinty in 2005, which could have been the series that was intended here). Because in making VP&PM2 the taking over is performed differently, PM has to devise another way to display a good figure (she experiments during movements 14-16).

### ARANDIC 15 *Irrkwely* ‘dish’; *Arengk* ‘dog’

#### (i) Construction

Here the series as performed by VP is presented. Her construction appears to be directed towards a final figure. PM also makes sequences that are closely related to this figure, but in her construction she does not appear to have a particular sequence in mind. PM is making different shapes by bringing tension in two of the three framing strings that she selects (see comparative notes below). PM’s sequences are presented separately in Appendix 1.

*The instructions below describe Making VP1.*

1. *Murray Opening I.*
2. Pass L1 between upper and lower L2n and pick up upper L2f; return between upper and lower L2n. Simultaneously pass R1 between upper and lower R2n from above in lower R2 loop only and pick up lower R2f; return between upper and lower R2n.
3. With R5 over upper 2 loop pick up lower R2n; simultaneously with L5, over lower L2f and upper L2n, from the far side pick up lower L2n.
4. Observe that the upper L2n-upper R2n, after passing under their respective palmar string, forms a *horizontal string segment* passing under 1 loop. With 2, from the far side, hook up this *horizontal string segment*, turning 2 down, towards the body and up.
5. Release 1 loop and with a throwing motion display the figure with palms pointing towards the ground, fingers pointing away from the body.

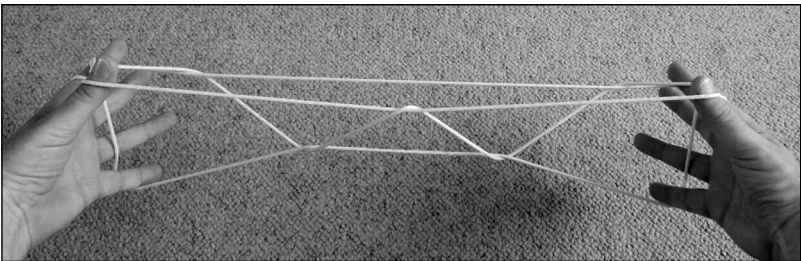


Fig. 55 - *Arandic 15* after movement 7

6. Observe that the string running from lower L2f to middle R2f is the *side* of a triangular space around each 5. With 1 pick up respective *side*.
7. Display with palms facing each other, fingers pointing upwards, fingers separated as much as possible (fig. 55).
8. Each upper 2 loop is closed by a *closing segment* that spans upper 2 loop. Gently release R1 loop and keep track of the *original R1f*. Pass R1 from the near side over *closing segment* and pick up *original R1f* (the mouth may assist here). Release L1 loop and keep track of the *original L1f*. Pass L1 from the near side over *closing segment* and pick up *original L1f* (the mouth may assist here) (fig. 56).

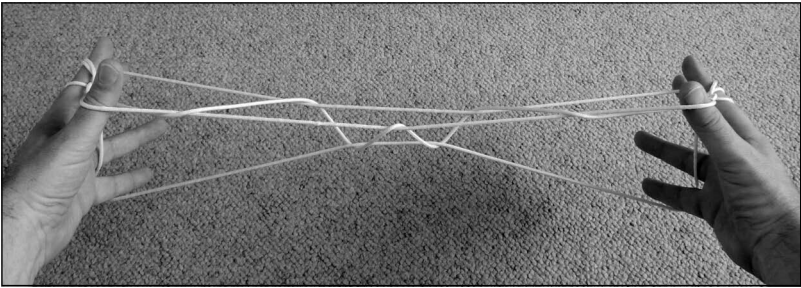


Fig. 56 - *Arandic 15* after movement 8

9. Each 1 loop is closed by a *closing segment*, and on each hand there is a 2n-5n *palmar segment*. Pass tips of R23 from above in L1 loop close to L1, then under L1 *closing segment* and under upper L2f, then pinch L *palmar segment* between tips of R23, R2 passing over, R3 under the segment. Bring tips of R23 towards the body under *closing segment* and up. A small *R23 loop* can be distinguished running from tips of R23 towards the LH. Gently release L5 loop, then with L5 from the far side, over all intermediate strings, remove *R23 loop*. Pass L12 from above in R1 loop close to R1, then under R1 *closing segment* and under upper R2f, then pinch R *palmar segment* between tips of L12, L2 passing over, L1 under the segment. Bring tips of L12 towards the body under *closing segment* and up. A small *L12 loop* can be distinguished running from tips of L12 towards the RH. Gently release R5 loop, then with R5 from the far side, over all intermediate strings, remove *L12 loop*. Extend.
10. A *framing string* can be distinguished which runs from upper L2f to upper R2f through the figure. With 2, from the far side, hook up *framing string* at the center side of the point where it has passed under 2n-5n palmar segment, by turning 2 down, towards the body and up.
11. Remove 1 from the figure and extend, palms facing each other, 2 pointing upwards, 5 pointing downwards (fig. 57).

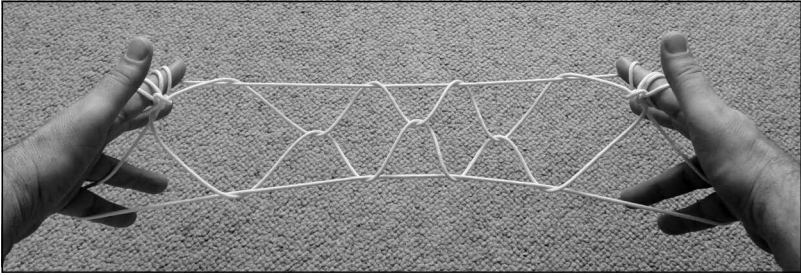


Fig. 57 - Arandic 15 after movement 11

### (ii) Interpretation and comparisons

VP names the figure after movement 7 *Irrkwely* 'dish' and the figure after movement 11 *Arengk* 'dog'; this last figure is also called *Arlatyey* 'pencil yam' by VP.

In her version of the series PM uses the middle finger instead of the index finger, amongst others at the point similar to movement 4 above. She uses *Murray Opening II* throughout, which is the same as *Murray Opening I* with Left and Right exchanged. In her Sequence A (see Appendix 1 below) she makes the figure cf. after movement 7 above, using the same construction method (*mutatis mutandis*), but then continues her play with the framing strings. In her Sequence B she directly makes the figure cf. after movement 8 above. In Sequence E she uses slightly different opening movements, resulting in different crossings around the framing strings and thus in slightly different figures. PM's various sequences mainly consist of relocating, then selecting and bringing tension in two or three of the three possible framing strings in the figure, so that various, closely related figures appear. The three possible framing strings are clearly visible when one makes the string configuration after movement 2 above; possible framing strings are then TV 1n, TV lower 2n and TV upper 2n. PM calls her figure *urtna* 'dish'.

The complete sequence of figures of Arandic 15 as made by VP is not found in other Australian collections, but the first (after movement 7) and second (after movement 8) figures are; in most cases these are also intermediate figures to different final figures, as in the Arandic recording.

Davidson recorded the figure after movement 7 above among the Wardaman of Northern Territory (Davidson 1941:870-871, nr. LXII Canoe).<sup>18</sup> Its con-

<sup>18</sup>In our opinion the written instructions do not completely match the drawing that Davidson gives (1941:870-871). In his instructions (step 5) he describes that the index finger hooks up the hanging string towards the body and up, resulting in an upper 2f framing string, whereas his drawing shows an upper 2n framing string, the result of hooking the hanging string away from the body and up.

struction is identical to that of Arandic 15 (except that L and R change roles in the construction). Kathleen Haddon recorded it with a similar name at Cape York (1918:131-132, nr. 14 *Auto* 'A Canoe'; there it continues to a different figure called A Waterspout (1918:132, nr. 15). The Cape York instructions are identical to Arandic 15, movements 1-7. At Yirrkala the Arandic figure after movement 7 is the first in a longer series (Maude & Sherman 1995:146, nr. 101A Dug-out Canoe. Here the middle finger instead of the index finger is used to hook up the horizontal string segment at the point cf. movement 4 above, just as PM does in her construction. The figure after movement 8 above (without first making the figure after movement 7 above) is made during the construction of another figure at Yirrkala, but not separately displayed and named (Maude & Sherman 1995:149-150, nr. 105 Fish, steps 1-5 there); its construction omits movements 5-7 above.

Although we did not find further identical construction methods of this figure in Australia nor in other regions of Oceania, photographs that suggest a similar figure are known from PNG (Camps & Claassen 2010:181-182, *Hele Mule* 7; Titus 2007:267, plate 9). The construction is somewhat related to *Sakara* 'Moon', as recorded by Philip Noble in the Managalas and Musa district (Noble 1979:128-129, nr. 75), which is again identical (except for some minor details), with a figure recorded by Diamond Jenness in PNG's D'Entrecasteaux archipelago (Jenness 1920:319-320, nr. 34 *Manu'a* 'A house'). In these two figures the middle of the string stretched over the frame strings is on the 2n string, whereas it is on the 1n string in *Hele-Mule* 7. And they both start with a modified Murray Opening, whereas *Hele-Mule* 7 probably starts with the regular Murray Opening. A Torres Straits figure recorded by Laade (Maude 1987:30, nr. 26 *Puineg*) is closely related to the figures of Noble and Jenness, but it has different final movements and is displayed differently. It is used as an action figure. This figure starts with the regular Murray Opening, after which the upper R2 loop is twisted.

## ARANDIC 16 <not named>

### (i) Construction

*The instructions below describe Making VP4*

Use a doubled loop, here treated as a single loop.

1. Position 1.
2. With L2 pick up R palmar string.
3. With R1 pick up R5n.
4. With R3 pick up (lower) R1f.
5. Release R5 loop and with R5 from below remove R3 loop.
6. With R3 from above remove double R1 loop.
7. With R1, under intermediate strings, pick up lower R3n (the string that runs to L5f). Remove R3 from the figure.

8. With R1 pick up R5n.
9. With R3 pick up (lower) R1f.
10. Release R5 loop and with R5 from below remove R3 loop.
11. With R2 from above remove double R1 loop.
12. With R1 pick up lower R2n (the string becoming L2n).
13. Remove R2 from the figure.
14. Movement 8-11.
15. With help of L12 place lower R2n (the string becoming L2f) over R1.
16. Remove R2 from the figure.
17. Movements 8-11.
18. With R1 pick up lower R2n (The string becoming L1n).
19. Remove R2 from the shared R12 loop but maintain the small loop encircling R2 (of which R2n continues to become a R2n-R5n palmar segment).
20. Release L2 loop. Use tip of L2 to extend the figure between L1n and L5n framing strings (fig. 58).
21. (Remove R5 from the figure).

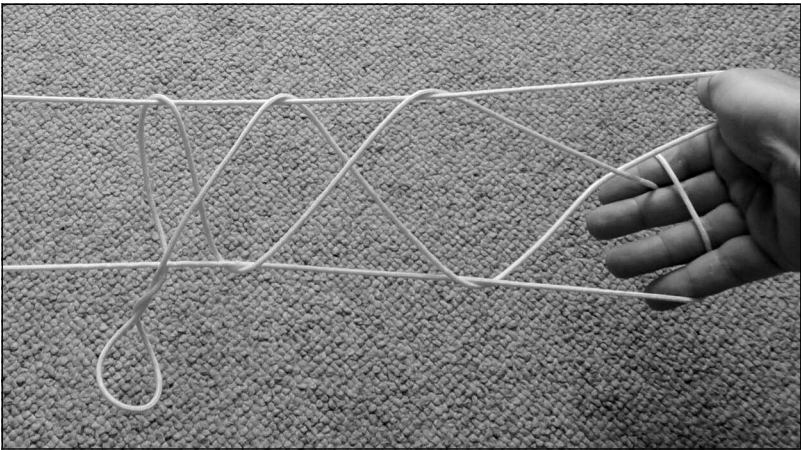


Fig. 58 - *Arandic 16*

Remarks:

- Movement 3. In Making VP2 R5f is picked up instead of R5n.
- Movement 8. In Making VP1 & VP3 R1 picks up R5f.
- Movement 6-7. In Making VP3 R2 is used instead of R3.

**(ii) Interpretation and comparisons**

The figure is only made by VP, and she performs it only once. The construction of the figure consists of the fourfold execution of a 'weaving sequence' of

movements (movements 3-7, 8-13, 14-16, 17-19), in which only the last execution of the sequence is slightly different in its ending.

An almost identical figure was recorded by Norman Tindale at Mount Liebig in central Australia<sup>19</sup>. Closely-related figures were also found by McCarthy at Yirrkala (Maude & Sherman 1995:119, nr. 45A/B Birth of a Baby/Baby Born; Maude & Sherman 1995:101, nr. 16 String Bag; Maude & Sherman 1995:119, nr. 46 Lightning). In these Yirrkala figures the “weaving sequence” is slightly simplified by each time taking off the loops by the other hand, then replacing them differently. In McCarthy’s figures nr. 16 and 46, the initial configuration is over the head instead of on the LH in Position 1 as in the Arandic figure.

Davidson also found closely-related figures in the Northern Territory, among the Wardaman and the Ngainman [Ngarinman], with names almost identical with those in Yirrkala (1941:804-806, nr. VI Dilly Bag; 1941:806-808, nr. VII Baby Being Born). As in the Yirrkala figures, the “weaving sequence” is slightly simplified; the Dilly Bag figure (nr. VI) is, as McCarthy’s nrs. 16 and 46, made from an initial configuration over the head. In Davidson’s figure VII the main movements are performed by the LH instead of the RH in the Arandic figure.

We find similar figures in other parts of Oceania; as in Australia, sometimes the figure is made with one side of the string loop over the head, sometimes it is held by the other hand. In Papua New Guinea it is made on the hands (Noble 1979:36-37, nr. 17 *Maha* ‘pig’), on the Solomon Islands we find both (Maude 1978:163-164, nr. 108 *Ma’i* <not translated>, over the head; Maude 1978:50-51, nr. 39 *Kandora* ‘cuscus’, on the hand, where, prior to the weaving sequence, the R2 loop is twisted several times). On the Loyalty Islands it is made with one side of the string over the head (Maude 1984:45-46, nr. 41 *Hadu hadone babu* ‘the figure that can be done with one arm’), and on Tikopia it is made on the hands (Firth & Maude 1970:37, nr. 33 *Takaro pena potutasi* ‘game worked at one end’). On the Tuamotus it is made with thumbs and index fingers of the hands, but still the construction principle is the same (Emory & Maude 1979:10-11, nr. 7 *Mago* ‘shark’).

## **ARANDIC 17 Bush Potato; Parachute; *Arrwe iltyingke* ‘rock wallaby bundle’**

### **(i) Construction**

*The instructions below describe Making VDI. Differences with other makings are explained in the remarks.*

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<sup>19</sup>Norman Tindale Collection: AA338/2-242-24. South Australian Museum Archives.

Use a doubled string loop, here treated as a single loop.

1. Position 1 on LH only.
2. With R234 hook L palmar string and draw it out. Remove R234 from the figure.
3. With R234 hook L palmar string between L1f and L5n and draw it out. Remove R234 from the figure.
4. Hold LH with fingers pointing up, its palm pointing towards the right. A *pending loop* hangs down from the LH palm. With RH from the right enter *pending loop*, pass R3 towards the far side under the far string of the *pending loop* and with R3 hook L5f close to L5 (before it is crossed by L5n); pass R2 towards the near side under the near string of the *pending loop* and hook L1n close to L1 (before it is crossed by L1f). Bring RH to the right, keeping R2 and R3 crooked and bringing along their loops.
5. Bend L4 down and from below (= towards the ground) enter R3 loop; bend L3 down towards the ground between R3n and R2f; bend L2 down and from below (= towards the ground) enter R2 loop. Bring RH over the LH to LH dorsal side and drop its loops there. Straighten fingers of the LH.
6. A small *LH palmar segment* is strung up between L1n and L5f. With R234 hook *LH palmar segment* and pull it tight towards the right.
7. Display vertically, LH above RH, LH fingers pointing away from the body, R234 being crooked (fig. 59).

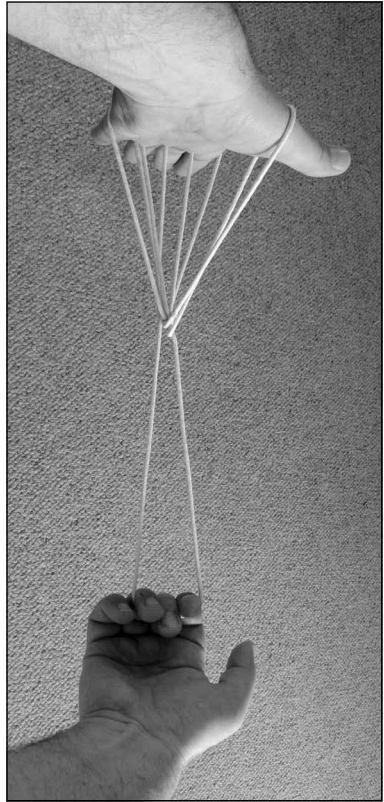


Fig. 59 - *Arandic 17*

Remarks:

- Movements 2-3. In Makings VD2, AC1-6 and EC1 R23 is used instead of R234; in Making VP1 R2345 is used instead of R234.
- Movement 4. In Making EC1 this movement is replaced with:
  - 4'. Hold LH with fingers pointing up, its palm pointing towards the right. A *pending loop* hangs down from the LH palm. With RH from the right enter *pending loop*, pass R2 towards the far side under the far string of the *pending loop* and with R2 hook L5f close to L5 (before it

is crossed by L5n); pass R2 under intermediate strings from below in L1 loop close to L1 and hook L1n. Bring RH to the right, keeping R2 crooked and bringing along its loops.

Movement 5 has to be adjusted slightly to fit this change.

- Movement 6. In makings AC1-6 and EC1 R2 is used instead of R234; in making VP1 R3 is used instead of R234.
- Movement 7: VD explains: “*Wallabies that were killed, and people carry them that way like that*”.
- Movement 7. VP (Making VP1) displays with RH above LH. VP then performs an extra movement:
  8. Carefully remove LH from the figure and display the figure hanging down from R3. With LH grasp the figure halfway and gently slide down LH along the figure towards the ground in order to press the four loops hanging down from the R3 loop together, then remove LH from the figure.
- Movement 7. EC (Making EC1) first displays with RH above LH, then with LH above RH.

## (ii) Interpretation and comparisons

VD (Arrernte) names this figure *Anatye antharle* ‘bush potato’, *Arrwe iltyingke* ‘rock wallaby bundle’ (representing rock wallabies carried held by their tails) or Parachute. VP (Anmatyerr) calls it *Anaty antharl* ‘bush potato’. It is probably also the figure referred to by Carl Strehlow as *Aroa* ‘rock-wallaby’ (Strehlow 1913).

Arandic 17 is made by almost all the women, and there are no significant differences in the construction methods used. VP displays the figure with right hand above left hand, after which she removes her left hand, pressing the lower hanging lozenges against each other; the figure for her represents a bundle of bush potatoes. EC displays the figure both with right hand above left hand and with left hand above right hand. The other Arandic performers display it only with left hand above right hand, keeping both hands in the figure. This figure was also recorded by Mr. Rolland at Jay Creek (near Alice Springs) in the 1930s from someone of mixed Aranda and Kukatja (Luritja) background, who used the variant of making EC1 at movement 4-5.<sup>20</sup>

Construction methods for figures identical or closely related to Arandic 17 are found in the collections of Davidson, Stanley (Yarrabah community, northern Queensland), and Tindale<sup>21</sup>. The Yarrabah recording, except for insignifi-

<sup>20</sup>Norman Tindale Collection: AA338/1/7. South Australian Museum Archives.

<sup>21</sup>Norman Tindale Collection: AA338/17, from the Ilpirra, Northern Territory, as the Jay Creek recording; AA338/1/5, from the Wirangu, Koonibba, South Australia, using R3 and R4 at movement 4; AA338/1/12, from the Diamantina River, south of Birdsville, using R1 and R2 at movement 4; AA338/2/30, from the Wangkonguru [Wangkangurru], South Australia. South Australian Museum Archives.

cant details, matches the Arandic construction method (Stanley 1926:76-77 The Lily Root). It is displayed as VP does, except the left hand is kept in the figure. The four lozenges kept by the left hand fingers represent the roots of the plant, the single right hand lozenge its stem.

Davidson gives four slightly different construction methods for closely related figures. The recording from Western Australia (Davidson 1941:814-815, nr. XII Hut/Penis) most closely matches the Arandic one. Here, as in the recording from Yarrabah, the final figure is displayed with right hand above left hand, with left hand remaining in the figure. The instructions prescribe that L1n and L5f have to be picked up, not hooked at the point cf. movement 4 above, which is quite difficult to achieve. Probably Davidson does not distinguish between picking up and hooking a string here, so it is possible that he means to hook the strings from the inside.

Among the Ngaluma of Western Australia the figure represents a headdress (Davidson 1941:813-814, nr. XI). Its starting position has the string suspended from L2 and L5 instead of L1 and L5 as has the Arandic figure. The constructions follow that of Davidson's nr. XII (*mutatis mutandis*). The final figure is displayed as the Arandic one; it has lozenges on L2, L3, L4 and L5 instead of on L1, L2, L4 and L5 as has the Arandic figure.

The Wardaman in the Northern Territory make the figure on the right hand instead of on the left hand (Davidson 1941:826-827, nr. XXI Fish Spear); slightly different opening movements are used to arrive at a string configuration that is the upside-down version of the Arandic version after movement 3 above. Instructions again prescribe to have (R)1n and (R)5f picked up, as in the recording from Western Australia. The final figure is displayed with the four lozenges pointing upwards; its string crossings are slightly different from the Arandic one.

A slightly different recording from the Wardaman and the Ngainman [Ngarinman] of the Northern Territory (Davidson 1941:811-813, nr. X Lily) is again made on the left hand. At the point cf. movement 4 above the right hand is, however, inserted from the left, and L1n and L5f are hooked from the inside; this results in a final figure that has again slightly different string crossings than the Arandic one. The final figure is held by the right hand, holding the connecting point where former four left hand lozenges meet former right hand single lozenge. Davidson mentions that in the Diamantina District of Southern Australia this design is called 'Yam'.

The figure is also known among the non-Aboriginal children of Australia (Howard 1961, Plate VI.2 and VII.1 Crow's Foot/Parachute, observed in Melbourne and Perth in the 1950s, no construction method was recorded). It is possible that a similar construction method was used as in the Arandic figure, since such a method was also recorded in the U.K. (Probert & Probert 2011:7-8 One of the Parachutes).

Closely related figures are found in Tikopia (Firth & Maude 1970:62, nr. 53 *Kume*) and the Society Islands (Handy 1925:84-85 *Taata ino* 'bad man', alt-

hough in both cases a different final figure is extended. A figure more or less identical to the Arandic one was also found in Japan (Saito 2004:229-230, #234) and in many other parts of the world (see Probert 1999:233-235). The figure is very common in many parts of Europe, for example Estonia (see Claassen 2019:80-82, Estonia 04 *Langevari* ('Parachute')).

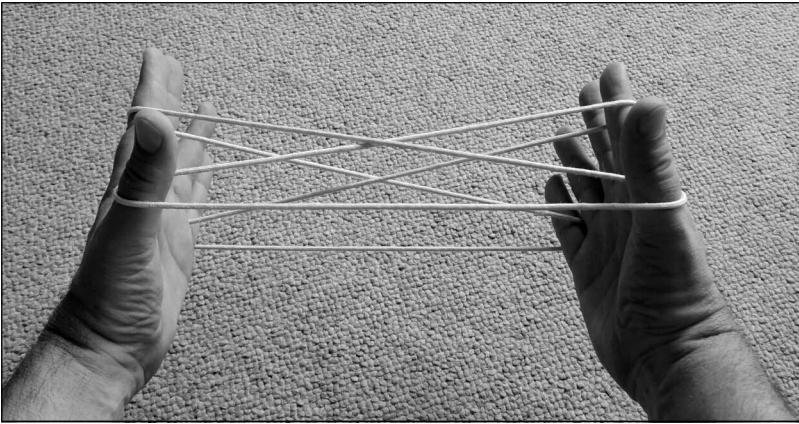
As the figure itself has been recorded in several parts of Australia, it is not likely to be introduced by Europeans, although its identification with parachutes by some suggests that some interpretations of the figure have their origins in contact history.

## ARANDIC 18 <not named>

### (i) Construction

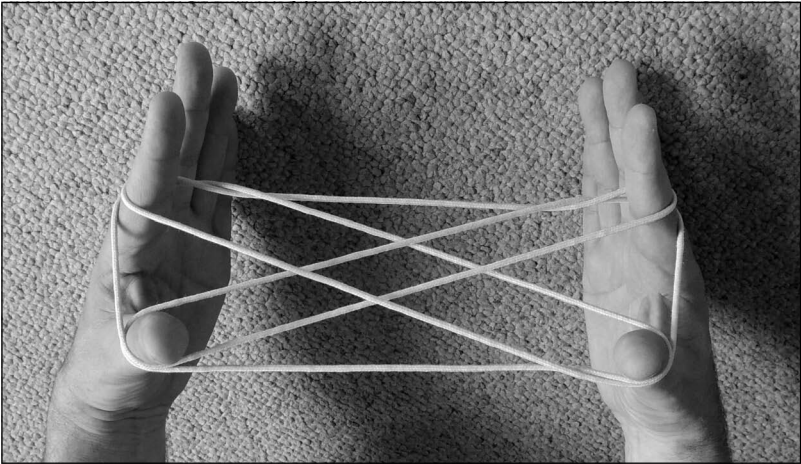
*The instructions below describe Making VPI.*

Two players, here marked A and B, are sitting opposite each other.



**Fig. 60** - *Arandic 18 after movement 1, here displayed horizontally*

1. Player A: *Opening A\**. Hold hands vertically, LH below RH, palms facing each other, fingers pointing towards player B (fig. 60).
2. Player B: With R12 grasp the crossing of A's 1f and 2n (R1 from the right entering the triangular space of which A's L1f and L2n are the sides, and R2 from the right entering the triangular space of which A's R1f and R2n are the sides), and with L12 grasp the crossing of A's 2f and 5n (L1 from the left entering the triangular space of which A's L2f and L5n are the sides, and L2 from the left entering the triangular space of which A's R2f and R5n are the sides). With L12 under A's 2n and 1f pick up A's (TV) 1n. With R12 under A's 1n, 5n and 2f pick up A's 5f. Bring hands away from each other.



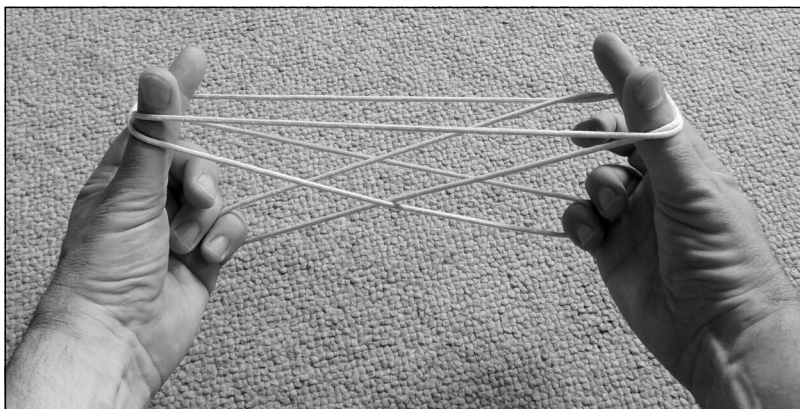
**Fig. 61** - *Arandic 18* after movement 4

3. Player A: Release all strings.
4. Player B: Display horizontally but perpendicularly to the body, RH closest to the body, LH farthest away from the body, fingers pointing upwards (fig. 61).
5. Player A: Pass R2 from above in B's R1 loop, R1 from above in B's L1 loop, L2 from above in B's R2 loop and L1 from above in B's L2 loop. Bring tips of R1 and R2 and of L1 and L2 together, pinching the crossings between them in the middle between B's hands. Lift 12 (keeping fingers pointing towards the ground) and separate hands over B's TV 1n and TV



**Fig. 62** - *Arandic 18* after movement 7, here displayed horizontally

- 2f, then bring 12 down, towards each other under B's TV 1n and TV 2f and up through B's figure.
6. Player B: Release all strings.
  7. Player A: Separate hands and separate 1 and 2 on each hand as far away as possible. Display vertically, RH above LH (fig. 62).
  8. Player B: Turn hands so that palms point upwards. With L5 from the left, over A's 2 loop, hook A's TV 1f and bring it in the bend of L5 towards the left over A's 2 loop to the far side of A's 2f. With R5 from the right and from above enter the triangular space strung up by A's 1f and B's L5, then from the right hook A's TV 2n and bring it in the bend of R5 towards the right over A's double 1n.
  9. Player B: With 12 of respective hand towards the ground enter the loop running from 5 towards A's figure close to 5, then with R12 from the right and from below pick up A's double TV 1n, and with L12 from the left and from below pick up A's double TV 2f.
  10. Player A: Release all strings.
  11. Player B: Extend, 12 pointing upwards, 5 being crooked. Display vertically, RH above LH, 12 pointing away from the body (fig. 63).

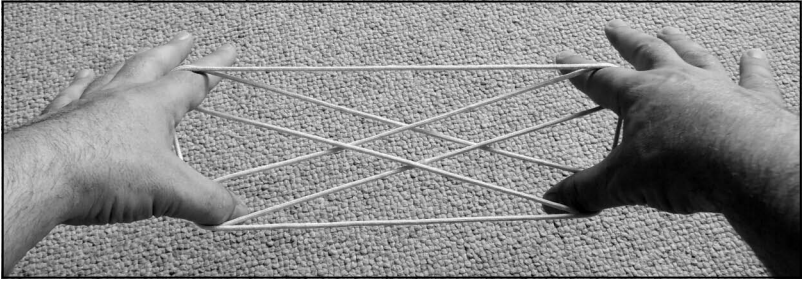


**Fig. 63** - *Arandic 18* after movement 11, here displayed horizontally

12. Player A: Observe that in B's figure the L5f-R1n and the R5f-L1n strings cross, as do the L5n-R2f and R5n-L2f strings. The 5n and 2f on the same hand each form the sides of a *far triangular space*, and the 5f and 1n form the sides of a *near triangular space*. Separate hands, then with R2 from the right (relative to A) enter B's R *near triangular space*, with R1 from the right enter B's L *near triangular space*, with L2 from the left (relative to A) enter B's R *far triangular space* and with L1 from the left enter B's L *near triangular space*. Bring tips of 1 and 2 together and pinch the string crossing between them, then separate hands under B's TV

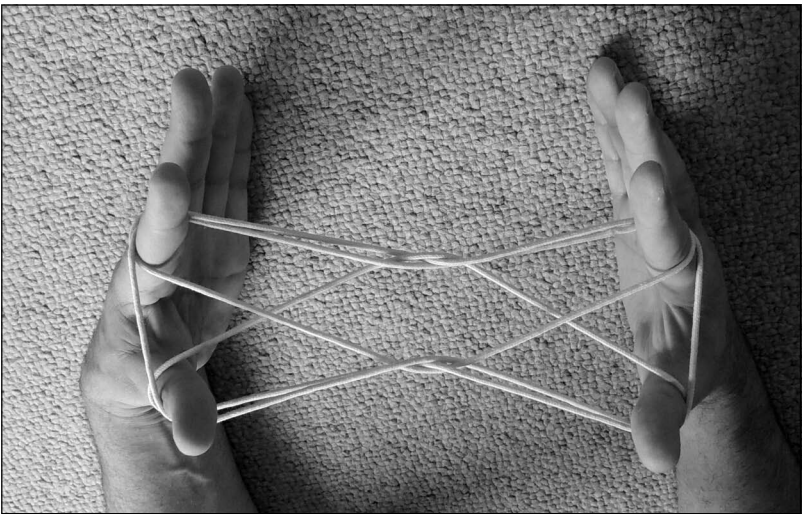
strings. Bring hands upwards, then towards each other over B's TV strings, and bring 12 down into B's figure.

13. Player B: Release all strings.
14. Player A: Extend and separate 1 and 2 of each hand as much as possible. Display vertically, RH above LH, fingers pointing towards the body (fig. 64).



**Fig. 64** - *Arandic 18* after movement 14, here displayed horizontally

15. Player B: Bring hands over A's figure. With R1 from below (= towards the ground) enter A's L1 loop, with R2 from below (=towards the ground) enter A's R1 loop, with L1 from below (=towards the ground) enter A's L2 loop and with L2 from below (=towards the ground) enter A's R2 loop. Bring tips of 12 together, pinching A's string crossings between them.



**Fig. 65** - *Arandic 18* after movement 17

- Raise hands and separate them over A's TV strings. Bring 12 down and towards each other under A's TV strings then up through A's figure.
16. Player A: Release all strings.
  17. Player B: Extend hands and separate 1 and 2 of each hand as far away as possible. Display horizontally, palms facing each other, fingers pointing away from the ground (fig. 65).
  18. Player A: B's double 1n is crossed by a *near crossing string* stemming from B's 2n and B's double 2f is crossed by a *far crossing string* stemming from B's 1f. With R12 at B's near side pull B's *near crossing string* exactly in the middle between B's hands towards B so that a *small loop* is formed, then with R5 from below enter this *small loop*, simultaneously releasing grip of R12. With L12 at B's far side pull B's *far crossing string* exactly in the middle between B's hands away from B so that a *small loop* is formed, then with L5 from below enter this *small loop*, simultaneously releasing grip of L12.
  19. Player A: With 12 of respective hand towards the ground enter the loop running from 5 towards A's figure close to 5, then with R12 from B's near side and from below pick up B's double TV 1n, and with L12 from B's far side and from below pick up B's double TV 2f.
  20. Player B: Release all strings.
  21. Player A: Extend, 1 and 2 pointing upwards, 5 being crooked. Display vertically, RH above LH, fingers pointing away from the body (fig. 66).

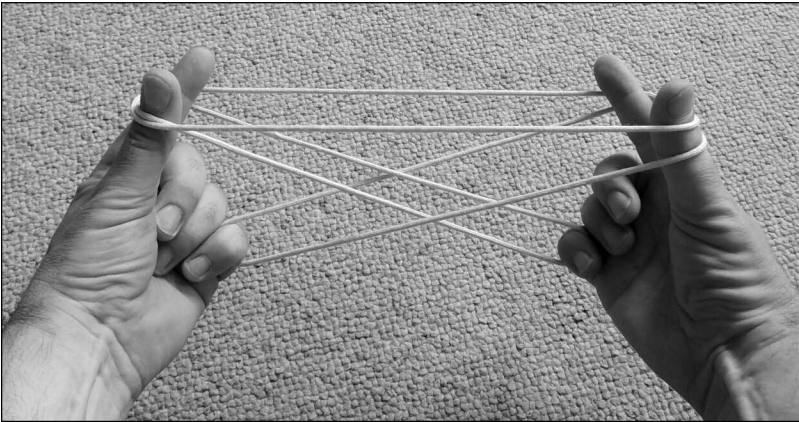
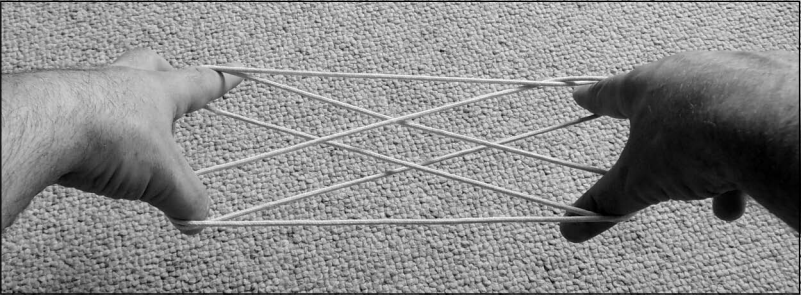


Fig. 66 - Arandic 18 after movement 21, here displayed horizontally

22. Player B: Observe that in A's figure the L5f-R1n and the R5f-L1n strings cross, as do the L5n-R2f and R5n-L2f strings. The 5n and 2f on the same hand each form the sides of a *far triangular space*, and the 5f and 1n form the sides of a *near triangular space*. Separate hands, then with R2 from

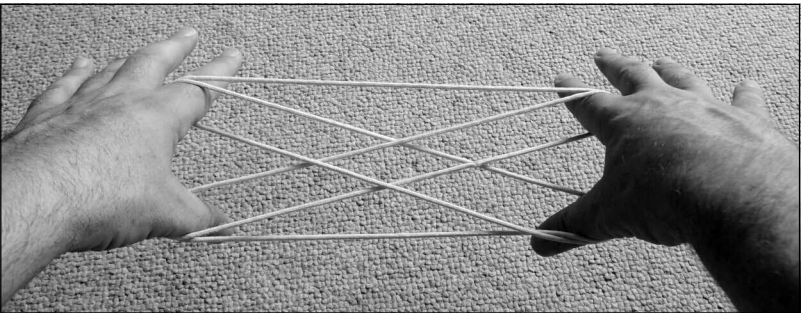
the right (respective to B) enter A's R *near triangular space*, with R1 from the right enter A's L *near triangular space*, with L2 from the left (respective to B) enter A's R *far triangular space* and with L1 from the left enter A's L *far triangular space*. Bring tips of 1 and 2 together and pinch the string crossing between them, then separate hands under A's TV strings. Bring hands upwards, then towards each other over A's TV strings, and bring 12 down into A's figure.

23. Player A: Release all strings.
24. Player B: Extend and separate 1 and 2 of each hand as much as possible. Display horizontally, fingers pointing towards the ground (fig. 67)



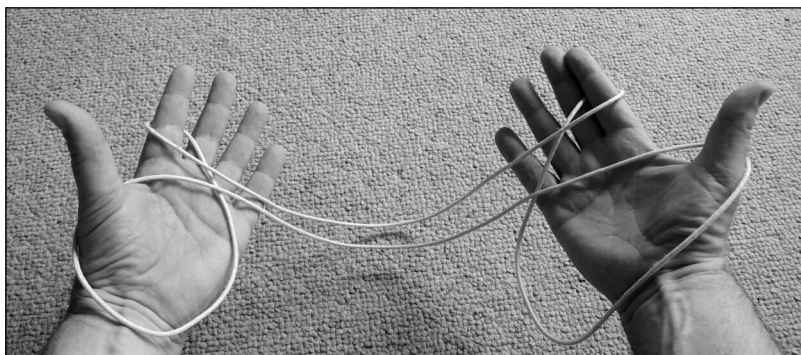
**Fig. 67** - *Arandic 18* after movement 24

25. Player A: With R1 from above (= towards the ground) enter B's L1 loop, with R2 from above (= towards the ground) enter B's R1 loop; with L1 from above (= towards the ground) enter B's L2 loop, with L2 from above (= towards the ground) enter B's R2 loop. Separate 1 and 2 of each hand.
26. Player B: Release all strings.
27. Player A: Display vertically, RH above LH, with 1 and 2 pointing towards the ground (fig. 68).



**Fig. 68** - *Arandic 18* after movement 27, here displayed horizontally

28. Player B: Movement 15 on A's figure.
29. Player A: Movement 16.
30. Player B: Extend hands and separate 1 and 2 of each hand as far away as possible. Display vertically, RH above LH (a figure similar to fig. 62).
31. Player A: Movement 8 and 9 on B's figure.
32. Player B: Movement 10.
33. Player A: Movement 11 (a figure similar to fig. 66).
34. Player B: Movement 22.
35. Player A: Movement 23.
36. Player B: Movement 24 (a figure similar to fig. 67).
37. Player A: Movement 25.
38. Player B: Movement 26.
39. Player A: Movement 27 (a figure similar to fig. 68).
40. Player B: With L1 from below (= towards the ground) enter A's R2 loop, with L2 from below (= towards the ground) enter A's R1 loop. With R1 from below (= towards the ground) enter A's L2 loop, with R2 from below (= towards the ground) enter A's L1 loop. Bring 1 and 2 of each hand upwards through the central small diamond of A's figure.
41. Player A: Release all strings.
42. Player B: Separate hands and extend, fingers pointing upwards (fig. 69). The figure dissolves.



**Fig. 69** - *Arandic 18* after movement 42

### **(ii) Interpretation and comparisons**

The two-player take-over game *Arandic 18* is commonly referred to as *Cat's Cradle*, and it is a common game in many places of the world. It is also common in Australia among non-Indigenous people (Poston-Anderson & Bathgate 1997:5). Starting from *Opening A* (or *Opening A\**, as above) is, however, not very common, and has, as far as we could trace, only been recorded in Japan

(Saito 2004:42, #013), Hawaii (Dickey 1928:145), Namibia (Kuehner 2013:115-122, nr. 14) and Greenland (Victor 1940:190-191, nr. 25). In Japan the figure maker continues towards the next stage, as in Arandic 18 movements 2-4 (Saito *ibid.*). Most of the Arandic methods for taking the figure from the other player are common worldwide (see Jayne 1906:324-336, *Real Cat's Cradle* for a description of the most common variant of the game). The take-over of movements 18-21, however, has been recorded only in Zanzibar (Kuehner 2013:99-101, movements 11-14), Belgium (Tyberg 1997:30-31) and Hungary (a video on YouTube).<sup>22</sup> The principle of movements 25-27 (repeated in movements 37-39) was found in Spain (a video on YouTube, described in Claassen, this volume), Korea (intro to the 1960 feature film Hanyo 'The Housemaid')<sup>23</sup> and Kazakhstan (a video on YouTube).<sup>24</sup>

It is impossible that the similarities between some of the Arandic take-over peculiarities and those in far-away regions such as Greenland, Africa, Belgium and Kazakhstan are the result of cultural contact. They must be explained by the principle of independent invention, as the two-player take-over games invite experimentation. It is, however, certainly possible that the basic principle of the game itself was introduced to Arandic peoples by non-Indigenous Australians.

Both Bunce in Western Port, Victoria (1857:75, *Cudgi, cudgick*) and Petrie (1904:111, *Warru Warru*), in the Brisbane area of Queensland, describe a string game between two players similar to what is known in Europe as "cat's cradle". Their description suggests that it was a similar or identical game as Arandic 18, but this is, however, not completely certain, as the name "cat's cradle" is also used to refer to making string figures in general, and other two-player take over string games that could match his description are also known in Australia (i.e. Davidson 1941:863-868, among the Wardaman; and a game from western Arnhem Land, recorded by Judy McKinty in 2005, see Noble, this volume).

It is possible that Arandic 18 was based on the Cat's Cradle game as made by non-Indigenous people, and, as the opening figure of the traditional Cat's Cradle game is not used in Arandic figures, it may have been modified to start from Opening A, an opening found in several traditional Arandic figures. There is, however, no proof or indication of this.

<sup>22</sup><https://www.youtube.com/watch?v=fwnm6HnEZK0>, accessed 2<sup>nd</sup> of April 2020.

<sup>23</sup>[https://www.youtube.com/watch?v=-J\\_HTZFC32s](https://www.youtube.com/watch?v=-J_HTZFC32s), accessed 4<sup>th</sup> of June 2020.

<sup>24</sup><https://www.youtube.com/watch?v=IckR8zYdaaI>, accessed 18<sup>th</sup> of April 2018.

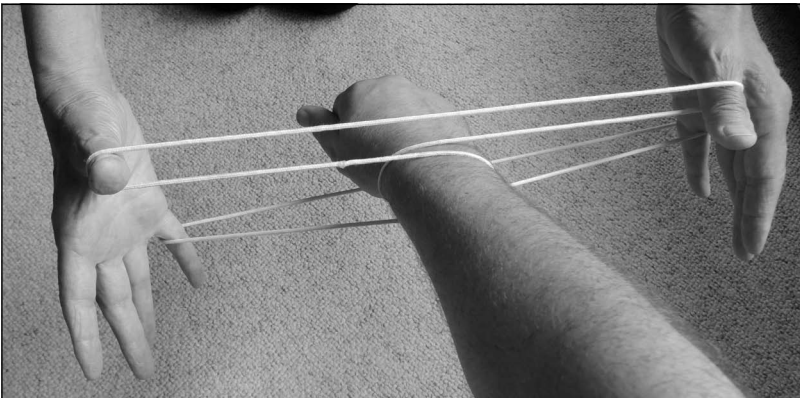
**ARANDIC 19 <not named>****(i) Construction**

*The instructions below describe Making AC1.*

Use a very long doubled string, here treated as a single string.

Two players are sitting opposite each other.

1. Player A: Opening A.
2. Player A: With fingers pointing away from the body present the figure to Player B.
3. Player B: Insert RH towards Player A in A's 2 loop and point fingertips to the ground.
4. Player A: Release 2 loop (fig. 70) then 5 loop and extend. Player B's wrist is caught in the string.
5. Player A: With 5 pick up 1f and bring hands to Normal Position.
6. Player A: With R2 pick up L palmar string; with L2 from above enter R2 loop, pick up R palmar string and return through R2 loop.
7. Player B: Pass RH, with its wrist loop, from below through A's 2 loop.
8. Player A: Release 2 and 5 loops and extend. Player B's wrist is free again.



**Fig. 70** - *Arandic 19 during movement 4*

Remark:

- Movement 7. This movement is out of view of the camera.

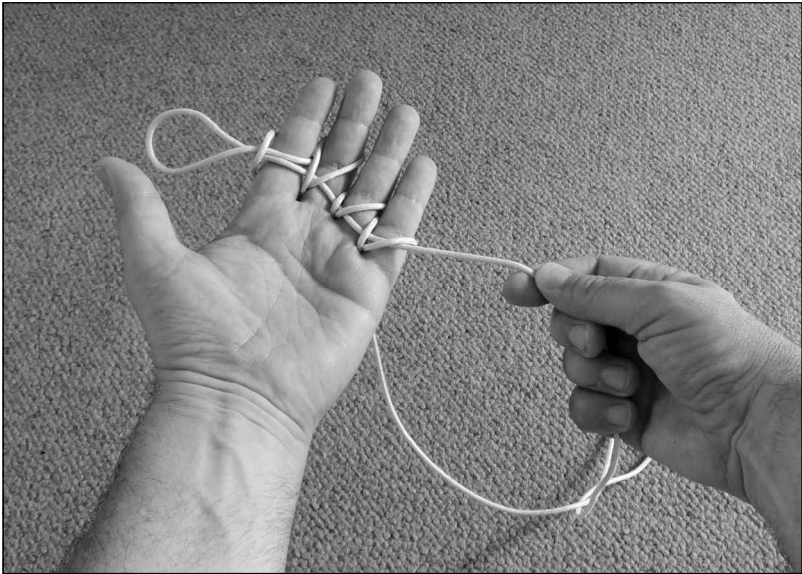
**(ii) Interpretation and comparisons**

We did not find this trick in the other Australian string figure collections, but it has been recorded in Papua New Guinea several times (see Noble & Claassen 2012:158-160, North Fly 6). It is also in a string figure collection from Hawaii (Dickey 1928:150, Hand Slip Trick A). A closely related trick was found on

the Caroline Islands (see its description in Noble & Claassen 2012 loc. cit.). Commenting on this trick Thomas Storer writes that it has “exceptionally wide currency among the children of modern urbanites, and enjoys a favored status among them” (1988:278-279). His bibliography lists several recordings of the trick from Africa and the Arctic (1988:328-344, items marked V.A.5).

## ARANDIC 20 A trick

### (i) Construction



**Fig. 71** - *Arandic 20 during movement 7*

*The instructions below describe Making VDI.*

1. Hold LH with palm pointing towards the right and fingers pointing away from the body. Place a string loop over L12345 so that a large *pending loop* hangs down from the LH, and there is a *L palmar string* and a *L dorsal string*.
2. With R2, under *L palmar string*, hook *L dorsal string* between L1 and L2, bring it in the bend of R2 towards the right under *L palmar string*, then give the newly formed R2 loop a half twist by turning R2 towards the body and up. With tips pointing towards each other place R2 loop over L2, and remove R2 from the figure. With RH pull both strings of the *pending loop* to pull the strings tight around the LH.

3. Movement 2 with R2 between L2 and L3, placing the loop over L3.
4. Movement 2 with R2 between L3 and L4, placing the loop over L4.
5. Movement 2 with R2 between L4 and L5, placing the loop over L5.
6. With the help of R123 remove L1 loop.
7. Hold LH so that its palm faces the body. With RH pull the near string of the *pending loop* just below L5 (fig. 71) completely towards the right. The string loop comes off the LH.

Remark:

- Movement 6. In Making VD2 L1 releases its loop by itself.

### (ii) Interpretation and comparisons

VD comments on this figure: “*This one is supposed to be a trick. I think even the white kids used to play it. It even could have come from there, you know, these string games. It is supposed to be a trick game. Then you pull it tight and let go the thumb one and pull it like that [string comes off]. I’m not exactly sure where this type of game came from. But I know that my people used to show us like, you know, the water, the running water [game], river and all that type of stuff, supposed to be an eagle, and also the parachute, people call that arwe iltyingke, the one that people used to do that way.*”

The trick has been described by Davidson from the Wardaman, at Southern Cross, and among the Ngaluma [Ngarluma] (Western Australia) (1941:880-881, nr. LXXI Bullocky/Fingers Caught), and it was recorded by Robyn McKenzie at Yirrkala as the Yam Thief.<sup>25</sup> Construction methods are identical with that among the Arandic. It was also seen on Murray Island, Torres Strait (Rivers & Haddon 1902:152-153, nr. 12 *Kebe mokeis* ‘the mouse’).

The trick is known in many other areas of Oceania, and there is hardly any variation in its construction. In Oceania it was found in Hawaii (Dickey 1928:151, *Kele-opa* ‘lame Kele’/*Pua-kala* ‘thorny flower’/*Puhi palemo* ‘gliding eel’), on the Loyalty Islands (Maude 1984:61-62, nr. 52 *Fek Alou* ‘Uprooting Maniania’), at the Tuamotus (Emory & Maude 1979:64-65, nr. 46 *Ko peka* ‘crossed’, on Tonga (Maude 1986:20-21, nr. 16 Trick) and on Kiribati (Maude 1958:149), nr. 119 <not named>). The trick is also known in Europe (see Claassen 2019:100-102 Estonia 10) and in many other parts of the world (Jayne 1906:340-344 describes occurrences in various parts of Africa, the Philippines, among Native Americans, in Alaska, and in Japan; see also Storer 1988:328-344, items marked V.C.2. Var.4).

## ARANDIC 21 <not named>

### (i) Construction

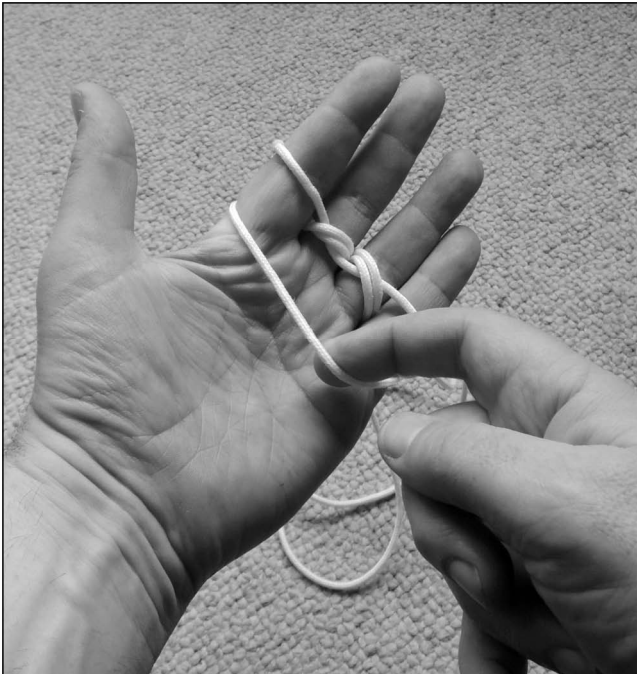
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<sup>25</sup>McKenzie 2016, accompanying video “Yirrkala Core Repertoire Tricks”.

*The instructions below describe Making CLI.*

Use a doubled string, here treated as a single string.

1. Hold LH with palm pointing towards the body, fingers pointing towards the right, and insert L2345 in a string loop so that it hangs down as a *pending loop* from the LH.
2. With RH grasp both strings of the *pending loop* at approximately halfway of the *pending loop* then bring RH over tips of LH to the palmar side of LH, allowing the *pending loop* string originating in L2n to pass between L2 and L3 and the *pending loop* string originating in L5f to pass between L5 and L4.
3. Keeping tension in the strings, bring RH at the near side of LH to the left, giving RH a half twist in an anti-clockwise direction when looking away along R forearm, then allow both RH strings to pass between L1 and L2 to the dorsal side of L1. Bring RH to the right then away from the body, so that both RH strings pass along L1. Make sure that the RH string originating in L5n becomes an upper L1n string.
4. With L5 pick up upper L1n.
5. Pass L2 over intermediate strings down to the near side of lower L1n and hook up this string, turning L2 away from the body and up.



**Fig. 72** - *Arandic 21* during movement 8

6. With R2 from above enter double L1 loop close to L1 then release the strings that were held by the other fingers (the former *pending loop*), then pull tight, bringing RH (R2 pointing towards the ground) to the right and removing L1 from the figure.
7. Keeping tension in the strings, bring RH over LH to the far side of LH, allowing all strings of the R2 loops to pass between L3 and L4. Slightly pull tight, then release R2 loops, allowing them to hang down from the dorsal side of the LH.
8. Pass R2 from above behind the L2n-L5f palmar string segment (fig. 72) and pull it towards the right. The string comes off the LH.

Remark:

- Movement 6. In Making CL3, CL drops all RH strings before she with R2 from above enters double L1 loop.

### (ii) Interpretation and comparisons

The trick was recorded in 1928-29 in Alice Springs.<sup>26</sup> It is common in many parts of the world, and has also been recorded in north, southwest and south Australia (Davidson 1941:881-882, nr. LXXII Cutting off the fingers; Tindale field notes.<sup>27</sup> Robyn McKenzie recorded it at Yirrkala as Handwrap (McKenzie video Yirrkala Core Repertoire Tricks)).

Recordings from New Zealand, PNG, Tonga, the Marquesas and Hawaii are known (see Beer & Claassen 2014:109-111, Wampar A4 *Safog* 'a mussel shell' for comparative details). There are only small construction differences between these recordings.

## 5. ANALYSIS OF THE ARANDIC CORPUS

### *General characteristics*

The Arandic string figure corpus described in this paper consists of twenty-one different figures or series of figures. Three of them (Arandic 19-21) can be considered string tricks, as the focus is on the string coming off the hand instead of the appearance of a final figure. The 'trick game' is recognized as having particular characteristics (see Arandic 20). Most string figures can be made by one person, but a considerable number of figures (Arandic 6, 13a, 14, 18, 19 and X10) are made by two.

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<sup>26</sup>Tindale writes in his field notes after a recording of this trick from Campbell Park: "This game was also obtained at Alice Springs by Miss M. Stitt about 1928-29". Norman Tindale Collection: AA338/1/33. South Australian Museum Archives.

<sup>27</sup>Norman Tindale Collection: AA338/1/7, a recording from the Antakirinja, Lilla Creek, Northern Territory; AA338/1/33, from Campbell Park, South Australia. South Australian Museum Archives.

Six out of the twenty-one figures in the Arandic corpus start with Opening A (and its variants Opening A\* and JA), and eight figures start with the Navajo Opening. Only one figure (Arandic 15) starts with the Murray Opening.

In four of the twenty-one figures (Arandic 01 (final figure of PM), Arandic 07, 09 and 10) a regular Caroline Extension is used to display figures. In the construction of three figures (Arandic 08, 13 and 14) a vertical Caroline Extension is used to display the final or an intermediate figure. Displaying a figure with palms facing the body occurs several times (the intermediate figure of Arandic 01 and 02, Arandic 4, 5 and the intermediate figure of Arandic 12 after movement 8). This technique was also found in other Australian recordings. Anmatyerr woman AC sometimes uses a display method we have referred to as ‘Tumbled Hands Display’ (making AC3 of Arandic 01a, Arandic 3). We have not seen this display method before and it is likely to be a personal innovation by AC.

### ***String loop size***

There is considerable variation in the length of the string loop used by the women. AC uses by far the longest loop, and CL and EC also use a fairly long one. PM and VP use a considerably smaller loop. By doubling the string loop (several times) the size of the string can be adjusted to fit the making of a particular figure. AC, undoubtedly because of the large string loop, never uses a single string loop – in the construction of one figure (Arandic 17) she doubles it over three times (making an octuple string loop). Several women can be seen making the same figure in different makings with different string sizes (see the index to the string figure footage in Appendix 4, where it is specified whether the string loop used is single, double, etc.). When a long string is used, women can make the opening movements only in the part of the string that is closest to them; they extend the hands fully only when a manageable configuration on the hands can be expected.

The size of the string loops that the Arandic women use is considerably longer than the 1.2 to 2.1 meters that D.S. Davidson describes for the Oceanic area (1941:787). In earlier research, the string loop used among the Wampar of Morobe Province, PNG, was described as being made of a string length of between 2.2 and 2.8 meters (Beer & Claassen 2014:20). Only the string of PM fits this description, all other women use longer strings. We do not know the exact reason for this, but it may have to do with the relatively thin wool used.

### ***Construction methods used by Anmatyerr and Arrernte string figure makers***

VD (Arrernte) employs the middle finger more often than the Anmatyerr women do. She consistently uses Opening JA (= Opening A, but using the middle finger instead of the index) where the other women use Opening A or its symmetrical counterpart Opening A\*. She uses her middle finger also in the Caroline Extension (Arandic 07, Arandic 13a/b), where the others use the index finger. Norman Tindale, in his description of a string figure called *wa:mi*

‘snake’, recorded at Alice Springs in 1933, already describes that the index or the middle finger is used in performing what we call a Caroline Extension.<sup>28</sup> The use of the middle finger (rather than the index finger) to draw lines in sand drawing and in applying ceremonial body paint has also been also noted (Green 2014:56-57).

AC is the only Anmatyerr woman to regularly use Opening A. All other Anmatyerr women use Opening A\* (= Opening A, but pick up the right palmar string first). Whereas we first intuitively thought that the choice for Opening A or Opening A\* could have been determined by the handedness of the woman (right handed people would prefer Opening A as the right hand acts first), this is not likely to be the case, since usually the number of left handed people is considerably smaller than right handed people. Furthermore, AC is the only woman to use the mouth to help remove the upper index loop (at Arandic 01a, movement 8), and the only one to use the Tumbled Hands Display to display a figure (Arandic 01a, movement 9, Arandic 03, final figure). PM uses Navajo Opening II and Murray Opening II consistently during the constructions. These are symmetrically opposite versions of Navajo Opening I and Murray Opening I, used by the other women.

Mark Sherman, in his study on Austral Islands string figures (Stokes & Sherman 1994:99-100), already noted a regional distribution of variants in the opening movements of figures identical to Arandic 01. In some areas the upper index loop is made using the mouth, while in others the fingers are used to achieve this. Furthermore, the moment at which the thumb loop is released differs regionally; it can be released before or after the upper index loop has been formed. An analysis of the Arandic collection shows that at Utopia VP (Anmatyerr) creates the upper 2 loop using the mouth, whereas PM (Anmatyerr) creates the upper 2 loop using 3 of the same hand; thus at the same place and time both variants co-exist. At Ti Tree AC and CL (Anmatyerr) use the mouth, as does VD at Alice Springs (Arrernte). All Arandic women release the 1 loop after they have created the upper 2 loop. The regional distribution of these variants in the Oceanic area has as yet not been sufficiently explained.

### *Navajo techniques*

In the Arandic collection the so-called Navajo movement is exclusively performed on the thumb when there are two (or more) near thumb strings. During the Navajo movement the lower near thumb string is passed over the upper (and middle, if there is one) near thumb string and off the thumb, to be dropped on the palmar side of the thumb. String figure makers can apply different techniques to achieve this Navajo movement. The three most common

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<sup>28</sup>Norman Tindale Collection: AA338/2/24, AA338/2/27. South Australian Museum Archives. It is possible that this figure was demonstrated by a Luritja person.

techniques are using the mouth, or the fingers of the other hand to help, or bending the tips of the thumbs (see Claassen 2016:81-85 for a description and study of the execution of the Navajo movement in southwest Alaska).

In the Arandic corpus described in this paper the mouth is sometimes used to execute a Navajo (labeled 'mouth' in Table 1), but most often the middle finger of the same hand bends towards the body and lifts the lower near thumb string over the upper near thumb string and off 1 (as in Arandic 01a movement

**Table 1. Techniques used to perform the Navajo movement in the present collection**

Arandic #	Movement #	Making	Navajo method	
01a	7	VP1, VP2, VP4	3	
		VP3	mouth	
		PM1-2	3	
		AC1-6	mouth*	
		CL1-2	3	
		14	VP2	3
			PM1-2	3
AC1	mouth			
CL1-2	3			
01b	7	VD1, VD2, VD3, VD4, VD5	3	
		14	VD2	3
		VD3	mouth	
02a	7	VD1-5	3	
		14	VD2	3
		VD4-5	mouth**	
02b	7	CL2	3	
		14	CL2	3
03	5	AC1	mouth	
04	7	PM1	3	
05	7	VP1	3	
12	11	VD2-3	3	

\* AC uses mouth also at other points in the construction of the figure

\*\* These makings follow each other chronologically

7 above; labeled '3' in Table 1). Table 1 gives an overview of the techniques used for the Navajo movement.

In Table 1 makings where the mouth is used are marked. The table shows that AC always uses her mouth to perform the Navajo movement, whereas PM and CL always use their middle finger. VP uses the middle finger in all cases except in one case, where she uses the mouth. VD mostly uses the middle finger, but also uses her mouth regularly, most often at movements 14 in the last part of the construction of figures Arandic 01b and 02a (which are close variants of each other). At these movements the hands are relatively close to each other, which could make the performance of a Navajo with the middle finger harder to achieve. But if this was indeed the reason for this, one would further expect that making the same figure with the string doubled (thus half its original size) would yield a higher frequency of the use of the mouth in a Navajo movement; however there is no causal relation between the status of the string loop (single or doubled) and the use of a particular Navajo technique to be found in the material.

We have not encountered the use of the middle finger of the same hand to perform a Navajo movement on the thumb before in other Australian collections. In other parts of Australia, the preferred technique is clearly the use of the mouth.<sup>29</sup> The only other recording we know of the Navajo technique using 3 of the same hand is from the Navajo in North-America (Sherman, Wirt & Wirt 2007:119, nr. 13.1 movement 7, 120, nr. 13.2, movement 7, 131-132, nr. 4.4, movement 4).

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<sup>29</sup>*In Stanley's collection from the Yarrabah near Cairns it is the sole technique (Stanley 1926:83, Snake, step 5), and in McCarthy's Yirrkala collection it is used almost exclusively. The only exception we encountered is when the lower 1 loop, after being lifted off the thumb, is placed over another finger (Maude & Sherman 1995:146-147, nr. 101 movement 8). We found an occurrence of the index loops being Navajo-ed by bending them towards each other and up (Maude & Sherman 1995:157-158, nr. 124, movement 6). Davidson, whose collection covers the whole continent, describes three possible Navajo techniques: the use of the teeth or lips, the use of the tips of thumb and index fingers of the other hand, and bending the fingers to allow the lower loop to slip over the upper loop and off 1 (1941:799). Sometimes he mentions the actual technique employed in a recording (his figures nr. I (bending the thumb, among the Wardaman of Northern Territory), nr. XII (the mouth, among the Wardaman), nr. XXXVII (the teeth, always used for Navajo at Southern Cross and Kellerberrin, Western Australia), nr. XLVII (the mouth, at Melville Island, Northern Territory) and nr. LXV (a Navajo on the RH only, bending the thumb, among the Wagoman of Northern Territory). Kathleen Haddon in her collection describes the principle of Navajo, but she does not specify the techniques employed (1918:124). In a short film on Iwaidja string figures (Northern Territory) a woman uses the mouth to perform a Navajo on the thumb.*

**Table 2 – Comparison between string figures in Arandic corpus and those found in other parts of Australia and in the Oceanic region**

Arandic figure #	Other records in Australia	PNG	Melanesia	Polynesia	Micronesia
1	Northern Territory, Queensland, Western Australia	Highlands, Trobriand Islands, Goodenough Island, Torres Strait	Fiji, Vanuatu, Solomon Islands, New Caledonia, Tikopia	New Zealand, Tonga, Austral islands, Marquesas, Society Islands, Tuamotus, Pukapuka, Hawaii, Tuvalu	Kiribati, Nauru, Caroline Islands, Palau
2					
3	Northern Territory				
4					
5					
6	Western Australia				
7	Northern Territory				
8	Northern Territory				
9	South Australia (first figure), Northern Territory				
10	Northern Territory				
11					
12					
13a	Western Australia, Northern Territory				
13b	Northern Territory				
13c					
14	Northern Territory				

**Table 2, Part 2**

Arandic figure #	Other records in Australia	PNG	Melanesia	Polynesia	Micronesia
15	Northern Territory, Queensland				
16	Northern Territory	Managas & Musa	Solomons, Tikopia, New Caledonia	Tuamotus	
17	Queensland, Western Australia, Northern Territory		(Tikopia)	(Society Islands)	
18	non-Indigenous			Hawaii	
19		North Fly		Hawaii	Caroline Islands
20	Northern Territory, Western Australia	Torres Strait	New Caledonia	Hawaii, Tuamotus, Tonga	Kiribati
21	Northern Territory, Western Australia, South Australia	Goodenough Island, Morobe Province		Tonga, Marquesas, Hawaii, New Zealand	

***The Arandic corpus in an Oceanic context***

Table 2 shows the regions with which the Arandic string figures share (near-) identical figures and construction methods, or substantial (near-) identical parts of a construction method.

There are six figures (shaded in Table 2) that we were not able to find in other recordings from Australia or other parts of Oceania (Arandic 2, 4, 5 11, 12 and 13c). If our inventory is accurately described, a further ten figures (Arandic 3, 6-10, 13a/b, 14, 15) appear to be limited to Australia. This stresses the uniqueness of the Arandic and Australian string figure traditions.

Nevertheless, there are also clear connections with the string figure traditions of other parts of Oceania. Arandic 01 is one of the most common string figures in Oceania, and is made by almost all Arandic women. Arandic 16 is also widespread. String tricks (Arandic 19-21) are often distributed over large parts of the world, and Table 2 confirms this.

Arandic 17 (Bush Potato; Parachute; *Arrwe iltyingke* ‘rock wallaby bundle’)

is a popular string figure in the Arandic area (four women make it), and it is also widespread elsewhere in Australia. It is of note that we did not find identical recordings in other Oceanic collections, whereas it is a popular string figure in large parts of Europe as well, and often identically constructed. The explanation for this is not apparent: was the European figure introduced in Australia by early colonists, or were both invented independently? As Davidson points out, independent parallel development may be the result of the laws of chance, driven by constant factors in string figure construction (Davidson 1941:786-787).

The occurrence of the two-player take-over game known in the English-speaking world as Cat's Cradle (Arandic 18) is also interesting. Although Davidson did not encounter it in Australia in the 1930s, perhaps he missed it among the Arandic peoples since this game occurs in many places of the world, and it was possibly observed in Australia around 1900 by Petrie. Its distribution has not yet been explained satisfactorily.

Arandic 02 appears to be an Arandic string figure made both among Anmatyerr and Arrernte, but we did not find recordings of it in other parts of Australia nor in other parts of Oceania. This is remarkable: as a small variation of a very common figure (Arandic 01) in Oceania, it would be likely that, by means of experimentation, the same variation would have been found in other parts of Oceania as well.

On the basis of Table 2 it is difficult to determine a region in Australia or in Oceania to which the Arandic string figure corpus is most similar. It appears that most similarities between the Arandic collection are with other parts of northern Australia, but perhaps this is because most string figure recordings we know of stem from there. Whether string figures are much rarer in other parts of Australia we do not (yet) know.

## 6. CONCLUDING REMARKS

This study of Arandic string figures brings to light a large number of unique string figures (six out of twenty-one), that have not yet been recorded in other parts of the world. A further ten figures appear to be limited to Australia. This suggests that Arandic and Australian string figures form a distinct string figure tradition. We have described a number of characteristics of these figures, such as the display of a string figure with the palms of the hands facing the body and the use of very long string loops.

We have also found a relatively large proportion of figures with rotational symmetry. Davidson (1941:790) describes this as a rare form of symmetry, where two triangles coincide if one is turned 180 degrees (Type 4 in his original classification). In the Arandic string figure collection we encountered five different figures that show this type of rotational symmetry, compared to only two examples among the 51 different string figures (tricks not taken into account) in Davidson's collection. Further research into symmetry in string fig-

ure traditions of various cultures is necessary to find out more about this and to explore the significance of our initial observations.

The string figure called *wirlpirlpe* 'Bush-Stone Curlew' (Arandic 13) includes a short sung text. In central Australia it is significant that a string figure for this particular nocturnal bird is found both in our collection and in the records of Carl Strehlow, made well over 100 years earlier. The curlew figure is perhaps an example of what Davidson has previously called 'Action' figures (1941:791) where the completion of a fixed figure is not an end in itself but rather creates a visual prop that may be further manipulated. This figure is embedded in a multimodal performative event that includes a visual graphic element (the string), and a small song. As the song is sung movements of the two players who are holding the string animate the string figure and embody the actions of the birds as they 'knock each other down'.<sup>30</sup> The words of the song text may allude to the "remarkable courtship dance" of the curlews where they stamp their feet on the ground "like soldiers".<sup>31</sup> Such string figures, to our knowledge with uses that are largely outside of ceremonial contexts, may well be more common than previously thought in Australia, and require further investigation.

There is much more to be learnt about traditional Australian string figures and their "multitude of uses and levels of connection and meaning" (Huffman 2019:27). As McKenzie (2016:347) writes, "There is a job to be done", for string figure scholars and enthusiasts, in bringing new historical records that come to light and contemporary records together. This study of Arandic string figures fills in some of the gaps in knowledge of string figures in central Australia, and adds to an appreciation of the diverse ephemeral art forms found there, whose real meaning lies "in the making" (ibid: 348). Documentation of these Arandic figures and their variants at various locations in central Australia provides a foundation for future research, which may shed more light on how string figures are learned, taught and transmitted.

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<sup>30</sup>See Henderson & Dobson (1994: 505) for discussion of the verb *nteweme*. The ergative marker +*le* is not present in the string figure song text but its omission may not be uncommon in song texts. The reflexive form of the verb, *ntewelheme* applies to 'stomping the feet', for example "When men dance in *altharte* ceremonies... They stomp their feet down really hard" (ibid).

<sup>31</sup><<https://www.birdlife.org.au/bird-profile/bush-stone-curlew>>, Accessed 2 November 2020.

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## APPENDIX 1. ARANDIC 15, SEQUENCES AS MADE BY PM

PM makes various sequences starting from the string configuration resulting from the opening movement (*Murray Opening II*). She may be experimenting, and does not appear to have a particular sequence in mind. The various sequences she performs on the video footage are presented below, as far as we managed to transcribe them.

### Sequence A

As in Making PM1

1. *Murray Opening II*.
2. With L1, between upper and lower 2n, pick up lower L2f; with R1, between upper and lower 2n and over lower R2f, pick up upper R2f.
3. With L5 over upper L2 loop pick up lower L2n; with R5, over lower R2f and over upper (TV) R2n pick up lower R2n.
4. Observe that the upper L2n-upper R2n, after passing under their respective palmar string, forms a *horizontal string segment* passing under 1 loop. With 3, from the far side, hook up this *horizontal string segment* at the near side of lower 2n, turning 3 down, towards the body and up.
5. Release 1 loop.
6. Identify the *framing string* that runs from lower R2f to upper L2f. Halfway between the hands it is crossed by the string running from upper R2f to lower L2f. With 1, under intermediate strings, pick up respective *framing string*.
7. Display with palms facing each other, fingers pointing away from the body (fig. a1).

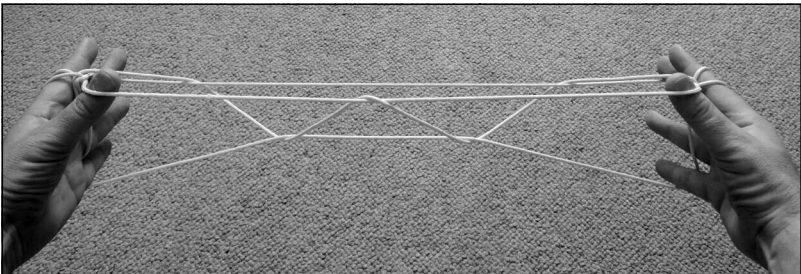


Fig. a1 - Arandic 15 sequence A, after movement 7

8. Release 1 loop.
9. With 1 pick up 3f close to 3; remove 3 from the figure.
10. Identify the *framing string* running from upper L2f through the figure to

lower R2f. With 3, over the 2n-5n palmar string segment, pick up the *framing string*.

11. Movements 8-9.
12. With 3 pick up upper 2n at a point after it has passed under the 2n-5n palmar string segment.
13. Release 1 loop and extend, palms facing each other, fingers pointing away from the body. Zigzag the hands to absorb the slack as fully as possible (fig. a2).
14. Remove 5 and 3 from the figure and extend.

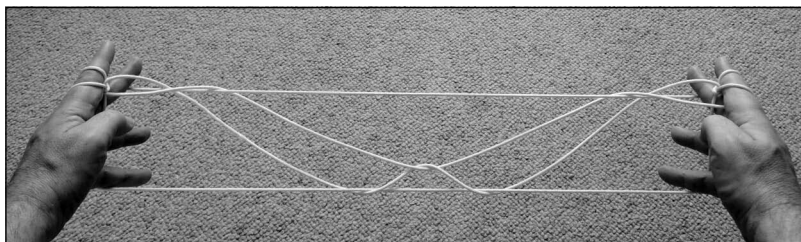
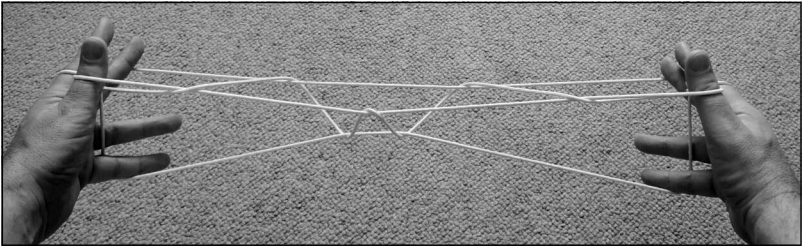


Fig. a2 - Arandic 15 sequence A, after movement 13

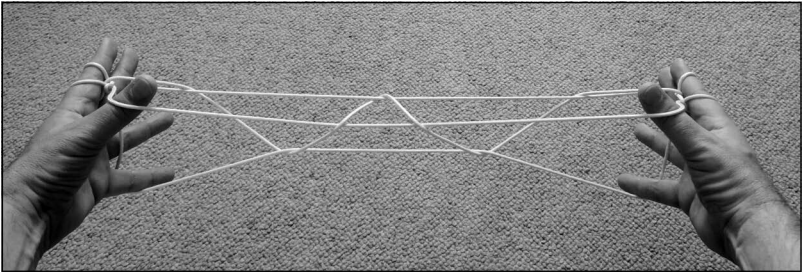
### Sequence B

As in Making PM1

1. [*Murray Opening II.*]
2. Movement 2-4 of Sequence A.
3. Identify the *framing string* that runs from lower R2f to upper L2f. Halfway between the hands it is crossed by the string running from upper R2f to lower L2f. Carefully release 1 loop and do not extend, then with 1, over the loop just released and under other intermediate strings, pick up respective *framing string*.
4. Release 3 loop.
5. Identify the *framing string* that runs from upper L2n to upper R2n through the figure. With 3, over the 2n-5n palmar string segment, pick up the *framing string* (= the string released in movement 4).
6. Display with palms facing each other, fingers pointing upwards (fig. a3).
7. Release 3 loop, then with 3 from above remove 1 loop.
8. Identify the *framing string* that runs from upper L2n to upper R2n through the figure (a slightly slack TV string). With 1, under intermediate strings, pick up the *framing string* after it has passed under upper 3n. Display with palms facing each other, fingers pointing away from the body (fig. a4).
9. Release 5 loop.
10. With 5 from below remove 3 loop.

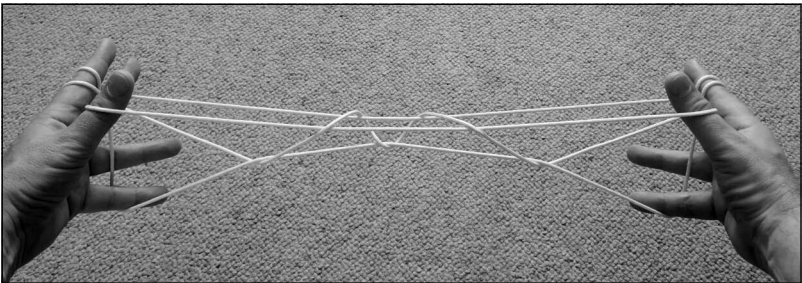


**Fig. a3** - *Arandic 15 sequence B, after movement 6*



**Fig. a4** - *Arandic 15 sequence B, after movement 8*

11. Identify the *framing string* that runs from lower L2n to lower R2n ( a slightly slack TV string). With 3, over palmar string segment and the string running from lower L2f to upper R2f, from the far side pick up *framing string*.
12. Release 1 loop and zigzag the hands to absorb the slack. Then with 1 take up the 1 loop again. Display with palms facing each other, fingers pointing away from the body (fig. a5).



**Fig. a5** - *Arandic 15 sequence B, after movement 12*

13. Release 3 loop.
14. Movement 11-12.
15. Release 3 loop then 1 loop and 5 loop.

### Sequence C.

As in Making PM1

1. [*Murray Opening II.*]
2. Movements 2-7 of Sequence A.
3. Remove 3 from the figure.
4. Identify the *framing string* that runs from upper L2n to upper R2n. Pass 3, under upper 2f, over *framing string* and hook up this string, passing 3 down, away from the body under upper 2f and up. Remove 1 from the figure, then with 1 pick up 3n close to 3. Remove 3 from the figure (fig. a6).

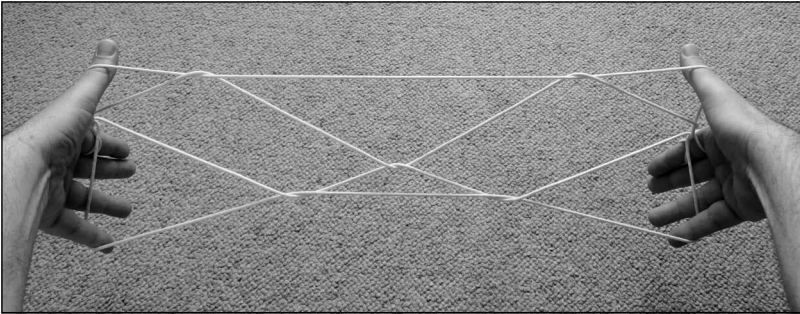


Fig. a6 - Arandic 15 sequence C, after movement 4

5. With L3, over L2n-L5n palmar string segment, pick up upper L3f after it has passed under L2n-L5n palmar string segment; simultaneously with R3, over R2n-R5n palmar string segment, pick up lower R2f after it has passed under R2n-R5n palmar string segment.
6. Remove 1 from the figure, then with 1 pick up 3f close to 3. Remove 3 from the figure.
7. Identify the *framing string* that runs from upper L2n to upper R2n. With 3 pick up *framing string* and display, palms facing each other, fingers pointing upwards, fingers of each hand spread away from each other as far as possible.
8. Release 1 loop and display, palms facing each other, fingers pointing away from the body (fig. a7).
9. Remove 3 and 5 from the figure and extend.

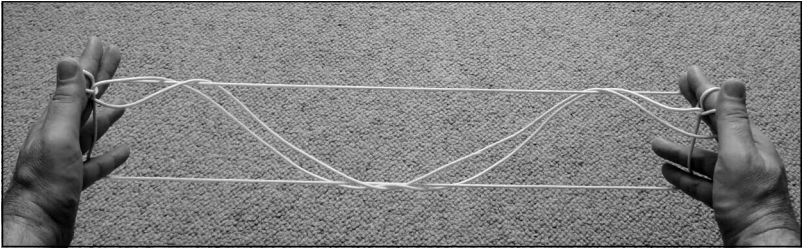


Fig. a7 - Arandic 15 sequence C, after movement 8

### Sequence D

As in Making PM1

1. [*Murray Opening II.*]
2. Movements 2-5 of Sequence B.
3. Release 1 loop.
4. With 1 pick up 3f. Remove 3 from the figure.
5. Identify the *framing string* that runs from upper L2f to lower R2f through the figure. With 3 pick up *framing string*.
6. Release 1 loop.
7. With 1 pick up 3f; remove 3 from the figure.
8. Identify the *framing string* that runs from upper L2n to upper R2n. With 3 pick up *framing string*.
9. Release 5 loop, then with 5 from below remove 3 loop close to 3 (fig. a8).

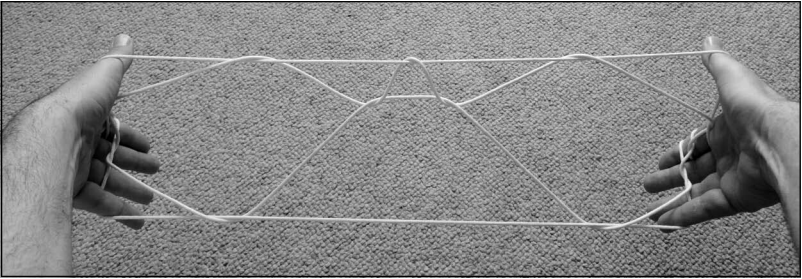
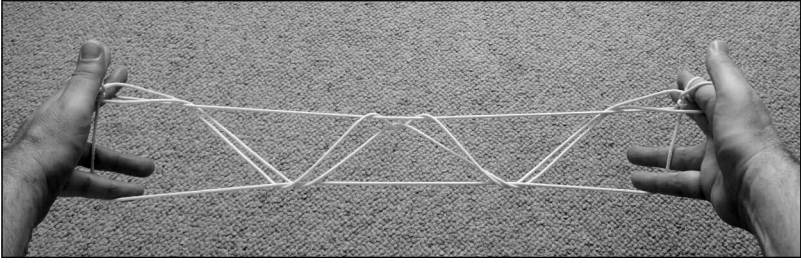


Fig. a8 - Arandic 15 sequence D, after movement 9

10. With 3 pick up the continuation of lower 2n, after it has passed under upper 2n-5n palmar string segment.
11. Release 1 loop and display with palms pointing away from the figure. Zig-zag the figure to absorb the slack (fig. a9).



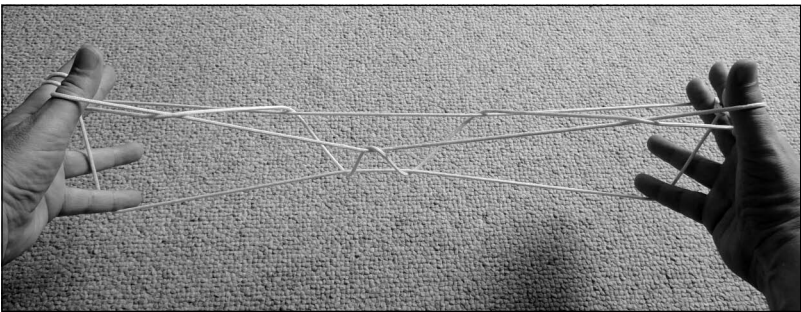
**Fig. a9** - Arandic 15 sequence D, after movement 11

12. Remove 3 and 5 from the figure and extend

### Sequence E

As in Making PM1

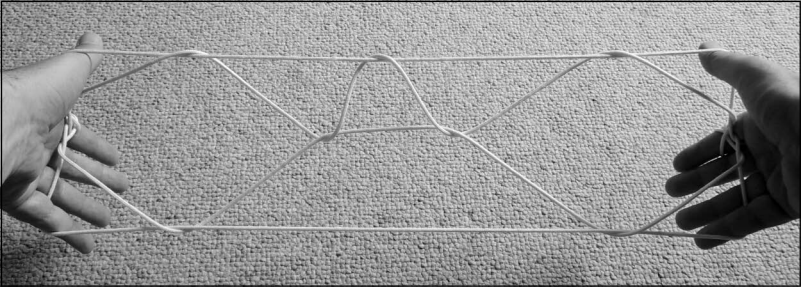
1. [*Murray Opening II.*]
2. Pass L1 from above in upper L2 loop and pick up lower L2f; return through upper L2 loop. Simultaneously with R1 pick up upper R2f.
3. Pass 3 over 2f and upper 2n and pick up lower 2n.
4. With 5 from below remove 3 loop.
5. Identify the *framing string* that runs from upper L2n to upper R2n. With 3, over intermediate strings, from the far side pick up *framing string*.
6. Gently release 1 loop, then with 1, over the loop just released, pick up the string that runs from (upper) L2f to lower R2f through the figure (fig. a10).



**Fig. a10** - Arandic 15 sequence E, after movement 6

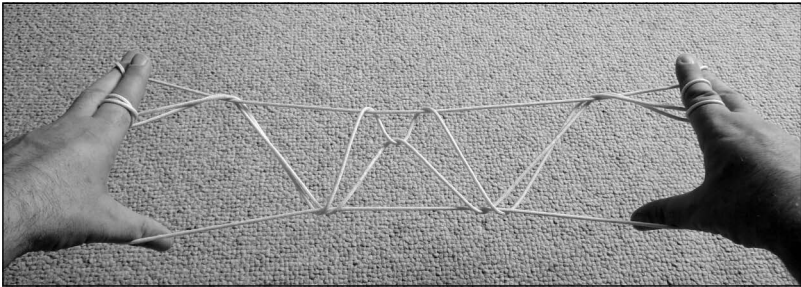
7. Release 1 loop, then with 1 pick up 3f. Remove 3 from the figure.
8. Identify the *framing string* running from upper L2f to lower R2f. With 3, over 2n-5n palmar string segment, pick up *framing string*.
9. Release 1 loop, then with 1 pick up 3f and remove 3 from the figure.

10. Identify the *framing string* running from upper L2n to upper R2n through the figure. With 3, over 2n-5n palmar string segment, pick up *framing string*.
11. Release 5 loop, then with 5 from below remove 3 loop (fig. a11).



**Fig. a11** - Arandic 15 sequence E, after movement 11

12. Identify the *framing string* running from lower L2n to lower R2n through the figure. With 3, over 2n-5n *palmar string segment*, from the far side pick up *framing string* just after it has passed under the *palmar string segment*.
13. Remove 1 from the figure. Display with palms facing the ground, fingers pointing away from the body. With 1 from below share 5 loop and press down TV 5f (fig. a12).



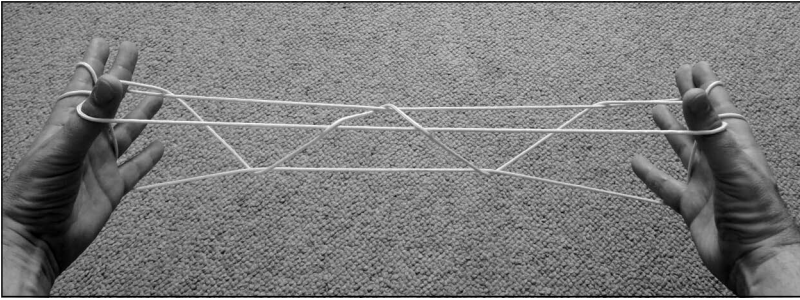
**Fig. a12** - Arandic 15 sequence E, after movement 13

14. Remove 1, 3 and 5 from the figure and extend.

### Sequence F

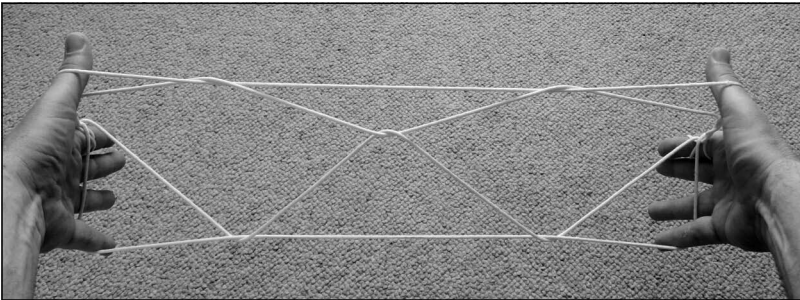
As in Making PM2

1. *Murray Opening II*.
2. Movements 2-4 of Sequence B.



**Fig. a13** - *Arandic 15 sequence F, after movement 4*

3. With 3 from above remove 1 loop.
4. Identify the *framing string* running from upper L2n to upper R2n through the figure. With 1, under intermediate strings, pick up *framing string* (fig. a13).
5. Remove 3 from the figure, and display with palms facing each other, fingers pointing away from the body (fig. a14).



**Fig. a14** - *Arandic 15 sequence F, after movement 5*

6. The R1 loop is closed by a *R closing segment* originating in lower R2f, and the L1 loop is closed by a *L closing segment* originating in upper L2f. Each *closing segments* is one of the near sides of a *diamond*. The *far sides* of each *diamond* are formed by a string running from lower L2f to upper R2f through the figure. Pass L2 from above in L1 loop, bring *L closing segment* on its tip to the far side over *left far side* of the *L diamond*, then hook up *left far side* of the *L diamond* by turning L2 towards the body and up. Simultaneously pass R3 from above in R1 loop, bring *R closing segment* on its tip to the far side over *right far side* of the *R diamond*, then hook up *right far side* of the *R diamond* by turning R3 towards the body and up.

- Release 1 loop, then release 5 loop, remove R3 from the figure and release upper L2 loop.

### Sequence G

As in Making PM3

- Murray Opening II.*
- Movements 2-3 of Sequence B (fig. a15).

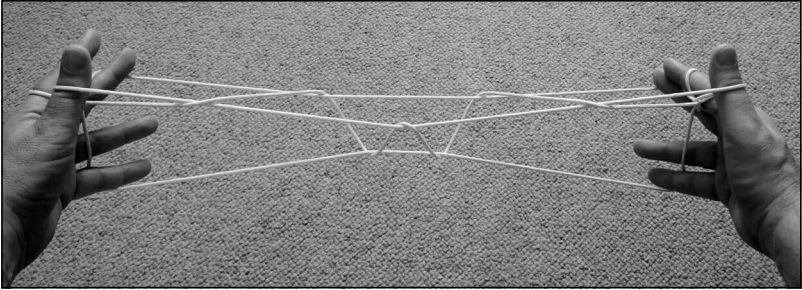


Fig. a15 - Arandic 15 sequence G, after movement 2

- Remove 1, 3 and 5 from the figure.

### Sequence H

As in Making PM4

- Murray Opening II.*
- Movements 2-4 of Sequence B.
- With 3 from above remove 1 loop.
- Identify the *framing string* running from upper R2n to upper L2n through the figure. With 1, under intermediate strings, pick up *framing string*.

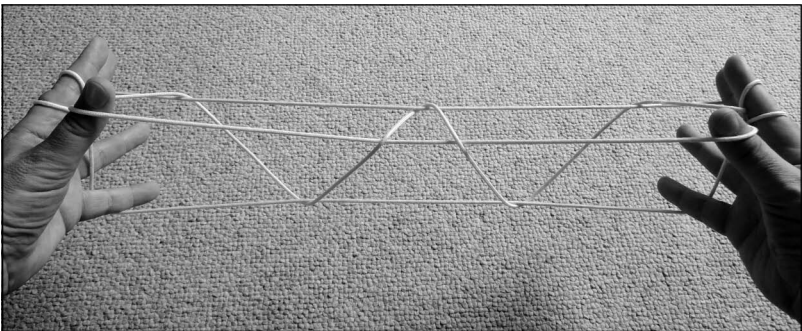


Fig. a16 - Arandic 15 sequence H, after movement 5

5. Display with palms pointing towards each other, fingers pointing away from the body (fig. a16).
6. Remove 1, 3 and 5 from the figure.

### Sequence I

As in Making PM6

1. *Murray Opening II.*
2. Movements 2-3 of Sequence B..
3. With 2 from above remove 1 loop close to 1 and allow it to become an upper 2 loop.
4. Remove 3 from the figure.
5. Observe the *framing string* running from middle L2n to middle R2n through the figure. With 1 under intermediate strings pick up *framing string* (fig. a17).

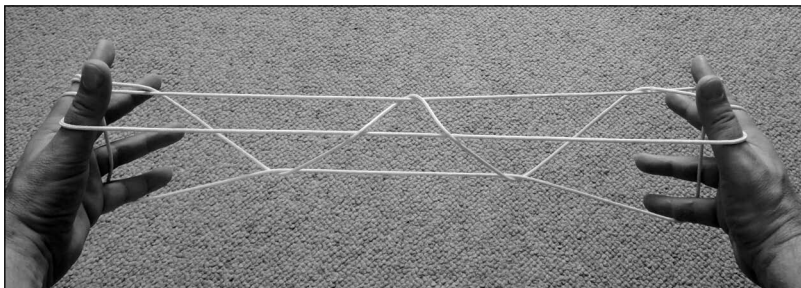


Fig. a17 - *Arandic 15 sequence I, after movement 5*

### Sequence J (partly transcribed)

As in Making PM5

1. *Murray Opening II.*
  2. Pass L1 from above in upper L2 loop and pick up lower L2f; return through upper L2 loop. Simultaneously with R1 pick up upper R2f.
  3. Pass 3 over 2f and upper 2n and pick up lower 2n.
  4. With 5 from below remove 3 loop.
  5. Remove 1 from the figure.
  6. With R1 pick up upper R2f and with L1 pick up lower L2f (the continuation of upper R2f).
  7. With R2 from above remove R1 loop.
- [continuation difficult to see, not leading to a final figure.]

## APPENDIX 2. ADDITIONAL DEFINED MOVEMENTS

### Opening A\*

- a. Position 1.
- b. With L2 pick up R palmar string.
- c. With R2 from above enter L2 loop, then pick up L palmar string; return through L2 loop.

### Opening JA

- a. Position 1.
- b. With R3 pick up L palmar string.
- c. With L3 from above enter R3 loop, then pick up R palmar string; return through R3 loop.

### Navajo Opening I

- a. Hold LH with its palm facing the body, fingers pointing towards the right. Insert L2345 into a string loop so that the string loop hangs down from L2345, then close L5 to the palm. A *pending loop* hangs down from the LH, which has a *palmar string* (closest to the body) and a *dorsal string* (farthest away from the body).
- b. With RH grasp the *dorsal string* of the *pending loop* at a point below L5 and wrap it once around L234 in a clockwise direction (when looking at tips of L234); release grip of R123 to drop the string along the dorsal side of L234 (but keep R45 closed to the RH palm over the string they hold).
- c. Pass R2 from below along the dorsal side of L234 under both strings running along the dorsal side of L234, remove L34 from the shared L234 loop, then turn 2 towards the body, down, away from the body under both strings running between 2n and through the *pending loop* and up. Simultaneously pass 1 towards the body, down and away from the body through the *pending loop*, thus picking up respective palmar string segment of the *pending loop* (a continuation of 2f on the other hand). Bring hands to Normal Position. There is a loop on each 1 and 2; 1f and 2n are TV strings.

### Navajo Opening II

- a. Hold RH with palm facing the body, fingers pointing to the left, and place a string loop over R23 so that a *pending loop* hangs down from R23.
- b. With LH grasp far string of the *pending loop*, and twist it once around R23 in an anti-clockwise direction (when looking at tips of R23), then, the LH keeping its string, pass L2 from below (= towards the left) behind dorsal R23 string segment, then turn R23 and L2 down, away from the body and up; remove R3 from the shared R23 loop. Simultaneously pass 1 away from the body through the *pending loop* and away from the body, releasing grip of LH (which held the far string of the *pending loop*). Bring hands to Normal Position. There is a 1 loop and a 2 loop, and 1f and 2n are TV strings.

**Murray Opening I**

- a. Hold LH with its palm facing the body, fingers pointing towards the right. Insert L2345 into a string loop so that the string loop hangs down from L2345, then close L5 to the palm. A *pending loop* hangs down from the LH, which has a *palmar string* (closest to the body) and a *dorsal string* (farthest away from the body).
- b. With RH grasp the *dorsal string* of the *pending loop* at a point below L5 and wrap it once around L234 in a clockwise direction (when looking at tips of L234); release grip of R123 to drop the string along the dorsal side of L234 (but keep R45 closed to the RH palm over the string they hold).
- c. Pass R2 from below behind the two L234 dorsal string segments, then raise 2 and separate hands, removing L345 and R45 from the figure.

**Murray Opening II**

- a. Hold RH with palm facing the body, R23 pointing towards the left, and hang a string loop on R23.
- b. With help of the RH twist R23f once around R23 in an anti-clockwise direction when looking at the tips of R23.
- c. With L2 from below share double R23 loop at the dorsal side of R23. Separate hands, remove R3 from the shared R23 loop, and turn tips of 2 towards the body and up. Bring hands to Normal Position. There are two 2 loops; each 2n is TV.

### APPENDIX 3. COLLECTIONS USED IN THE COMPARATIVE ANALYSIS

Table A1 lists the Australian collections that have been used for comparative analysis.

**Table A1. Australian string figure collections used in the comparative analysis**

Location	Year	Collector	Nr. of figures and series of figures	Reference
Milang (South Australia)	1914	C. Herdman	6	K. Haddon 1918
Victoria	1914	J.W. Layard	1	K. Haddon 1918
Cape York (Queensland)	1914	Kathleen Haddon	17	K. Haddon 1918
Near Cairns, Queensland	1926	George Arthur Vickers Stanley	17	Stanley 1926
Various parts of Australia	1930s	Daniel Sutherland Davidson and Norman Tindale	51 (Davidson (1941:776) gives 68 different figures, but he counts the figures in a series as separate figures).	Davidson 1941
Yirrkala (Arnhem Land, Northern Territory)	1948	Frederick D. McCarthy	Since (nearly) identical figures with different names are listed as separate figures in this collection, it is not exactly clear how many different figures it contains. Robyn McKenzie has examined this (193 string figures mounted on boards) with Ngarrawu Mununggurr (McKenzie 2011)	McCarthy 1960; Maude & Sherman 1995

**Table A1, part 2**

Location	Year	Collector	Nr. of figures and series of figures	Reference
Western Australia, South Australia, Northern Territory	1930s	Norman Tindale, Miss M. Stitt, Mr. Rolland	24 different string figures	Unpublished field notes in the South Australian Museum, Adelaide.
Western Arnhem Land, Northern Territory	2005	Judy McKinty	4 sequences of figures	Film: Western Arnhem Land string game (7'05", color, sound). Transcripts: P. Noble, this volume.
Northern Territory	?	Bruce Birch	6 different figures	Film: Iwaidja (5'38", color, sound).
Yirrkala (Arnhem Land)	2010s ?	Museum of Contemporary Art Australia	5 different figures	Film: String figures demonstrated by Yirrkala artists. (4'29", color, sound) <sup>32</sup>

For other parts of Oceania representative collections have been, to some extent subjectively, selected:

- Papua New Guinea: Noble 1979; Maude 1987; Beer & Claassen 2014.
- Melanesia: Solomon Islands (Maude 1978); New Caledonia (Maude 1984); Fiji (Hornell 1927).
- Micronesia: Kiribati (Maude & Maude 1958); Nauru Island (Maude et al. 2001).
- Polynesia: Marquesas and Society islands (Handy 1925); Hawaii (Dickey 1928); New Zealand (Andersen 1927).

In many cases additional sources have, however, been included in the comparative remarks. These remarks have to be treated with some caution, however. They can never be complete, and it is possible that some identical or closely related recordings have escaped our attention. Furthermore, the fact that a figure has not been recorded in a particular collection does not necessarily mean that the figure is not known in the region from which the collection stems.

<sup>32</sup><<https://www.youtube.com/watch?v=S-EPzrYts5s>>, accessed 26th of July 2020. The film was published by the Museum of Contemporary Art.

## APPENDIX 4 – INDEX TO THE FILM FOOTAGE

Table A2 gives an overview of the media files that were the source material for this analysis of Arandic string figures. As filming was done simultaneously with two cameras, one filming from the front (F), one from above (T), for each video file listed in Table A2 there is a companion video file that was recorded by the other camera. In some instances, the recordings from the two camera views were not exactly the same length.

**Table A2. Overview of Arandic field recordings used in this paper**

Archival session name	Media	String figure maker	Date	Place	Length of recording (mm:ss)
STR-20120620	String20120620-VPety-01T.mov	VP, PM	20 <sup>th</sup> of June 2012	Ilyenty outstation, Utopia	14:03
STR-20120620	String20120620-VPety-02T.mov	VP, PM	20 <sup>th</sup> of June 2012	Ilyenty outstation, Utopia	11:17
STR-20120620	String20120620-VPety-03T.mov	VP, PM	20 <sup>th</sup> of June 2012	Ilyenty outstation, Utopia	28:57
STR-201212221	STR-20121222-F-01.mov	AC	22 <sup>nd</sup> of December 2012	Victoria	2:15
STR-20121222	STR-20121222-F-02.mov	AC	20 <sup>th</sup> of June 2012	Hansen River, Ti Tree	6:01
STR-20121222	STR-20121222-F-03.mov	AC	20 <sup>th</sup> of June 2012	Hansen River, near Ti Tree	4:51
STR-20070814	dvF_VMD_070814.mov	VD	14 <sup>th</sup> August 2007	Alice Springs	31:16
STR-20120622	String20120622-TiTree-01T.mov	EC, CL	22 <sup>nd</sup> of June 2012	Hansen River, near Ti Tree	7:48
STR-20120622	String20120622-TiTree-02T.mov	EC, CL	22 <sup>nd</sup> of June 2012	Hansen River, near Ti Tree	13:55

Table A3 gives an overview of the makings of the various figures in the film footage, indicating the women who made the figure, the number of makings (complete or partially) and the type of string used.

**Table A3. Overview of the string figure makings in the film footage**

Arandic #	Made by	Total # of makings [completed/part]	Type of string used
01a	VP	4 [1/3]	Single
	PM	2 [1/1]	Single
	AC	6 [0/6]	Double
	CL	2	Double
01b	VD	5 [2/3]	Double (3 makings), Single (2 makings)
2	VD	5 [3/2]	Double (3 makings), Single (2 makings)
	CL	2 [1/1]	Quadruple (1 making), Double (1 making, construction halted)
3	AC	1	Double
4	PM	1	Single
5	PM	1	Single
6	EC & CL	3 [1/2]	Single
7	VD	8 [5/3]	Double (4 makings), Single (4 makings)
8	VP	3 [2/1]	Single
9	VP	2 [1/1]	Single
	EC	4 [2/2]	Quadruple (2 makings), Double (2 makings, both failed)
10	PM	2 [1/1]	Single
11	PM	1	Single
12	VD	3 [1/2]	Double
13a	VD	3 [2/1]	Double (2 makings), Single (1 making)

**Table A3, part 2**

Arandic #	Made by	Total # of makings [completed/part]	Type of string used
13b	VD	9 [1/8]	Single (6 makings), Double (3 makings)
13c	CL	3	Double (2 makings), Quadruple (1 making)
14	VP & PM	2 [1/1]	Single
15	VP	2	Single
	PM	6	Single
16	VP	4 [1/3]	Double
17	VD	3	Double
	AC	6	Double (3 makings), Quadruple (2 makings), Octuple (1 making)
	EC	1	Quadruple
	VP	1	Double
18	VP & PM	1	Single
19	AC	1	Double
20	VD	2	Single
21	CL	3	Quadruple