Received: 3 December 2021 | Accepted: 20 March 2022

DOI: 10.1111/taja.12428

ORIGINAL ARTICLE

TAJA The Australian Journal Of Anthropology WILEY

The archipelago of meaning: Methodological contributions to the study of Vanuatu sand drawing

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Funding information
Crafoordska Stiftelsen; Endangered Languages Documentation Programme; Vetenskapsrådet

Abstract

Vanuatu sand drawing has been listed by UNESCO since 2006 and has both fascinated and puzzled researchers from various disciplines for over a century. The inherent multi-dimensionality of the practice makes analysis complex, and until very recently developing a systematic methodology to study this intangible art form was difficult. This paper aims to contribute to filling this gap with the analysis of a corpus of sand drawings documented on the island of Paama in 2019. A detailed methodological toolkit is proposed to better understand the complex morphology of the drawings and their multi-layered meaning and function. This paper offers the first few steps along a journey toward designing integrated comparative methods of analysis that can not only potentiate unprecedented insights into the cultural practice of Vanuatu sand drawing, but also more broadly help us understand how worldviews, beliefs and societal structures spread across time and space.

KEYWORDS
art, cultural studies, culture, indigenous people

1 | INTRODUCTION

Mutis en atan 'tracing on the ground' is the name given in Paamese, one of the 138 Oceanic languages spoken in the exceptionally linguistically diverse Republic of Vanuatu, for sand drawing (François et al., 2015, p. 138). Paama is one of the northern-central Vanuatu islands where sand drawing, the

UNESCO-listed intangible heritage of humanity (UNESCO, 2006), is practised and which will be the focus of this paper. The Vanuatu archipelago had been visited by ethnologists before Layard's immersive fieldwork on Malekula in 1914–1915 but they had missed the existence of this intimate practice 'never staying long enough in one place to gain confidence in Vanuatu', as Huffman (1996a, p. 248) explains. Layard's notes were published decades later (Layard, 1936), and it was Deacon's work (Deacon & Wedgwood, 1934) that was to be foundational to the study of Vanuatu sand drawing. 'Sand-tracing' as Layard (1942) called it, has been interpreted in various ways, sometimes only to support the already written conclusions of various theories like the diffusionist heliolithic theory (e.g., Layard, 1936, 1942; Rivers, 1914) that claimed sand drawings were labyrinths originating from ancient Egypt. Other approaches of the early 20th century included that of Haddon—a trained biologist—and his student Wedgwood who published Deacon's work (Deacon & Wedgwood, 1934) and adopted 'the biology of art' approach. This generally treated Indigenous people as living fossils that were stuck in time and whose 'ornaments' were mere imitations of natural forms deprived of aesthetic value. Riegl (1992) critiqued this approach, since it denied the artist's creative impulse—or *Kunstwollen*—and although Page Rowe (1936) never acknowledged Riegl, he applied this principle to studying Vanuatu sand drawing. Page Rowe, however, adopted an equally extreme, if contrary approach, denying that the drawings had any meaningful referential values.

The study of Vanuatu sand drawing then was mostly forgotten for four decades until it was picked up again by an ethnomathematic approach (Ascher, 1988, 1991). Huffman (1996a) took stock of the contributions made by the literature so far and Gell (1998) mentioned the practice in a short section of his influential *Art and Agency*. Soon after the Vanuatu Cultural Centre and Zagala (2002) worked together to make Vanuatu sand drawing recognised as a 'Masterpiece of Humanity's Cultural and Intangible Heritage' which was proclaimed in 2006 (UNESCO, 2006). This prestigious inclusion put the practice once again into the spotlight and its materialisation of kinship concepts and structures were discussed in studies by Taylor (2005), Rio (2005) and Patterson (2006). More recent descriptions of the practice include the works of Rory (2013) and Cabane (2016), an analysis from an aesthetics perspective (Lind, 2018), a comparative study between sand drawing and string figures (Vandendriessche, 2022), and an ethnomathematics analysis (Vandendriessche & Da Silva, 2022). Two PhD theses on Vanuatu sand drawing have been recently defended by Baron (2020) and Da Silva (2022), offering two extensive and thorough contributions to the field of investigation.

Overall, there has been a noticeable progression in the literature from using sand drawing as mere accessories to support (diverging) existing theories to placing them (deservedly) at centre stage. The descriptive and analytical work relating to Vanuatu sand drawing outlined above obviously cannot be done without their documentation. More than 400 sand drawings have been collected (Baron, 2020; Cabane, 1994, 1995, 1997; Deacon & Wedgwood, 1934; Devylder, 2014, 2019; Franjieh, 2018; Rodman, 1991; Tailhade, 1978a, 1978b; von Prince, 2015).

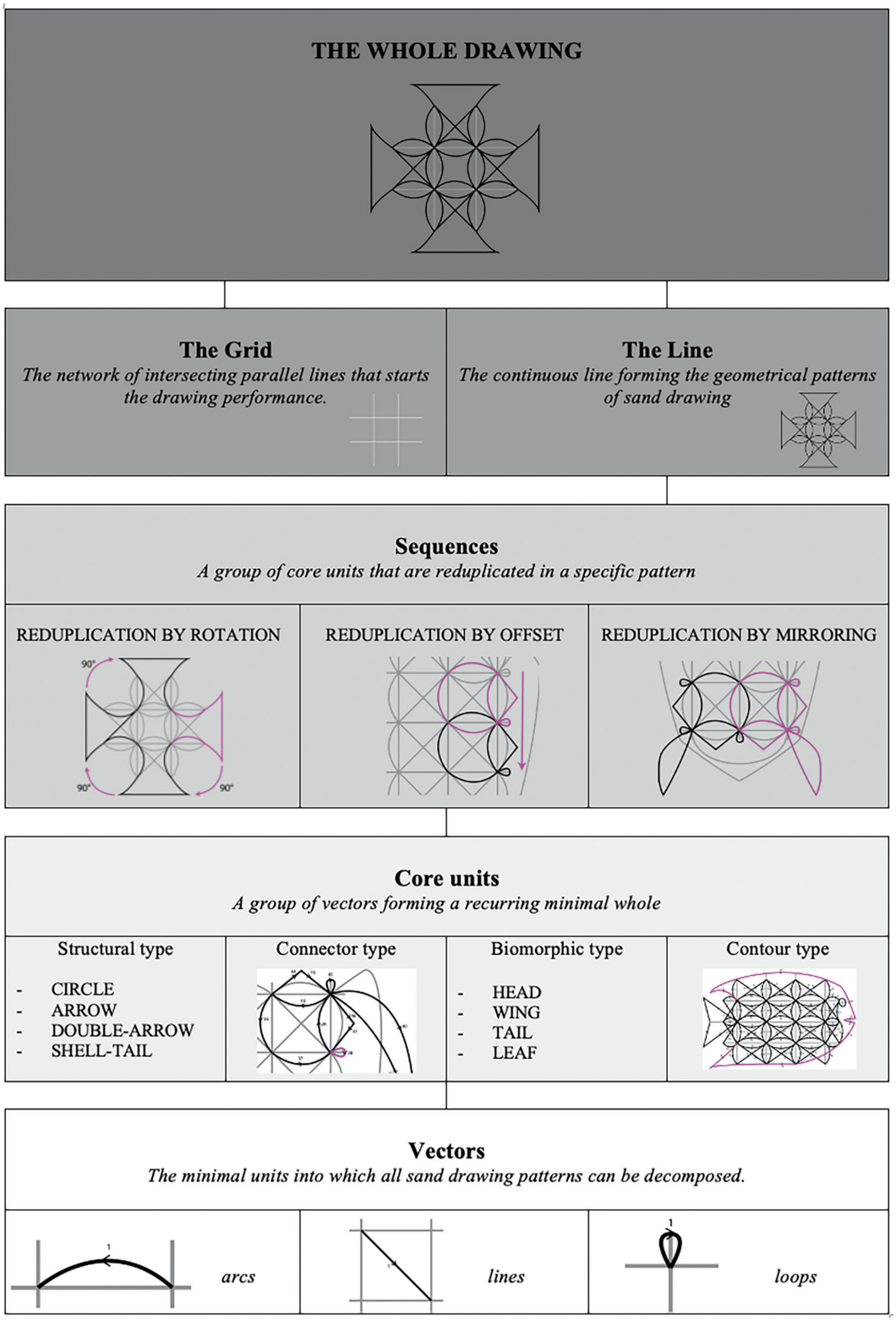
PHOTOGRAPH 1 Matthew Joe performs the laplap sand drawing

This suggests momentum in the field and a critical mass of collected material, but, until very recently, developing systematic methods of analysis has not been on the agenda. We will only gain insights into the complex practice of Vanuatu sand drawing if we join forces to make the collected data accessible

PHOTOGRAPH 2 The audio-video recording set up

PHOTOGRAPH 3 The Talimbur and Siel leaves planted in the ground set a respectful perimeter for the drawing space

TABLE 1



and develop an integrated method of analysis. This paper is driven by this latter ambition and proposes the first step toward a multi-dimensional method of analysing a corpus of Vanuatu sand drawings.

2 | SOME BACKGROUND

Any short introduction to this complex multi-dimensional cultural practice will always be incomplete, but one can nonetheless be introduced to the practice by looking into its prototypical working principles. A sand drawing performance on Paama starts with cleaning the fine black volcanic ground with the palm of the hand or with a coconut leaf broom. The sand drawer then sprinkles some white ashes over the drawing space so as to strengthen the contrast between the black line and its white background. Sand drawers then use their index finger and trace a grid through which their finger will draw a continuous line that takes an intricate geometrical path. Prototypically, the rule is that the line should start and end at the same point and never take the same path twice. When the tracing of the line is done, the sand drawer will contemplate the drawing and begin a verbal description of its various parts, delivering some of its meaning to the audience, with whom there is often an interaction. The sand drawer then erases the pattern and the performance is finished.

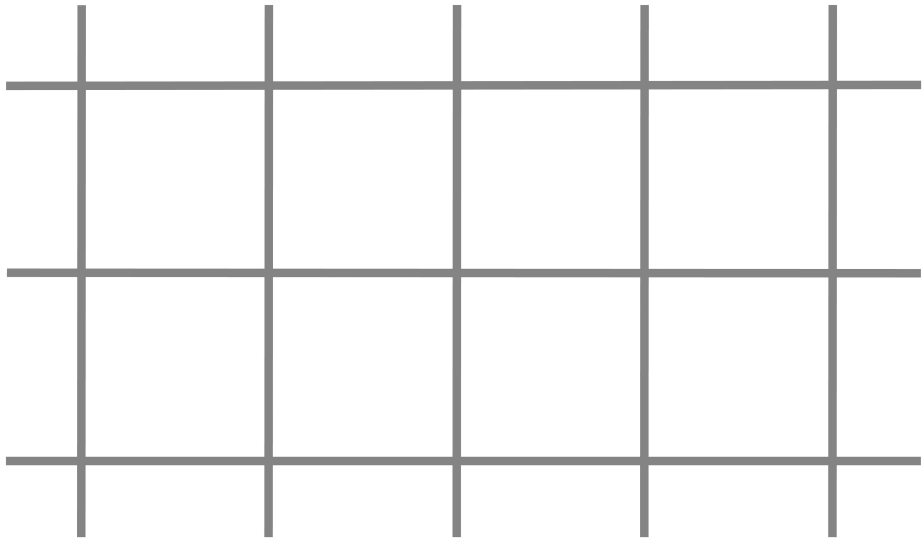


FIGURE 1 A 3×5 line grid

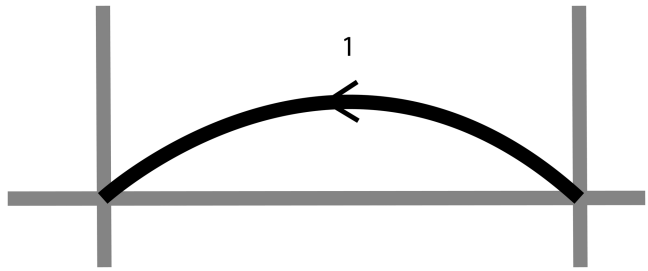


FIGURE 2 Vector type: Arc

A dimension of Vanuatu sand drawing is its inherently polysemiotic nature. Polysemiotic communication involves the combination of different *semiotic systems* like language, gesture and depiction in the formulation of a single message (Stampoulidis et al., 2019; Zlatev, 2019; Zlatev et al., 2020).

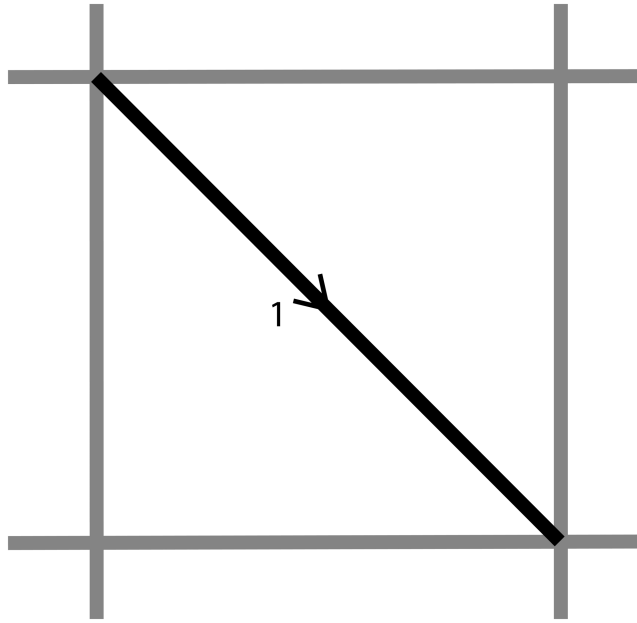


FIGURE 3 Vector type: Line

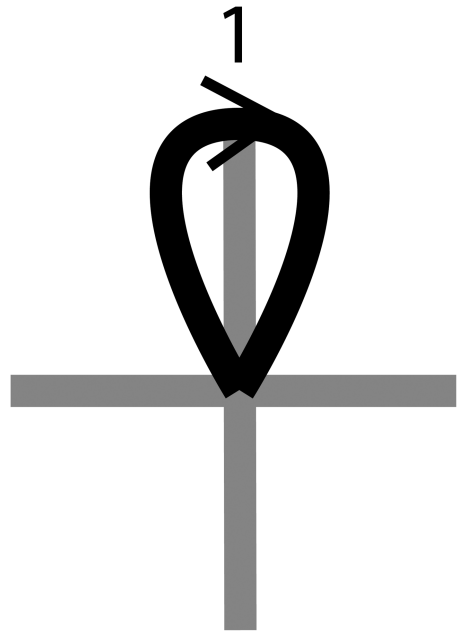


FIGURE 4 Vector type: Loop

This dimension is illustrated in Matthew Joe's performance (Photograph 1) of the *laplap* sand drawing—Vanuatu's national dish—that he augments with verbal explanations and iconic, that is, resemblance-based, gestures enacting the various steps of cooking the dish in a hot stone oven. The

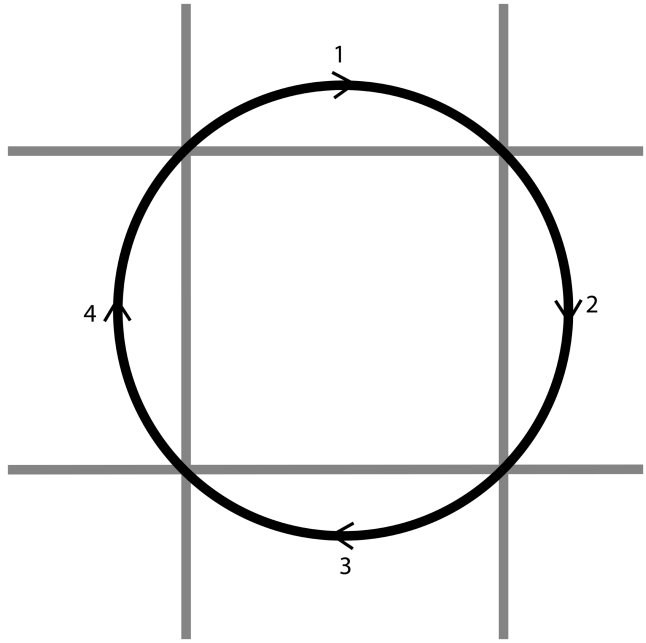


FIGURE 5 Circle

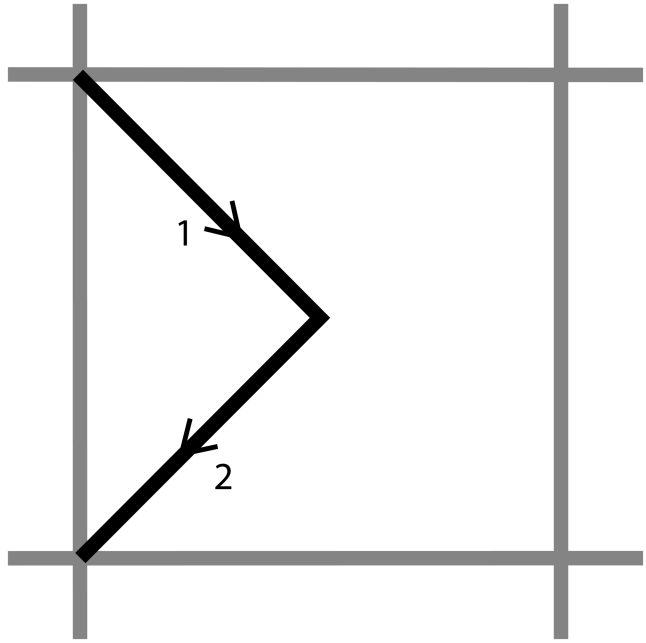


FIGURE 6 Arrow

whole *laplap* drawing is thus produced as an interaction of speech, gesture and depiction that are combined by Matthew to deliver the polysemiotic meaning of the performance.

This video recording and the material analysed in this paper[1] is a collection of 23 video-recorded sand drawing performances and 10 iPad drawings collected on Paama in June and July 2019. The performances were captured by two cameras: a wide-angle camera facing the sand drawer and audience and a bird-eye view camera mounted on a tripod as displayed in Photograph 2.[2] The performances and interactions between the sand drawers and their audience were done in Paamese, the language spoken on the island, and were also transcribed, morphosyntactically glossed, and translated into English using the software ELAN. In addition, the performers' gestures were segmented and annotated. The iPad drawings were screen-recorded while performed on the application Scribblify[3] and synchronised with audio-recorded verbal descriptions in ELAN. The 33 sand drawing performances and video-recorded informed consents of all participants can be accessed openly from the ELAR archive (Devylder, 2019); these are in addition to a variety of other media resources that offer a glimpse into the richness of Paamese culture and language. I have vectorised all sand drawings of this collection with Adobe Illustrator for the sake of clarity and have numbered each vector in the way Deacon did 100 years ago to somehow make the static diagrams more dynamic.

A key dimension of Vanuatu sand drawing is that it constitutes intellectual property. This knowledge is indeed protected by traditional copyrights that have deep significance in Vanuatu culture (Huffman, 1996b). Ownership of a sand drawing is tied to its place of origin and if it is performed somewhere else, a displacement ritual must be performed, one which I have been privileged to witness

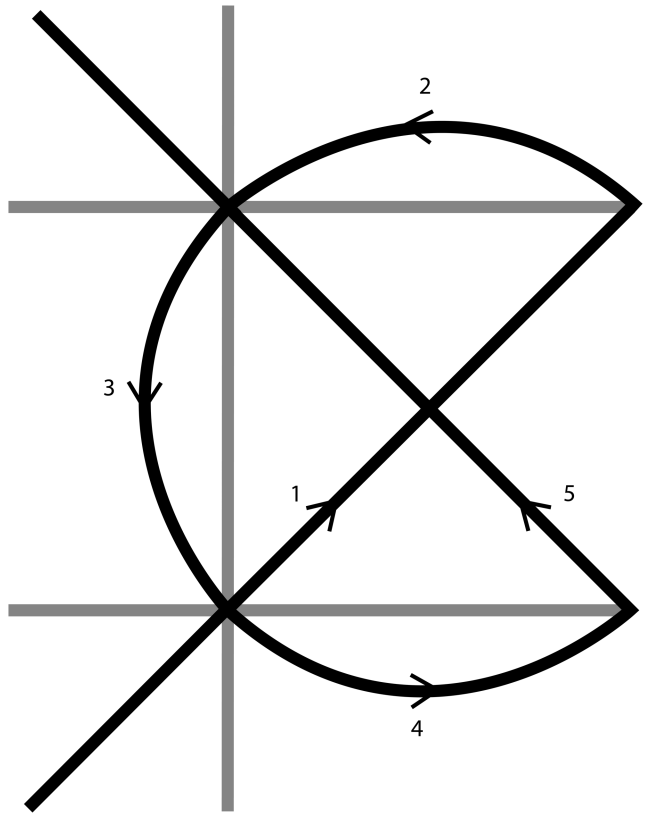


FIGURE 7 Double-arrow

and document.[4] The performance took place in the village of Lulep, where the sand drawer Terry Titomat Mael is from. Some sand drawings that Terry was about to perform originate from Luli, a coastal village situated north of Lulep. This amounts to a displacement of ownership that must be repaired by a specific ritual 'to make it straight' as Paamese people would say. John Mark Lunmark, the Chief of Luli, who is both a sand drawer and the representative of all Paamese chiefs, initiates this ritual: 'we will make a ceremony to acknowledge and return the drawings back to Luli'. The leaves from the *talimbur* ('cycad', *namele* in Bislama) and the *siel* ('cordyline fruticosa', *nanggaria* in Bislama) are planted in the ground to set a respectful perimeter around the drawing space (Photograph 3). The colourful red *siel* leaves symbolise peace, as John Mark explains, and have always been used by chiefs who were engaged in conflicts, and then endeavoured to find common ground. The green leaves of the *talimbur* are found on the Vanuatu coat of arms and are associated with high status throughout the archipelago. Both plants are of great cultural significance throughout the archipelago. The use of these leaves is quite revealing of the sacred, prestigious and respected character of sand drawing, and the existence of this ritual also signals how sand drawing are anchored into specific places.

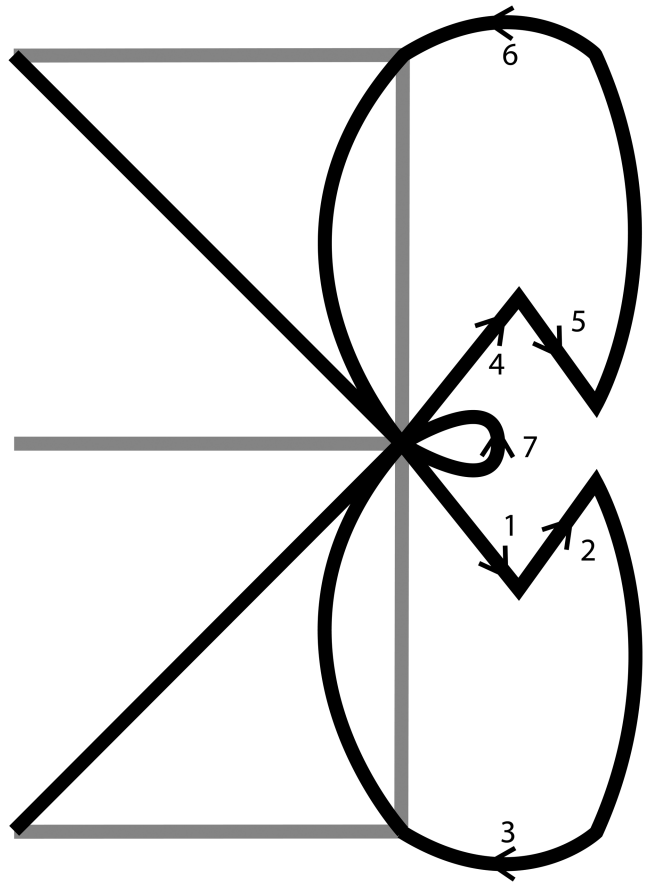


FIGURE 8 Shell tail

3 | ARCS, LINES, AND LOOPS: THE MESMERISING MORPHOLOGY OF SAND DRAWING

Coding sand drawing performances with the proposed detailed taxonomy is tedious work. This may appear to be an unnecessary high degree of granularity at this stage, but its value cannot be ascertained until we are able to compare the morphology of sand drawings across islands and regions. To the best of my knowledge this has not been done in a systematic way to date. In doing so, we may find that specific sequences of vectors used in the completion of certain patterns define regional drawing styles and this would help us better understand how sand drawings have been exchanged and transmitted across time and space. In order to eventually conduct systematic and fine-grained comparative morphological analyses of sand drawings, I propose to adopt the equally fine-grained and systematic coding method. The multi-layered morphological structure of sand drawing is summarised in Table 1 and detailed in the following sub-sections.

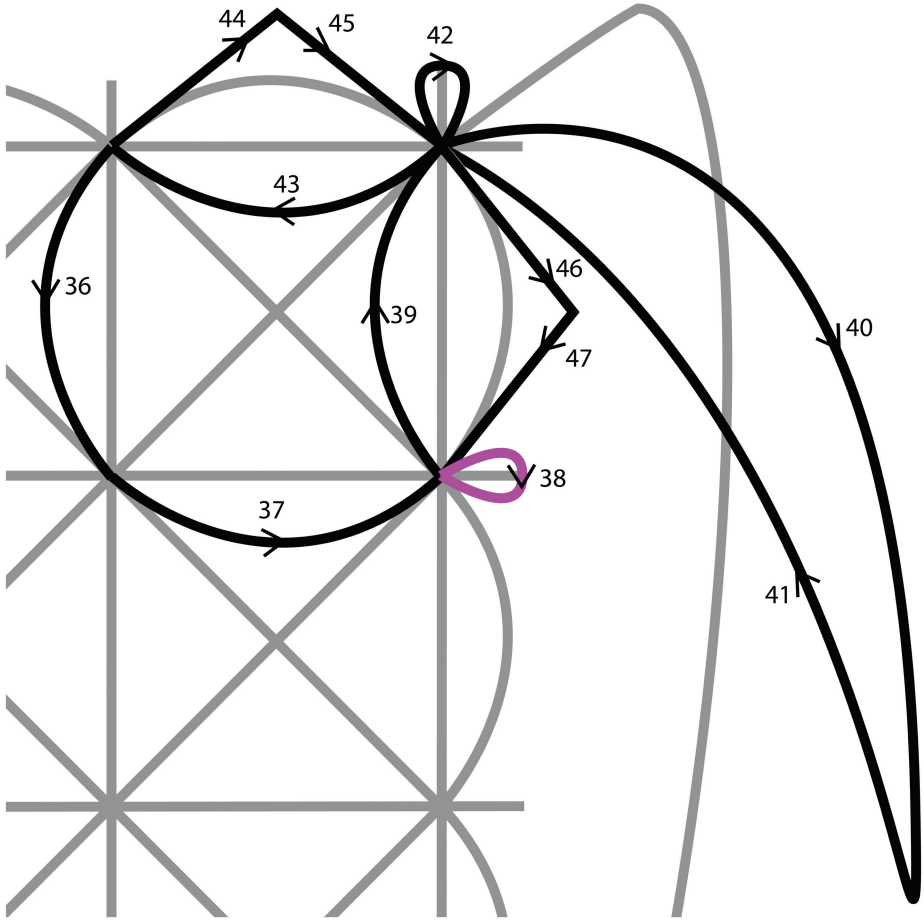


FIGURE 9 A loop-CONNECTOR core unit

3.1 | The grid

First, there is the grid that the sand drawer traces in the sand. On Paama, it consists of intersecting horizontal and vertical lines (Figure 1). The grid helps keep the drawer's movements and the traces they leave in the ground symmetrical. It also limits the number of paths that the unbroken line can take to find its ways to the completion of the pattern. It determines the length of the vectors and is more than the structural first layer of a palimpsest. It is an integral part of the drawing around which the continuous line dances in intricate ways and is also meaningful as being the body part of a drawn animal (see Section 3.5).

3.2 | Vectors

Sand drawing vectors are the minimal units into which all sand drawing patterns can be decomposed. A vector is defined here in its traditional mathematical sense as a quantity that has magnitude and direction. The magnitude is the length of the segment and the direction is the orientation on the grid. Vectors are segmented when they cross a line of the grid or change direction. In the Paamese sand drawing practice, I count three types of vectors: arcs (Figure 2), lines (Figure 3) and loops (Figure 4).

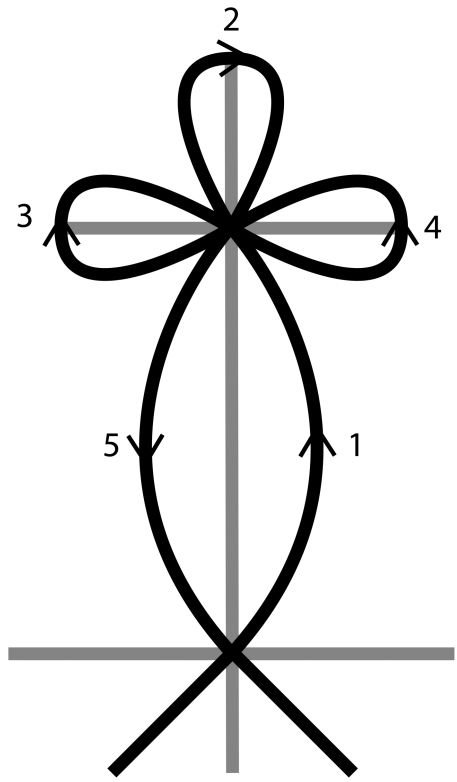


FIGURE 10 Head

FIGURE 11 Different versions of abuen 'wings' and asupoten 'tail' in three sand drawings: a. Vatitiga 'butterfly,' b. Asio 'king fisher', and c. Nawimba 'imperial pigeon'

3.3 | Core units

A core unit is defined as a group of vectors that are traced sequentially and that form a whole. This whole can be repeated within the same drawing or across different drawings, but has to be repeated to qualify as a core unit. Core units are thus defined with respect to their form but also with respect to their degree of conventionalisation. The latter is assessed with regards to the frequency of occurrence of the unit in a corpus of sand drawings. Another index for the degree of conventionalisation of a core unit is the existence of a term to describe them in the language of the community, where sand drawing is practised. Identifying criteria of core units is thus a combination of etic (frequency of use) and emic (descriptive terms lexicalised by local languages) perspectives.

Core units can be further distinguished with regards to the function they play in the completion of the final geometrical pattern: a structural function and a characterising function. When core units serve a structural function, it means that they give 'structure' to the sand drawing in the sense they provide the guiding geometrical patterns, the fabric, 'the flesh' to this immaterial art form. The characterising function is based on the iconic relation between an object and a sign. It is worth noting that I use the notion of iconicity in a much narrower sense than in Peircean semiotics (Peirce et al., 1931). When I write that a core unit is predominantly based on iconicity and serves a characterising function, I mean that the relation between the object (e.g., a bird) and the sign (e.g., the drawing of a bird) is based on resemblance. Accordingly, the 'characterising function' makes the whole drawing a unique design and helps establish a resemblance between the drawing and the animal, plant or object to which it may refer. The core units that I describe below predominantly serve one of the two functions.

The first core units that I identify are highly structural and lowly characterising. I have not yet been able to elicit Paamese lexemes to describe the first three minimal structures reproduced below, but there is good reason to think that these minimal units are, or used to be, referred to by specific terms on Paama. Baron (2020, video 25) video-recorded a situation in West Ambrym, where sand drawers not only use specific terms in the Daakaka language of West Ambrym for these exact same core units, but also illustrate the key instrumental role that they play in the transmission of knowledge of sand drawing. In this video, three sand drawers discuss how to proceed with the drawing of the green pigeon. They give instructions in the form of a list of sequences of core units that the drawer must trace in order to complete the drawing. They provide the following terms in Daakaka: *lisi* 'loop', *keviti* 'circle', *si* 'arrow' and *simbek* 'shell tail'. In another session Baron (2020, p. 183) also elicits the term to describe the minimal composite unit reproduced in Figure 7 as *si lo* 'double arrow'. Another reason to identify circles (Figure 5), arrows (Figure 6), double arrows (Figure 7) and shell tails (Figure 8) as core units is their high frequency of use in Paamese sand drawings, which indicates that they are

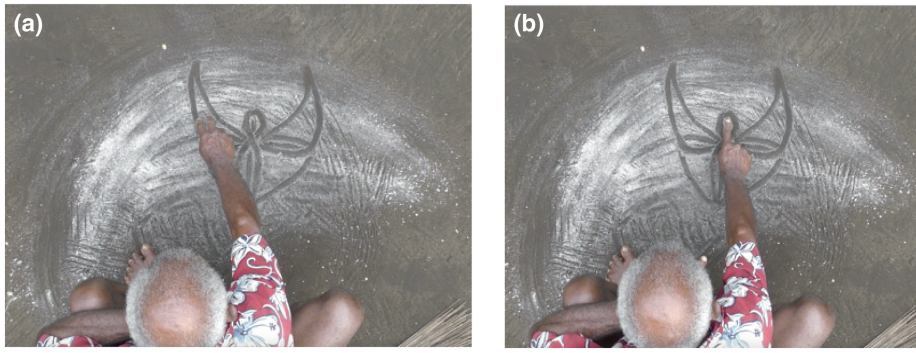


FIGURE 12 The vetah 'breadfruit' sand drawing performed by Samson Daniel

conventionalised patterns. I suggest calling this type of unit *structural core units* with reference to their predominant function within the whole drawing performance.

I propose the term—connector—for a second type of core unit that is predominantly structural, after the function that that it plays in the completion of the geometrical pattern. Connectors allow for 'filling in the gaps' between the other core units and/or solve structural puzzles. They usually consist of a few vectors but can also be made of a single one. A prototypical single-vector connector is the loop. Loop vectors are frequently used as connectors in sand drawing to reverse the direction of rotation of the continuous line, thus allowing the line to take a path that it could otherwise not have taken without the loop. For example, in Figure 9, which is one sequence taken from the *Ahu* 'turtle' drawing, the line that is traced through vectors 36 and 37 needs to stay clear of the ARROW path (vectors 46 and

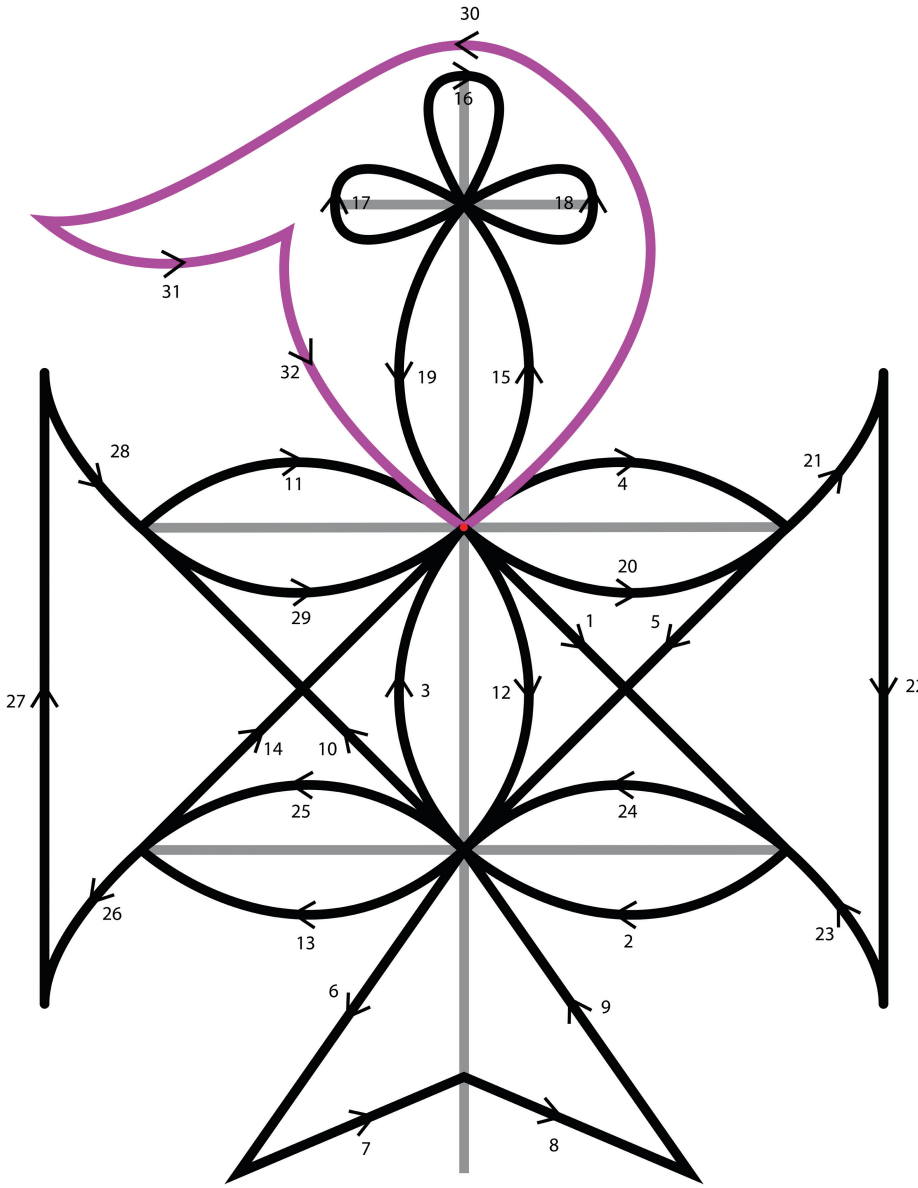


FIGURE 13 Asio 'the kingfisher'

47) because that path will be needed later on and needs to remain available. The line cannot continue its anti-clockwise rotation into a third arc vector either, because it has already been drawn (greyed out in Figure 9) and according to a working principle of the practice, the sand drawer cannot pass by the same path twice. This is how the loop-CONNECTOR (vector 38) solves this riddle by reversing the direction of rotation from anti-clockwise to clockwise, thus allowing the line to take the path of vector 39, which itself functions as an arc-CONNECTOR that allows tracing of the turtle's flipper (vectors 40 and 41).

A third type of core unit can be termed biomorphic, with reference to their predominant function, which is to give the drawing a phyllomorphic, anthropomorphic or zoomorphic shape. The most frequent core unit of this type is referred to as *vatin* 'its head´ in Paamese (Figure 10). *Abuen* 'its wing' and *asupoten* 'its tail' are prototypical zoomorphic core units (Figure 11). The tracing of these units goes beyond the geometrical constraints of the grid, and grants shapes more freedom to vary as illustrated in Figure 11. This relative freedom from the orthogonal structure allows making the drawing singular and resembling its referent. Anthropomorphic, zoomorphic and phyllomorphic core units can cross the boundaries of their own categories and extend to others. For example, the *vetah* 'breadfruit'

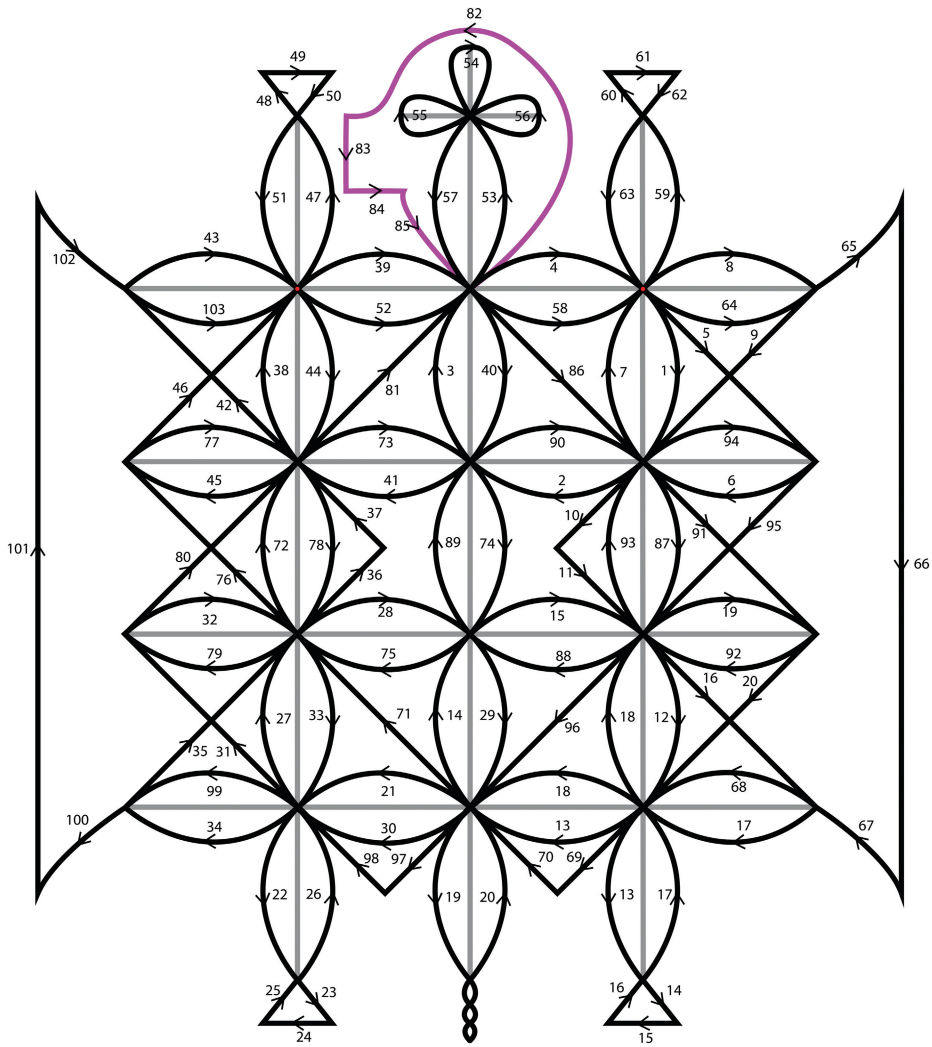


FIGURE 14 Uli 'the dog'

sand drawing (Figure 12), not only consists of phyllomorphic core units called *oute* 'leaf' (pointed to in Figure 12a) but also clearly contains a *vatin* 'its head' core unit (pointed to in Figure 12b). Sand drawer Samson Daniel points to this part of the drawing and calls it *vatin* but explains that this is the ovary part of the flower that will then become a fruit. There is thus a semantic transfer from human body parts to botanical parts in Paamese (*vatin* 'head') but also in the English botanical lexicon (*ovary*). This semantic transfer is also materialised in the morphology of the sand drawing: the core unit that is prototypically used to refer to the head of humans or animals is here used to refer to a part

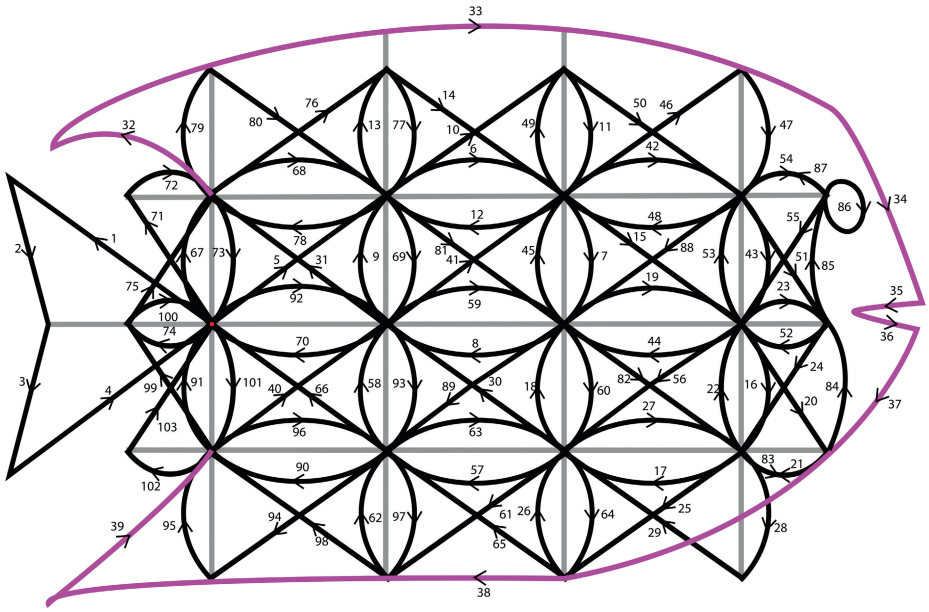


FIGURE 15 Mesao 'the whale fish'

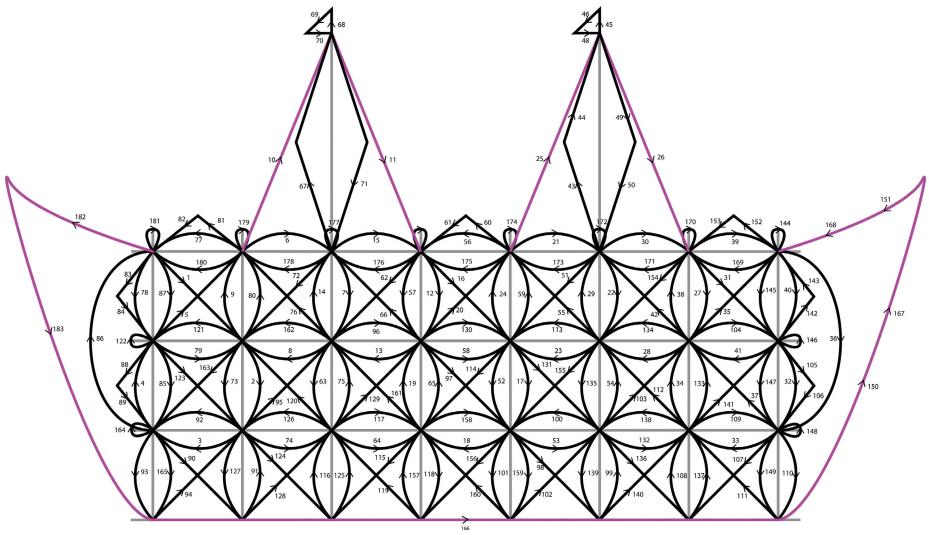


FIGURE 16 Blackbirding ship

of a plant. The semantic complexity of the rather simple design of *vetah* probably goes beyond these semantic transfers. Indeed, it is probable that the *vetah* drawing has multiple layers of meaning, and that the use of an anthropomorphic core unit signals the existence of a hidden layer of an anthropomorphic nature. This was evidenced by Franjieh (2018) on Ambrym Island where the breadfruit drawing that is morphologically the same as the Paamese *vetah* drawing is described as also being the face of a man. This provides a good example of how a fine-grained morphological classification and analysis can help retrieve hidden layers of meaning that are not necessarily transmitted or shared by the sand drawer.

I propose naming a fourth type of core unit contours. These units are drawn outside of the grid, which gives the drawer more freedom to meet the characterising function, naturally resulting in a greater diversity of shapes. These contours are segments of the continuous line that surrounds a core unit (e.g., Figures 13 and 14) or a larger area of the drawing (e.g., Figures 15 and 16) to give more iconicity to the drawing. Surrounding the *vatin* 'head' core unit is quite systematic in Paamese sand drawing. The *head* core unit characterises the drawing as an animate (e.g., a bird, a dog, a shark) and the 'head frame' specifies the type of animal the drawing is meant to refer to. The line draws the contours of some kind of round head from where a beak (e.g., Figure 13) or a snout (e.g., Figure 14) stands out. Tracing this type of unit is called 'blocking the head' in Daakaka (Baron, 2020, p. 182).

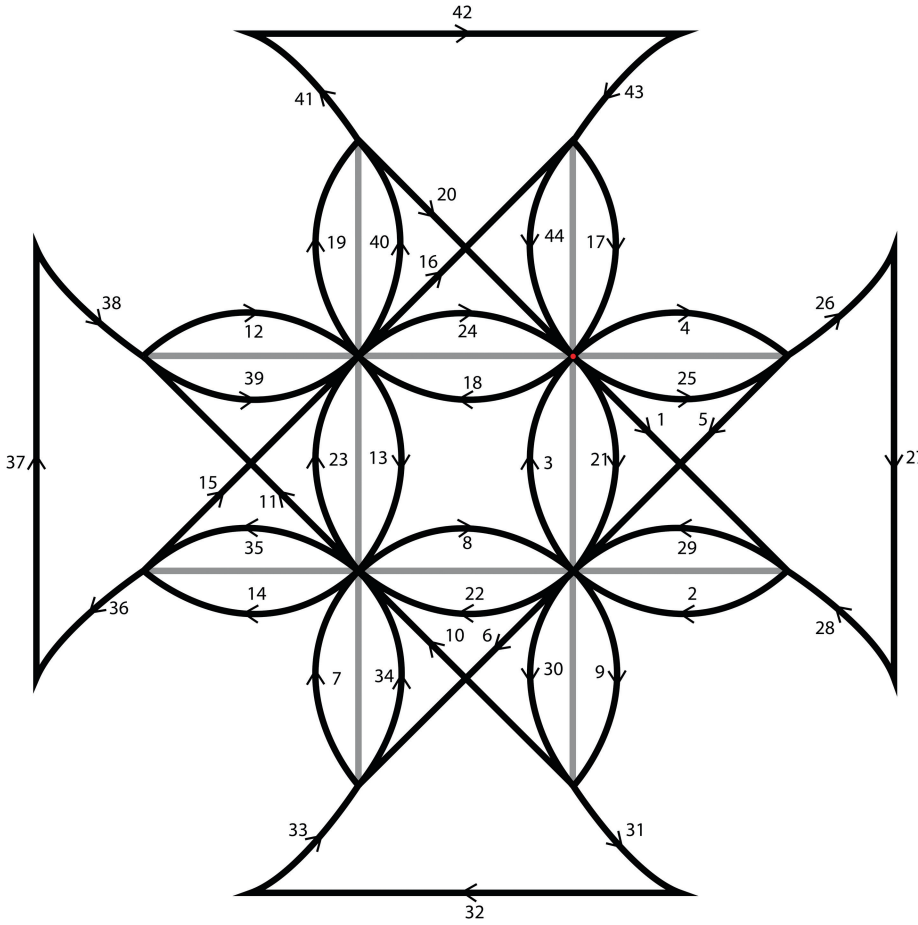


FIGURE 17 Laplap

It is important to note that the list of core units described in this section is not complete, nor can it be, because sand drawing is a practice that not only has structure, but also agency (Gell, 1998; Patterson, 2006; Rio, 2005), which in principle allows a sand drawer to modify existing core units and to create new ones.

3.4 | Sequences

The working principle of completing the drawing with one continuous line prevents placing core units on the grid in a random order. The sand drawing 'puzzle pieces' are assembled in specific *sequences*. Sequences can be defined as a collection of core units that are repeated in a specific order. The following sand drawing is called *laplap* and provides a neat and simple illustration of the way sand drawing is structured in sequences of units. The *laplap* drawing reconstructed in Figure 17 consists of 44 vectors that are structured in nine core units: four DOUBLE-ARROWS, one CIRCLE and four WINGS.

The sand drawer starts the tracing of the continuous line at the red dot and follows a path that is structured in three sequences. The first sequence consists of a DOUBLE-ARROW core unit, which is repeated three times following a clockwise 90° rotation (Figure 18). The second sequence consists of

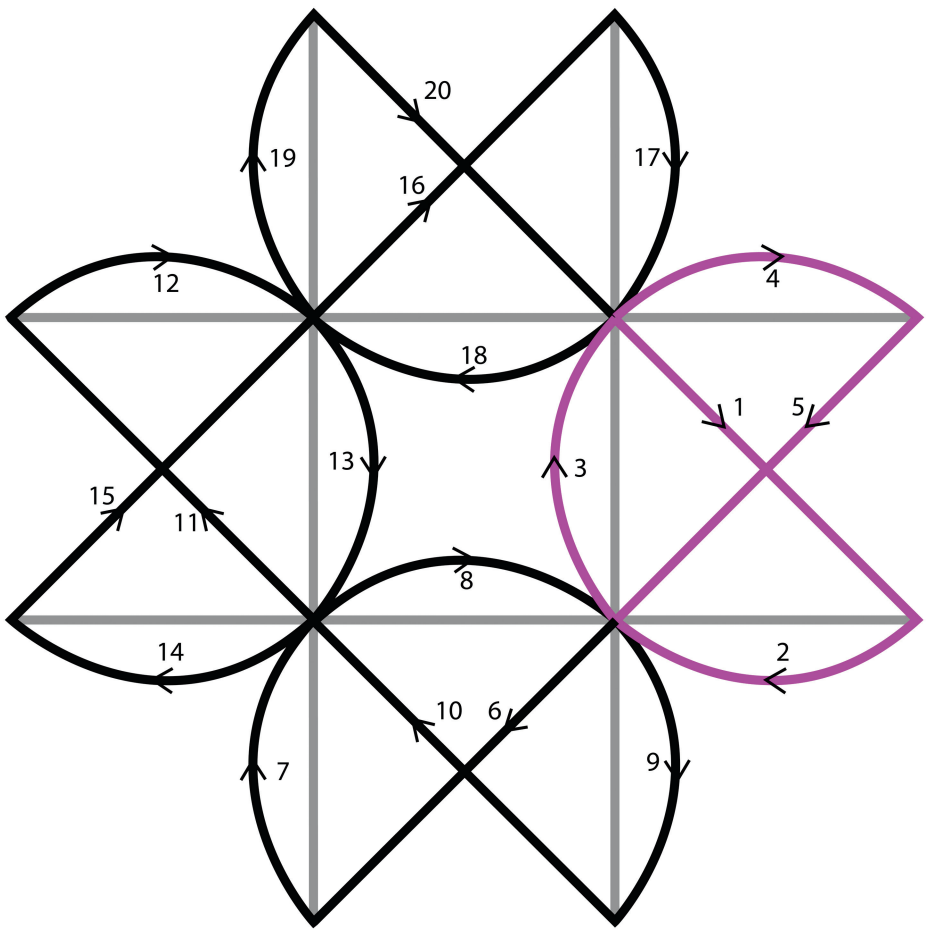


FIGURE 18 Sequence 1

a full CIRCLE core unit and starts at the arc vector 21, which is completed in a clockwise direction at vector 24 (Figure 19). The third and final sequence consists of three core units of the WING type. It starts at vector 25, which initiates the tracing of the first WING core unit and then repeats this core unit three times following a clockwise 90° rotation at each core unit (Figure 20). The pattern is completed at the point where it started in accordance with one of the sand drawing working principles. Each of the three sequences have their own structure, that consists of core units and of reduplication patterns of the core units. For instance, sequences one and two consist of distinct core units, DOUBLE-ARROW and WING respectively, but structured by the same reduplication pattern, which is a clockwise 90° rotation repeated three times. Among the multitude of possible intra-sequential structural patterns that can exist on principle, I observed at least four in the Paamese corpus:

1. simplex core unit completion;
2. reduplication via rotation;
3. reduplication via offset;
4. reduplication via mirroring.

Patterns one and two have already been described above in the description of the *laplap* drawing, respectively in sequence two and in sequences one and three. The 'reduplication via offset on the vertical/horizontal axis' can be found in a sequence of the *Ahu* drawing illustrated in Figure 21. This sequence consists of a reduplication of the composite unit coloured in purple. The reduplicated unit is the exact same as the first but is 'offset' down the grid.

The 'reduplication via mirroring' pattern can be found in another sequence of the *Ahu* drawing illustrated in Figure 22. The composite unit highlighted in purple is reduplicated via mirroring, which means that the sequence of vectors traced in the first composite unit (62–72) is reproduced in the exact reverse order in the second (74–85). Indeed, the first unit ends with a ZOOMORPHIC core unit

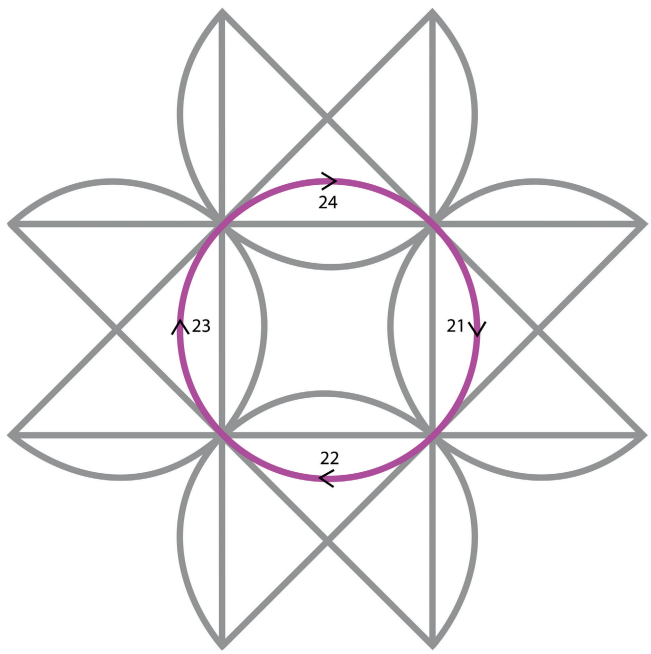


FIGURE 19 Sequence 2

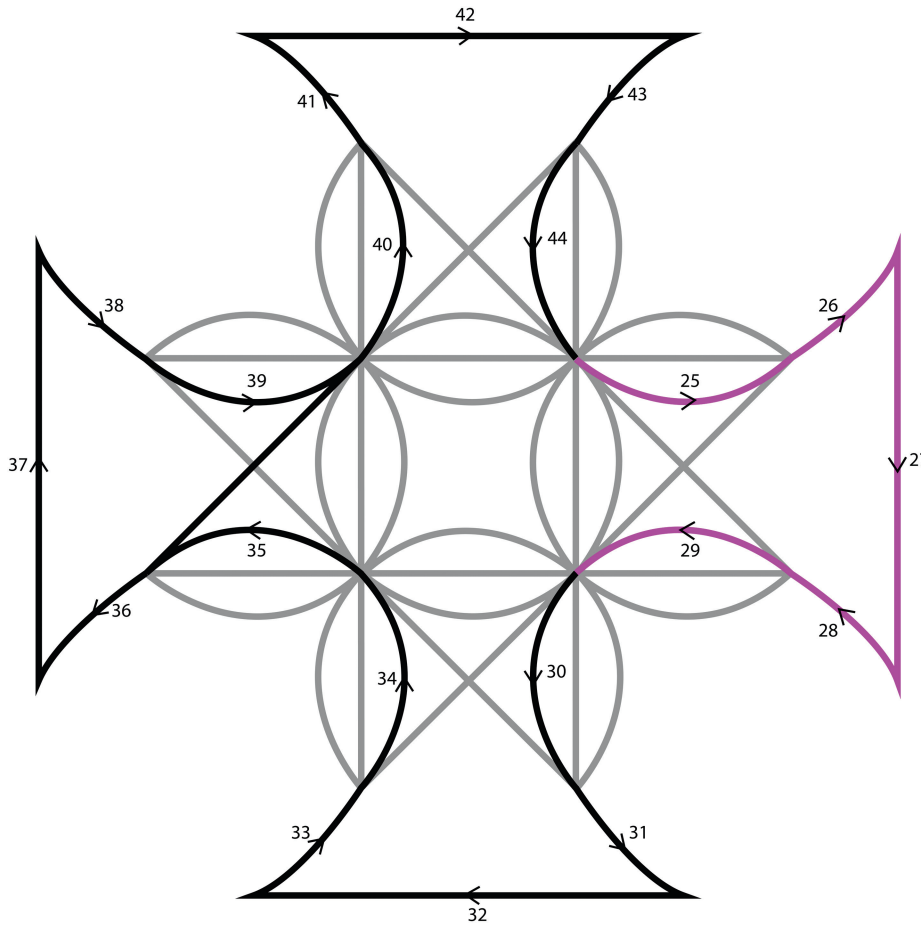


FIGURE 20 Sequence 3

(70–71) followed by an arc-CONNECTOR and the second unit starts with an arc-CONNECTOR (74), followed by the ZOOMORPHIC flipper of the turtle (75–76), and so on until completion of the second composite unit.

There are certainly more types of intra-sequential structural patterns that remain to be identified both within and outside this corpus, but it is already remarkable to see how much structure Paamese sand drawing can have.

3.5 | Larger meaningful segments

In my 2019 field trip on Paama, I explored the potential of using iPads to document sand drawings, which ended up going far beyond my expectations. Paamese sand drawers instantly welcomed this new semiotic medium with considerable revitalising potential and revealed layers of meaning that had remained hidden until then. The sand drawers quickly made the new semiotic medium their own and started playing with the drawing application by spontaneously changing colours (Photograph 4, Figure 23). As it happens the colours were revealed to be not just an aesthetic choice, they were also

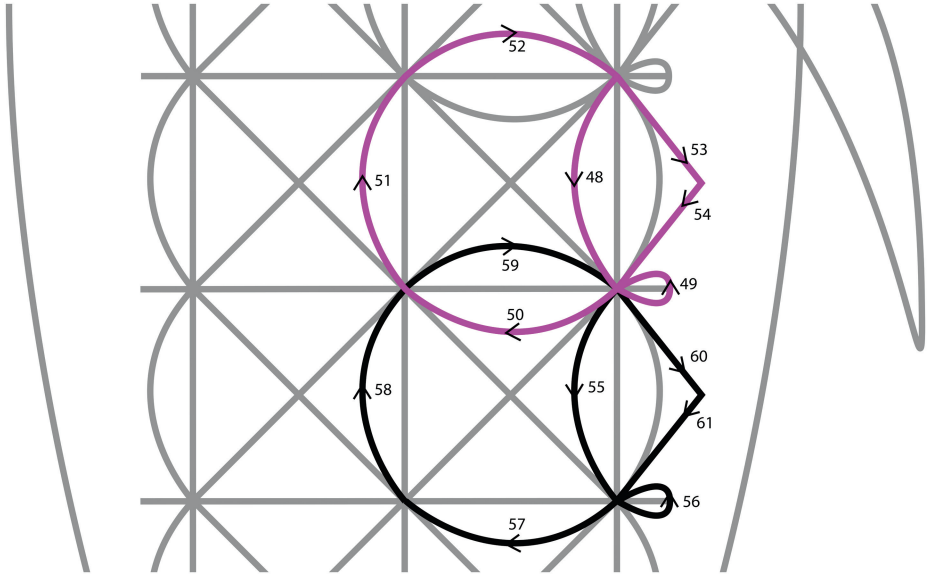


FIGURE 21 Example of a reduplication via offset down the grid

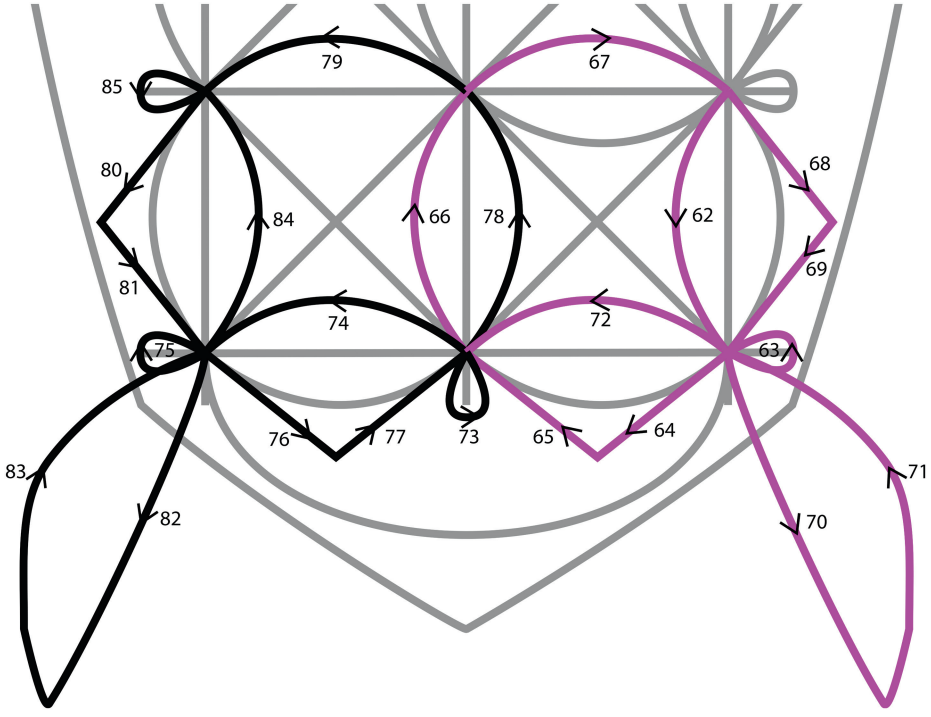
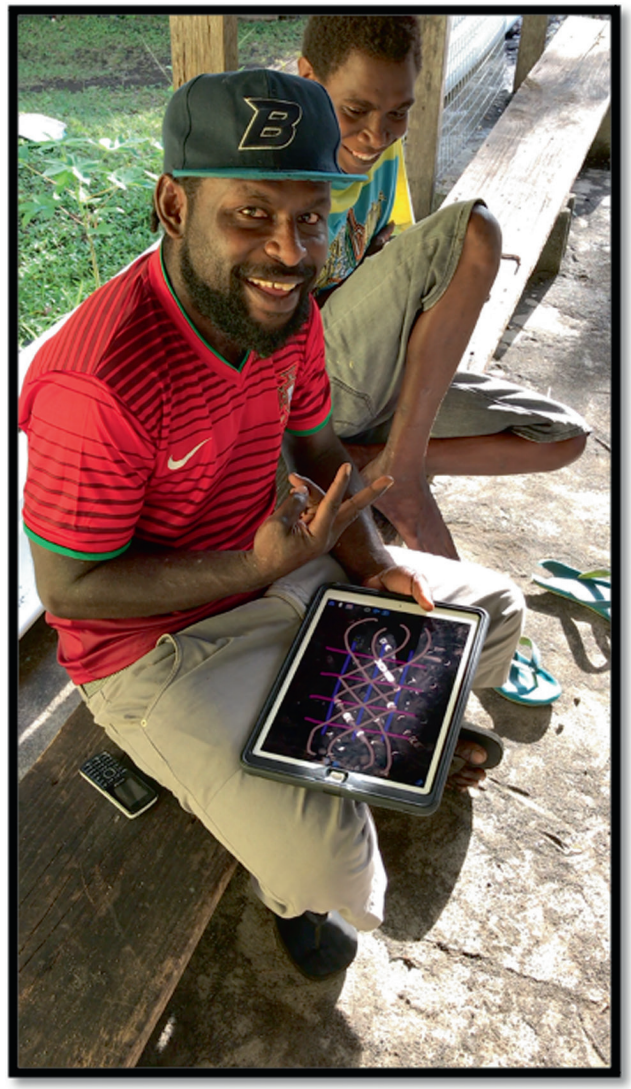


FIGURE 22 Example of a reduplication via mirroring

meaningful, corresponding to distinct segments of the whole drawing. For example, Matthew Joe explained that the pink lines of *oum* 'crab' (Figure 23) is the *husi* 'flesh' of the crab, and the green patterns are *aven* 'its body'.



PHOTOGRAPH 4 Matthew Joe drawing Oum 'the crab' on an iPad

Terry Titomat Mael, another sand drawer, had the same spontaneous and creative idea of changing colours when drawing the *Ahu* 'turtle' (Figure 24) and *Lumali Timi* (Figures 25 and 26) on the iPad. Interestingly, Terry chose the same colours as Matthew for the flesh of the turtle (pink) and its shell (green). This is possibly another case of iconicity between the sign (the colours of the animals' shells and flesh) and the referent (the actual colours of the animals' shells and flesh). Moreover, different colours were not only used to mark spatial distinctions but also temporal segments as in the iPad drawing of *Lumali Timi* (Figures 25 and 26). Terry described the pink segment as the twin brother that first drew his part of the drawing, the green segment as the part of the story when the second twin comes, and the blue part as *tunien vus ke* 'the end of the story'.

Using a new semiotic medium revealed the existence of segments that were not previously evidenced. It brought new affordance that resonated with the creative impulse of sand drawers: the choice of colours was discussed with the audience to make the drawing look more appealing, and

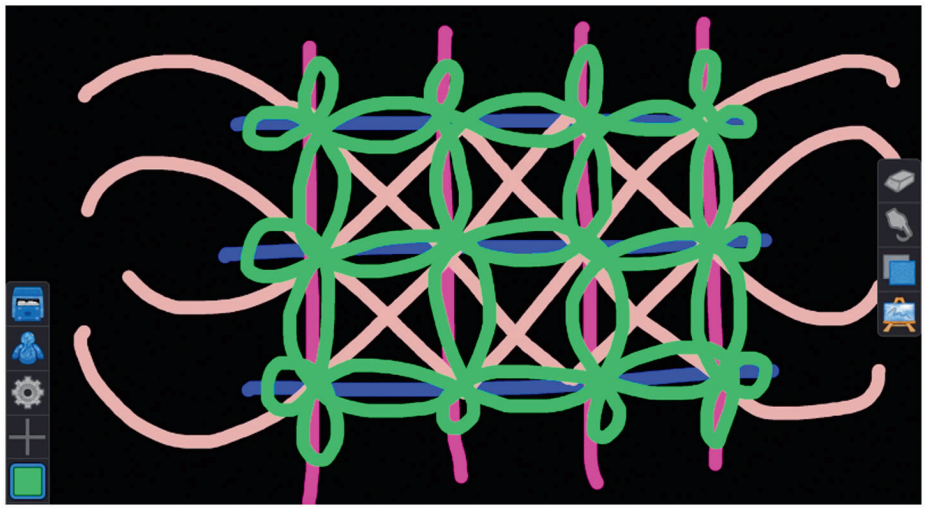


FIGURE 23 Screenshot of the Oum 'the crab' iPad drawing by Matthew joe from Luli, Paama

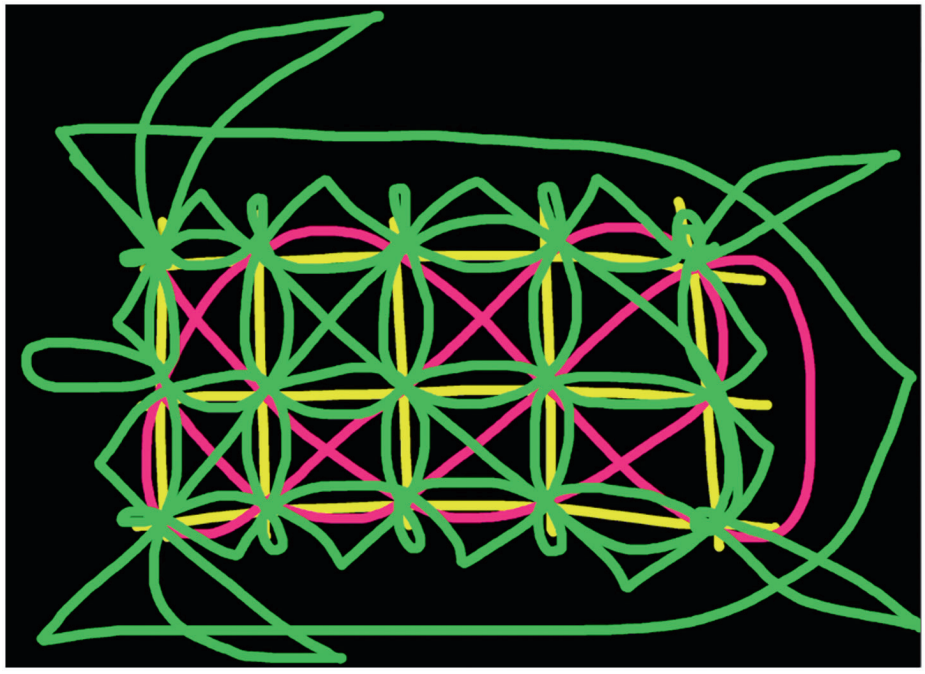


FIGURE 24 Ahu 'turtle', iPad drawing by Terry Titomat Mael from Lulep, Paama

this choice was also highly meaningful. This finding enlivens the debate opposing a *biology of art approach*, which denies the artist's creative impulse (or *Kunstwollen*, Riegl 1992) as Page Rowe (1936) argued, but also undermines the position at the other extreme position that rejects the semiosis of Vanuatu sand drawings and argues that they start with the abstract patterns of the interweaving line and that it is not before the outline is completed that '… comes the idea, "Let's make a turtle of it"' (Page Rowe, 1936, pp. 120–122). The iPad drawings further illustrate the multi-dimensionality of

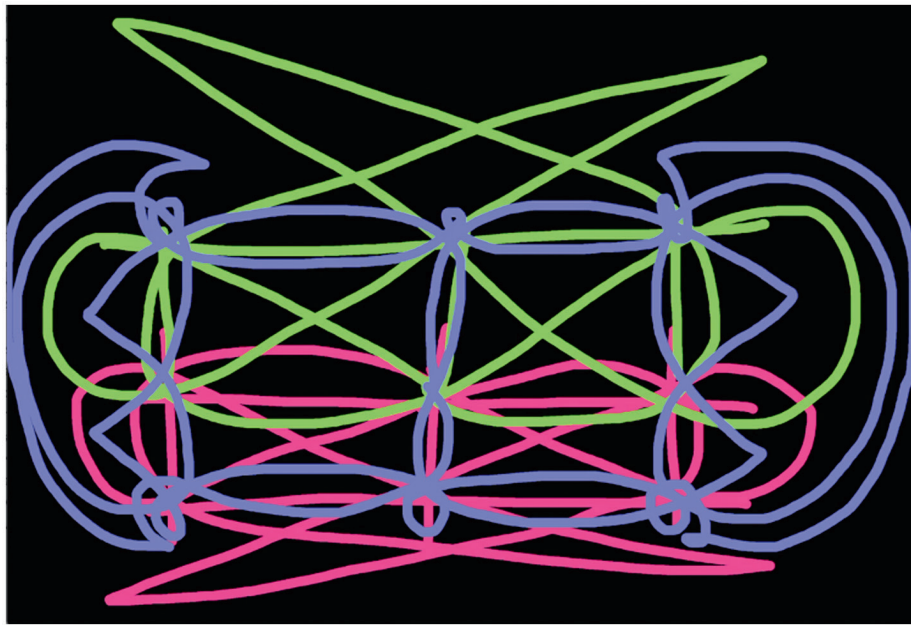


FIGURE 25 Lumali Timi 'the twins', iPad drawing by Terry Titomat Mael from Lulep, Paama

Vanuatu sand drawings as a practice that is both driven by the joint pursuit of meaning making and aesthetics.

4 | SEMIOTIC MAZES

In one of the first publications on Vanuatu sand drawings, Layard (1936) was convinced that 'sand-tracings' were labyrinths related to those found in ancient Egypt to protect royal tombs. The grid was the labyrinth and the continuous line, 'the path trodden by those who enter it' (Layard, 1936, p. 140). There is a general consensus in the literature that this diffusionist approach drew unsubstantiated parallels, but as long as we do not confuse the metaphor for the actual phenomenon, most would agree that investigating the meaning of sand drawings throws the analyst in quite the labyrinth indeed.

4.1 | Semiotic opacity and multiplicity

As Huffman (1996a, pp. 249–250) puts it 'sand-drawings do not exist in a cultural vacuum'. They should be studied in relation to their natural and cultural ecosystems. Moreover, their meaning can be multiple and context dependent. Some layers of meaning may be accessible to all while others with a sacred character are only disclosed to members of secret societies. The combination of secrecy and ownership is probably a reason why we observe such variation in the meanings of drawings across islands and regions as argued by Zagala (2004, p. 36):

> When sand drawings are shared between people from different language groups, there will only be a partial disclosure of the deeper meanings involved. Conversely, the frag-

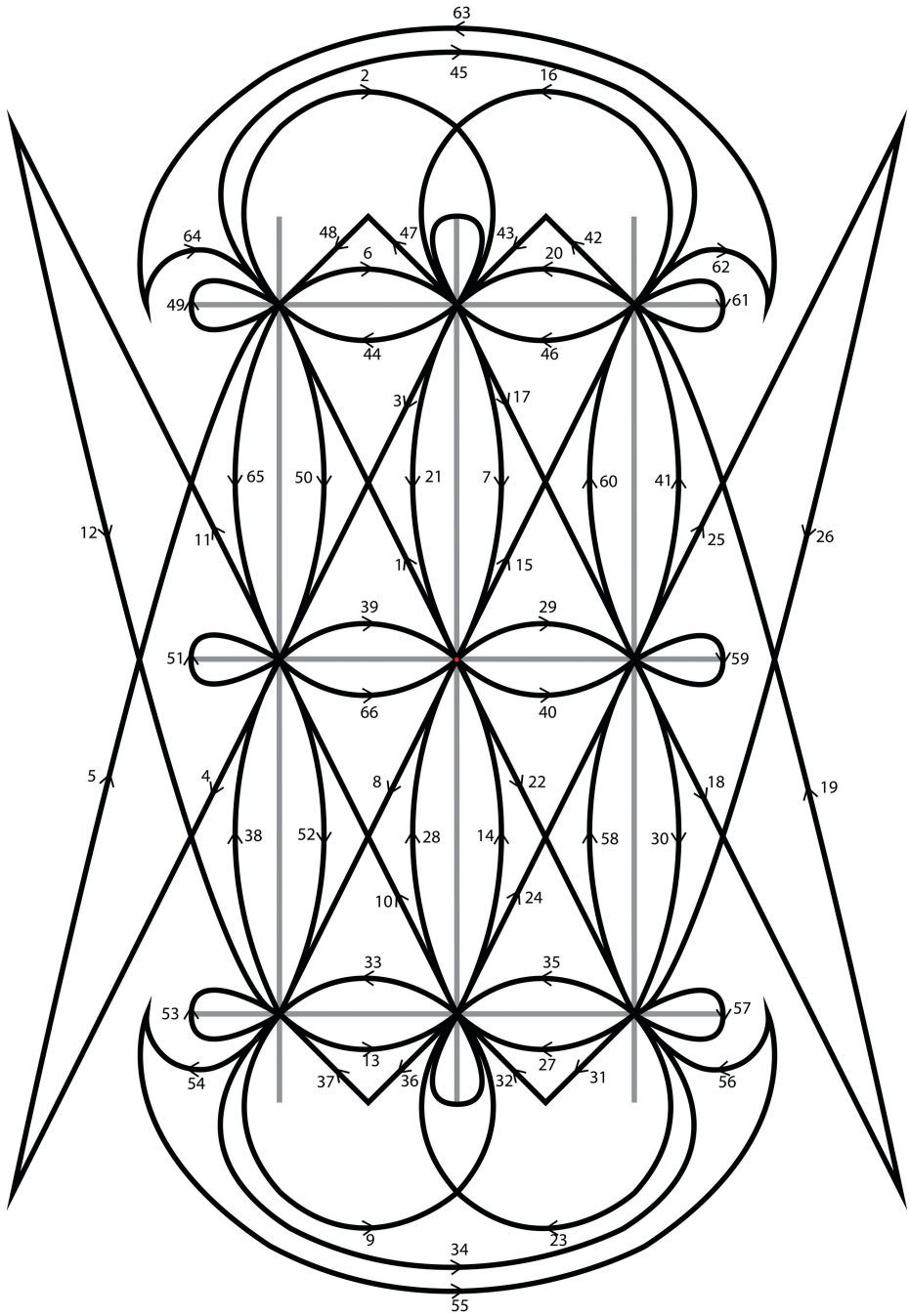


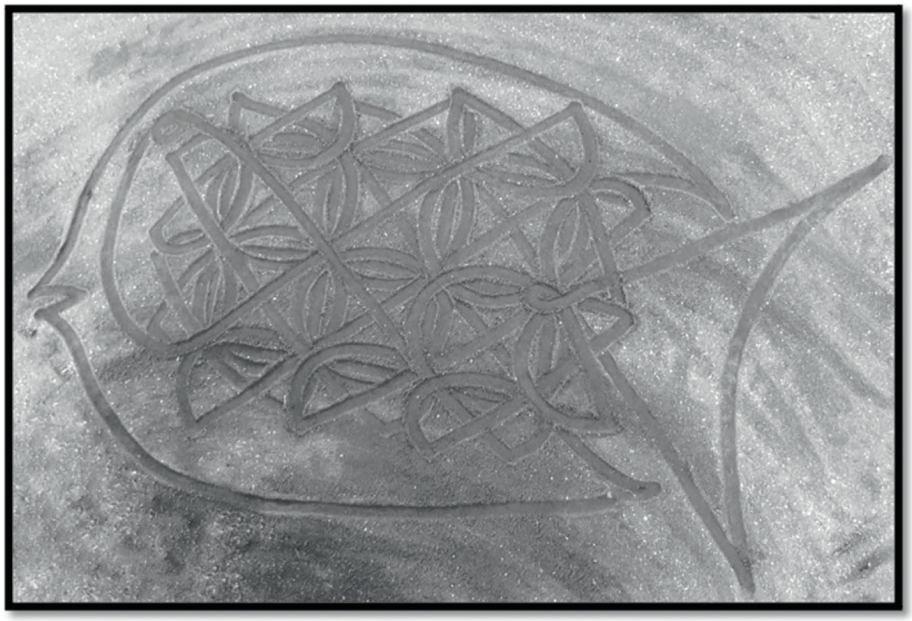
FIGURE 26 Lumali Timi 'the twins' by Terry Titomat Mael, Lulep, Paama

ments of knowledge that are acquired will always be modified and incorporated into another group's myths and legends in order to maintain regional differences.

A good example of what Zagala describes is found in the variation of meaning of the *mesao* drawing, shown in Photographs 5,[5] 6 and 7. The three versions have a very similar morphology and are all

quite iconic images of reef fishes found in the tropical waters of Vanuatu. The West Ambrym version is described as a reef fish, the Lulep version as a fish, and the Luli version as a whale-fish, which appears to be a kind of long-finned pilot whale that migrates through Vanuatu waters.

Once he had completed the drawing, Matthew Joe explained that when we see a whale-fish swimming down south from Tavie (north of Paama) to Lulep (south east of Paama) it is a bad omen for fishing because the whale-fish will take all the fish and leave none for the coastal communities. Conversely, if we see it swimming up north from Lulep (south east) to Luli (north east), it is a good omen because 'ling ris anien' 'it gives the food back'.[6] This narrative was not been given to Baron on West Ambrym and was not given to me by Terry Titomat Mael in Lulep. The structure of the *mesao* drawing in its three versions (Photographs 5–7) arguably bears more resemblance to the shape of a reef fish than that of a pilot whale. We could therefore presume that the reef fish interpretation preceded the whale-fish one. However, both reef fishes and pilot whales have a bulbous head shape, and we can understand how this morphological feature facilitated a semantic shift from reef fish to whale-fish. In an attempt to reconstruct what could have motivated the presumed shift of meaning, we might imagine that the Paamese people living on the east coast of the island observed two natural phenomena, the migration of pilot whales in one direction and a poor fishing season. They then drew a causal relation between the two, which materialised in the *mesao* sand drawing; this may have been either pre-existing and gained a new interpretation specific to Luli's ecosystem or was created in Luli at this time. As we will see in Section 4.3, sand drawing can be both vectors of knowledge transmission and media for rituals that 'make things happen'. Conceived in that light, the Luli *mesao* sand drawing appears to be either a way to convey ancestral knowledge about interpreting nature's signs and their impact on means of subsistence—quite similar to the way old agrarian proverbs do in many cultures—or as a performative way to influence the migration of pilot whales so that the fishing season can be fruitful. Given the multi-dimensional nature of sand drawing it could also very well be both. There is yet another documented variation of the *mesao* drawing described in Cabane (2016, pp. 61–62). On Pentecost Island, this exact same drawing is described as *bwaraet tai tai*, a Sphinx-like gate keeper



PHOTOGRAPH 5 The reef fish by Edwin Taso (West Ambrym), 2017 (Baron, 2020, p. 220)

PHOTOGRAPH 6 Mesao 'fish' by Terry Titomat Mael (Lulep, Paama), 2019

PHOTOGRAPH 7 Whalefish by Matthew Joe (Luli, Paama), 2019

fish that asks the recently deceased to complete two sand drawing patterns to be granted access to the after-life, called *Banoi*. One of the sand drawings that the deceased person must be able to complete is called *Vatangele*, a rock in the ocean situated south of Pentecost Island that is believed to be the door to paradise in Sia Raga cosmography (Taylor, 2010, p. 426). Interestingly, the *Vatangele* drawing that

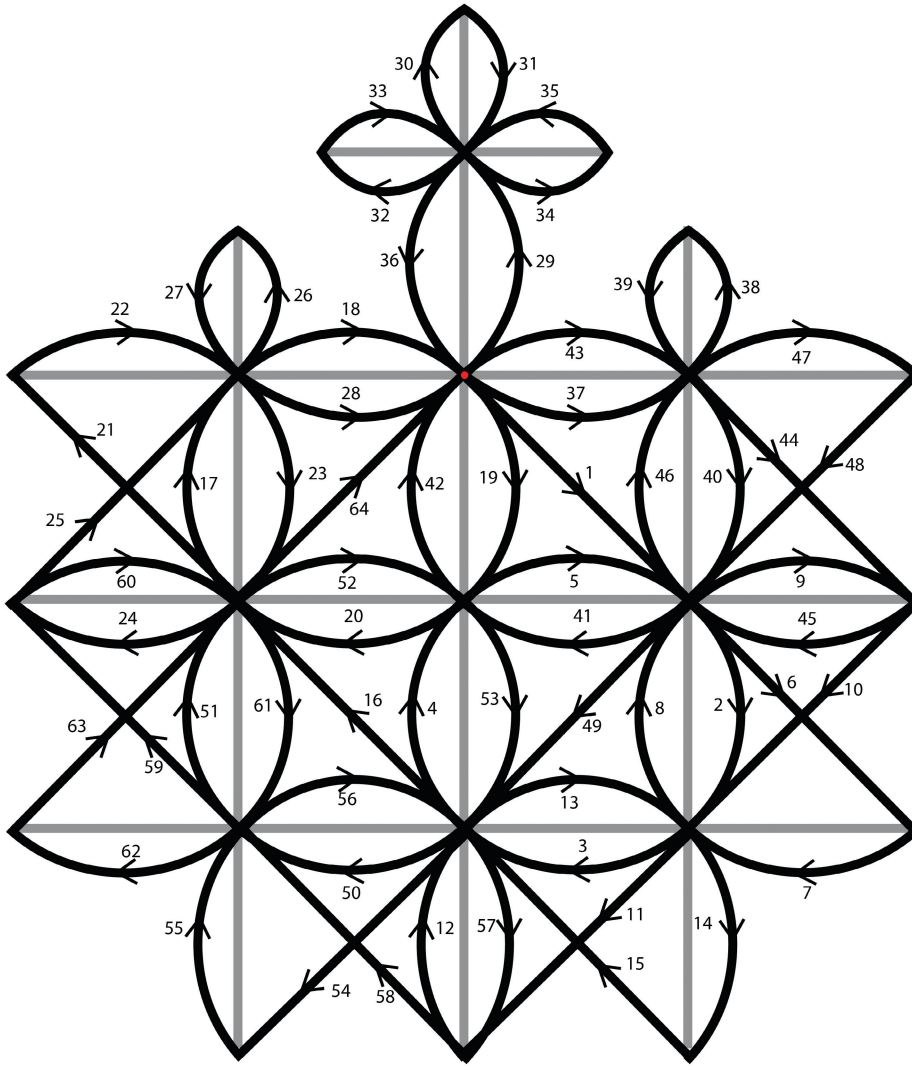


FIGURE 27 Heart

is photographed in Cabane (2016, p. 63) has the exact same morphology as the *Laplap* drawing that I described in Section 3.4 and reproduced in Figure 17. One may wonder how the morphology of a sand drawing can be preserved so accurately when it was apparently exchanged between Sia Raga and Paamese communities (possibly through a path of exchanges that passed by other islands) and at the same time has so divergent referents ('a door to Paradise' on the one hand, 'a traditional dish' on the other). Thankfully, Cabane (2016, p. 62) gives us a hint that there is apparently a link between the two interpretations when he describes the deceased Sia Raga person as sharing a last *laplap* before he departs from the rock of the dead (*Vatangele*) to Paradise. This further supports the importance of running systematic cross-island analyses of Vanuatu sand drawing to better understand the cultural practice as a whole. It also opens the door to a much larger field of investigation that can be informed by such comparative studies: how meaning is transmitted, exchanged and modified through time and space among people that are separated by geographic and cultural barriers, who spoke languages that

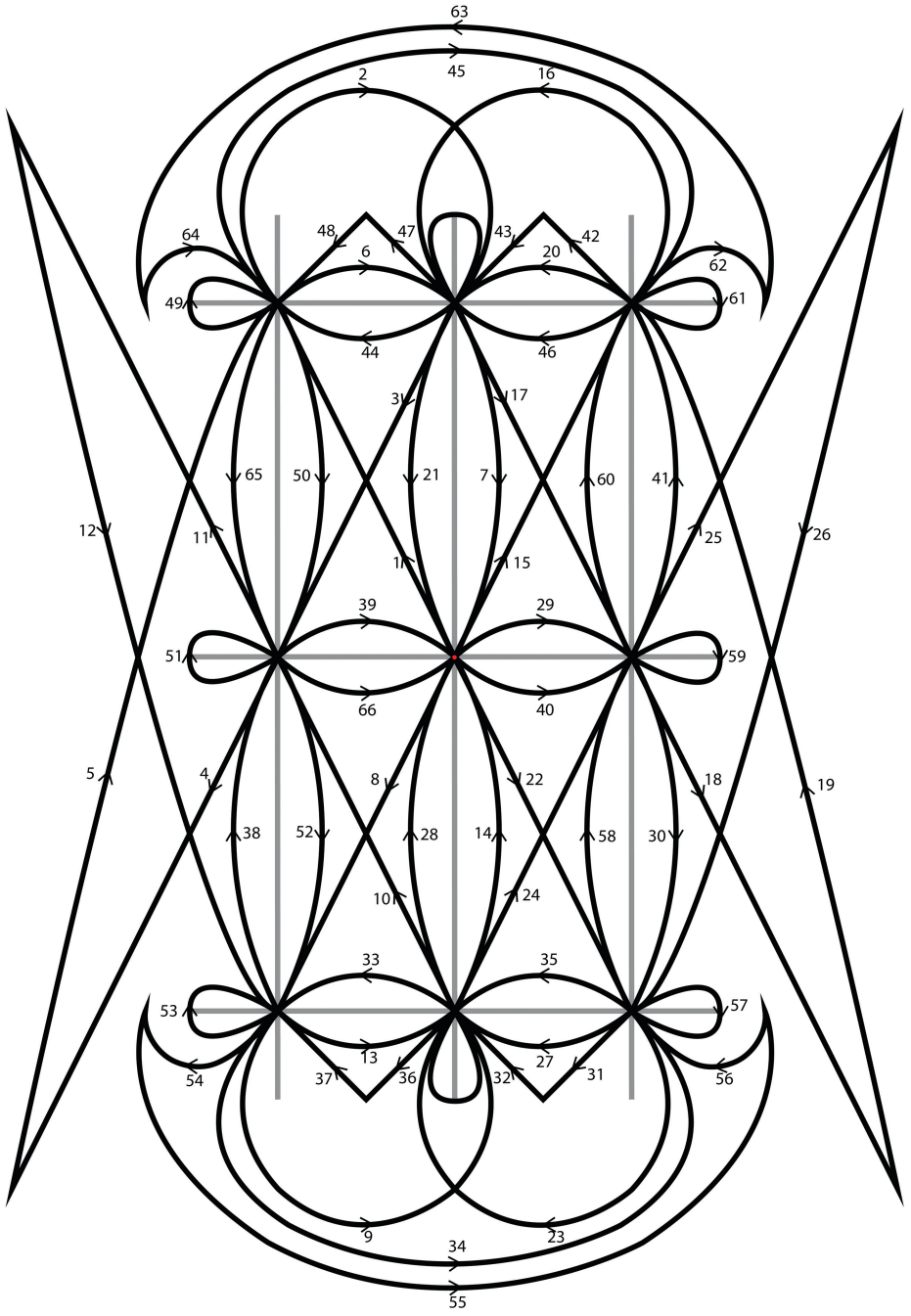


FIGURE 28 Lumali timi

were unintelligible, and via the combination of a number of semiotic systems like depiction, language or gestures.

The four versions of the *mesao* drawing and the two versions of the *laplap drawing* are too similar not to originate from the same source. As mentioned above, sand drawings are intangible artefacts with copyrights that were part of a network of trade exchanges as Huffman describes

FIGURE 29 Coat of arms

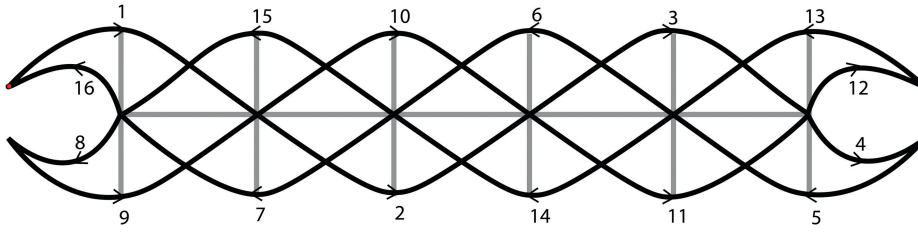


FIGURE 30 Titamol

(Huffman, 1996b, p. 182). The *mesao* sand drawing was designed somewhere in central-northern Vanuatu and must have been exported from one island to another following ancestral trade routes. As Zagala explains (Zagala, 2004, p. 36), only some layers of its meaning may have been transferred to the recipient, and/or it probably evolved and was adapted to the recipient's specific natural and cultural ecosystem. We would, of course, need to map the complete range of variation of such drawings in northern-central Vanuatu and provide a much more detailed analysis to draw these lines. But from a general perspective, this brief cross-island comparison already shows the need for a multi-dimensional methodology. It is indeed only through the combination of morphological analyses (e.g., the similar form of the *mesao* sand drawing), semantic analyses (i.e., the meaning[s] of the drawing) and functional analyses (e.g., knowledge transmission, ritualistic performatives) that we could begin to reconstruct the point of origin of the drawing and its journey across islands.

If some layers of meanings are not given to the recipient of a cultural exchange, we can then easily understand how not everything is given to the outsider researcher who comes to document and study sand drawing. And of all that is given to us, not everything can be shared (Huffman, 1996b, p. 183).

FIGURE 31 Hokstenfai

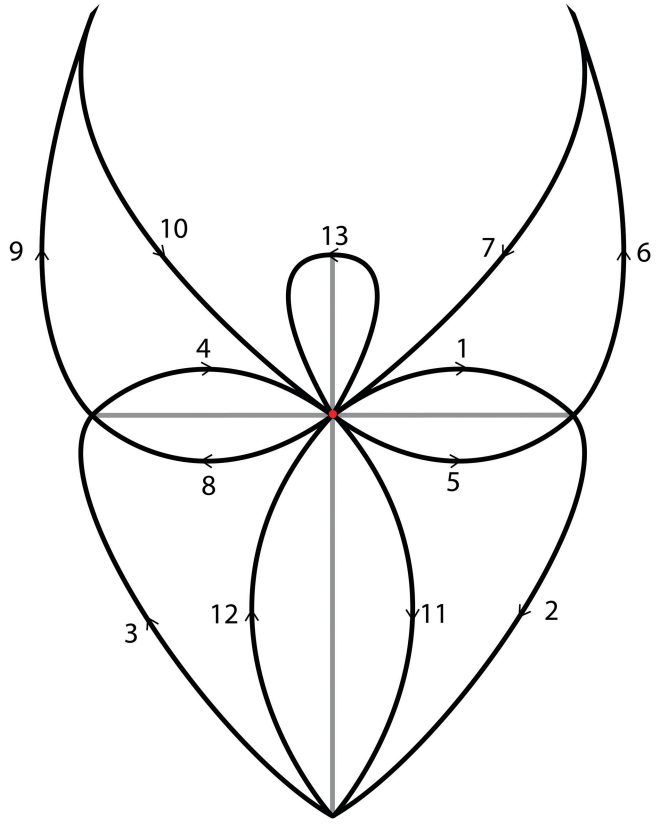


FIGURE 32 Vetah

Baron (2020, pp. 235–238) was authorised to share an event that sheds light on the secrecy dimension of sand drawing. John Beunkon, a sand drawer from West Ambrym, described the *wi man bwetewasee* 'water of the cardinal honeyeater' sand drawing as four birds looking at themselves in the water of coconut shells. Once satisfied with their appearance the birds flew away. But John Beunkon 'could no longer hold back and burst out in a liberating statement' (Baron, 2020, p. 236) and revealed that these birds were actually men but that the true meaning of the drawing was hidden to disguise the 'true story', which was that of a magic song ritual used as a charm spell. Secrecy, combined with decades of intensive Christianisation and traditional culture bleaching in the region, inevitably results in the loss of these meaningful dimensions. In fact, John Beunkon shared with Baron that his father was one of the men who possessed the charm that consisted of a song, which was to be chanted with a specific leaf in one's mouth. Beunkon's father refused to pass on this secret knowledge because it was deemed to be witchcraft, and therefore not consistent with the Christian faith.

The inherent multi-dimensionality and opacity that defines the practice of Vanuatu sand drawing more broadly resonates with a communicative style in Vanuatu known as *qaltavalu* (Rodman, 1991) that is based on delivering opaque messages that can be interpreted in myriad ways, and which challenges academic research. Valuable layers of meaning cannot be disclosed, or may have been forever lost, but we can still investigate the layers of meaning that were deemed accessible enough to be shared and possibly reconstruct others with a careful and fine-grained comparative method. These 'surface layers' of meaning would—at least—be the ones to be transmitted in trade exchanges and are thus already very valuable for establishing a multi-dimensional typology of Vanuatu sand drawing.

4.2 | A window into the Paamese worldview

Maki, an elder from the Paamese village of Luli, explains that 'before, old people, when they went to the bush and observed, they came back and drew in the ground like this. They did not go to school'.[7] Although the multi-dimensionality of sand drawing cannot be boiled down to the imitation of reality and its materialisation in the shape of a meaningful sign, four Paamese collaborators like Maki described the practice as referring to meaningful entities that are part of the Paamese worldview. The nature of the referred object hereby constitutes an important dimension of the meaning of the drawings. The corpus that I have collected on Paama consists of sand drawings that refer to the world of human beings (*heart*, *lumali timi, coat of arms*), who co-exist with the world of spirits (*titamol*,

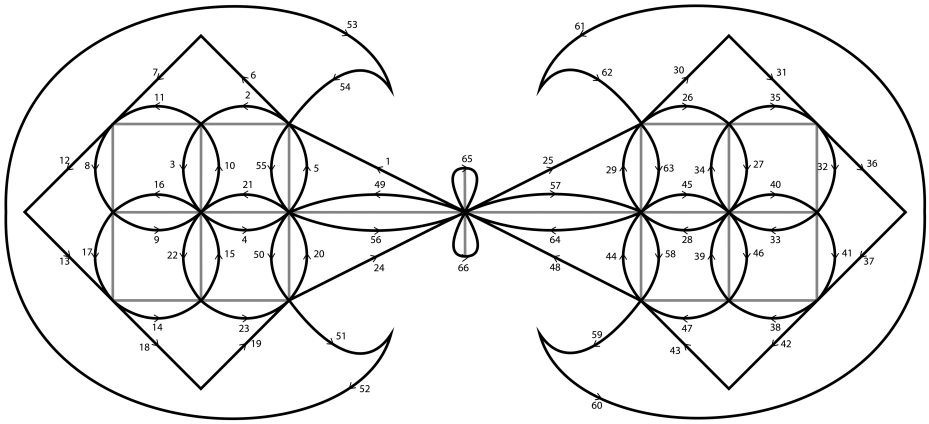


FIGURE 33 Huve

hokstenfai), plants (*vetah, huve, viek*) and animals (*mesao, uli, oum, asi, vatitiga, nawimba, manun, ahu*).

The *heart* sand drawing (Figure 27) is described as a human being with prototypical anthropomorphic core units (e.g., a HEAD core unit) and serves an important social function that I describe

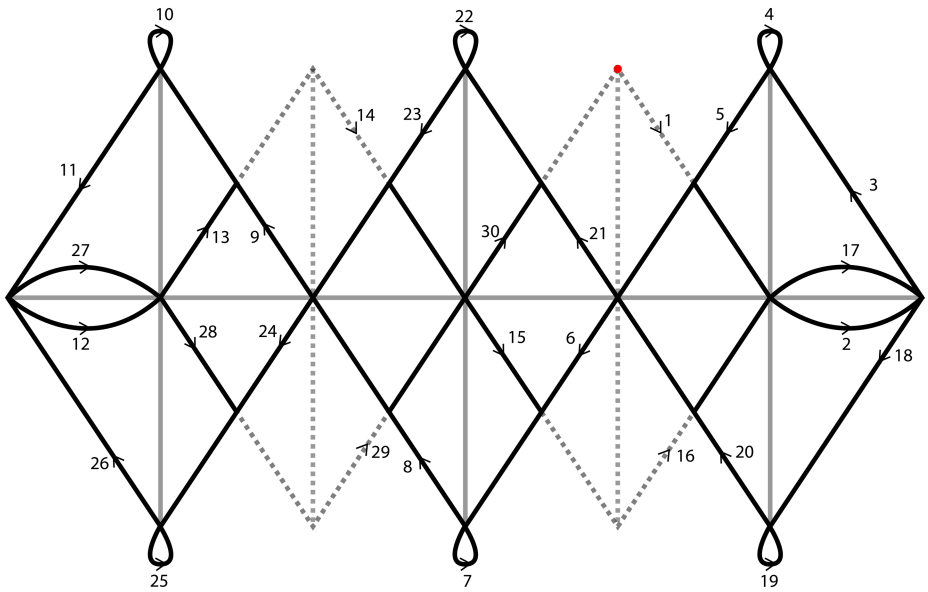


FIGURE 34 Viek

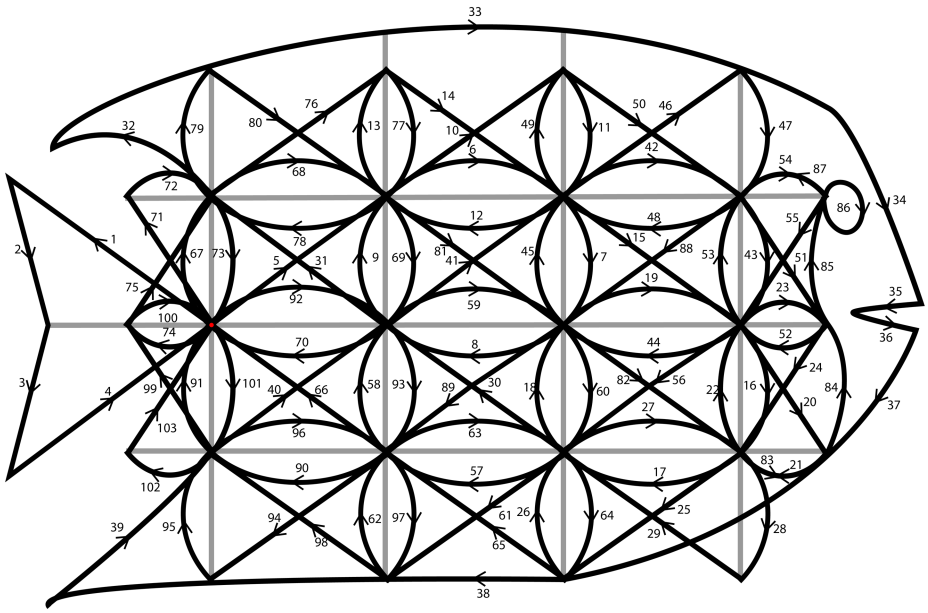


FIGURE 35 Mesao

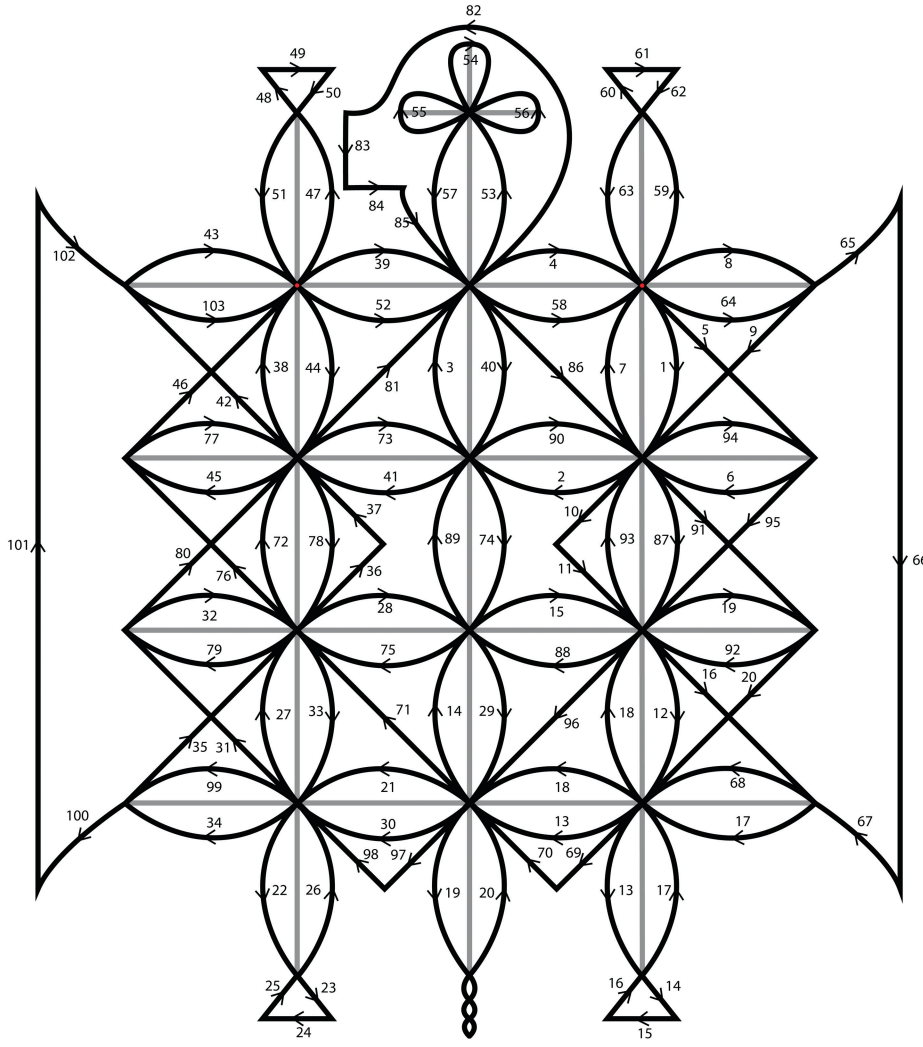


FIGURE 36 Uli

in the following sub-section. Other members of the human being referential categoriy are *lumali timi* 'the twins' (Figure 28) and the Ni-Van Warrior found in the coat of arms sand drawing (Figure 29).

Two spirit entities are materialised in Paamese sand drawings, *Titamol* and *Hokstenfai*. *Titamol* are forest spirits that are described on Paama as being of human shape but smaller, hairy, and living in banyan trees. Their existence is well accepted on Paama and throughout the Vanuatu archipelago where they are commonly referred to as *lisefsef* in Bislama, with some variation in their descriptions (Ammann, 2012; Franjieh, 2019, p. 97; François, 2013; François & Stern, 2013, pp. 74–75; Thieberger et al., 2021; Von Prince, 2015). *Titamol* entities are said to speak a secret language that they have occasionally shared with human islanders in the form of songs or numerals. I collected a number of songs and dances on Paama[8] that neither I nor my collaborators were able to transcribe and translate because they were said to be sung in that secret language. There are also stories where Paamese people have killed *Titamol* beings, with serious consequences for the community involved. I recorded the tragic story of *Evol*,[9] a village in the south of Paama, where the villagers shot and killed a *Titamol* who cursed them for their crime. Soon after, a mysterious disease contaminated the whole village and all inhabit-

ants died. The village is now indeed a ghost town of abandoned huts where nobody lives anymore. The sand drawing reproduced in Figure 30 is described by the sand drawer Samson Daniel as *Titamol sin* 'the Titamol's bones' and represent the spine of the creature that was killed.

The other spirit that is represented in the Paamese sand drawing corpus is the dreadful *Hokts-enfai*, a shark spirit that is believed to be dwelling in a secret cove somewhere on Paama island and can be summoned to kidnap people for warfare purposes by tracing the sand drawing (Figure 31). Extensive descriptions of that spirit can be found in a collection of recordings in the SD1 collection (Devylder, 2014) and Black Sand Stories collection (Devylder, 2019). A recent interview[10] with Kirk Huffman and Johnny Obed by Jodie Kell and Steven Gagau gives valuable information on how this sand drawing is connected to shark attacks that happened in the late 1970s on Paama. There was no doubt on Paama that the series of attacks were targeted to a specific clan and the result of *nakaimas* 'witchcraft'. Huffman and Obed explain that this ritual must have been purchased from another island and performed on Paama, which resulted in the late 1970s attacks.

The Paamese flora and fauna is also well represented in Paamese sand drawing. I described above in Section 3.3 how *vetah* 'breadfruit' (Figure 32) probably has several layers of meaning, *huve* (Figure 33) refers to a kind of nut that is split opened with rocks, *viek* 'taro high land' (Figure 34), is a prized kind of taro that is found only inland. As for the animals, aside from the *mesao* drawing (Figure 35) that I already described above, we find sand drawings referring to a dog *uli* (Figure 36), the story of the unfortunate hunting dog that was eaten by the hunters when they failed to kill wild pigs, *vatitiga* 'butterfly' (Figure 37), *nawimba* 'royal pigeon' (Figure 38), *asio* 'king fischer' (Figure 39), *oum* 'crab' (Figure 40), *manun* 'flying fox' (Figure 41), and *ahu* 'turtle' (Figure 42).

Paamese sand drawing also captures significant historical landmarks like the infamous blackbirding era when European colonists coerced and enslaved Melanesian islanders to work in sugar cane

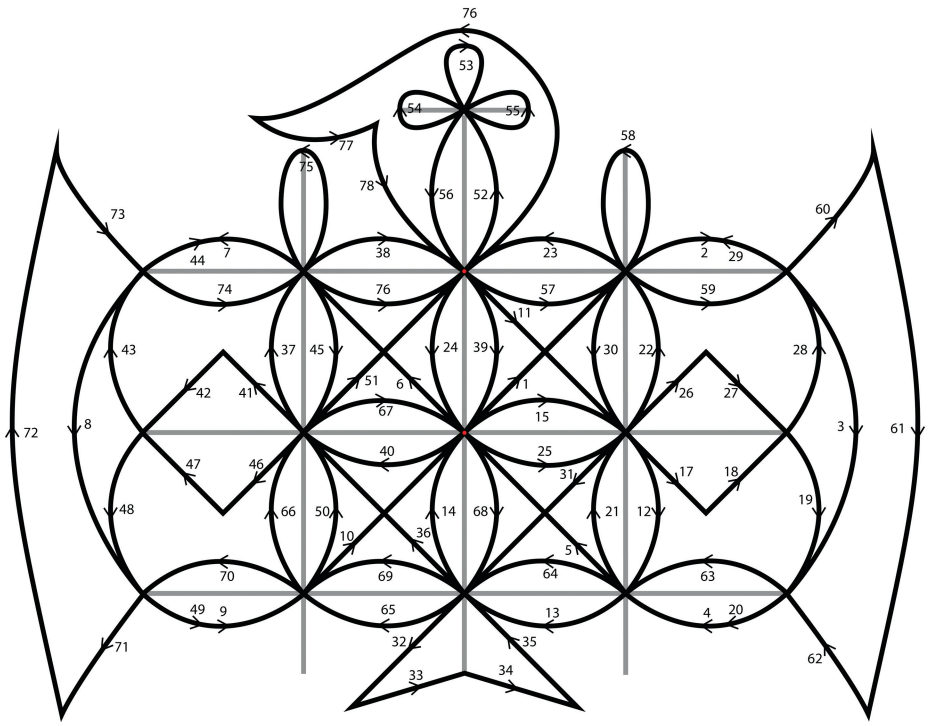


FIGURE 37 Vatitiga

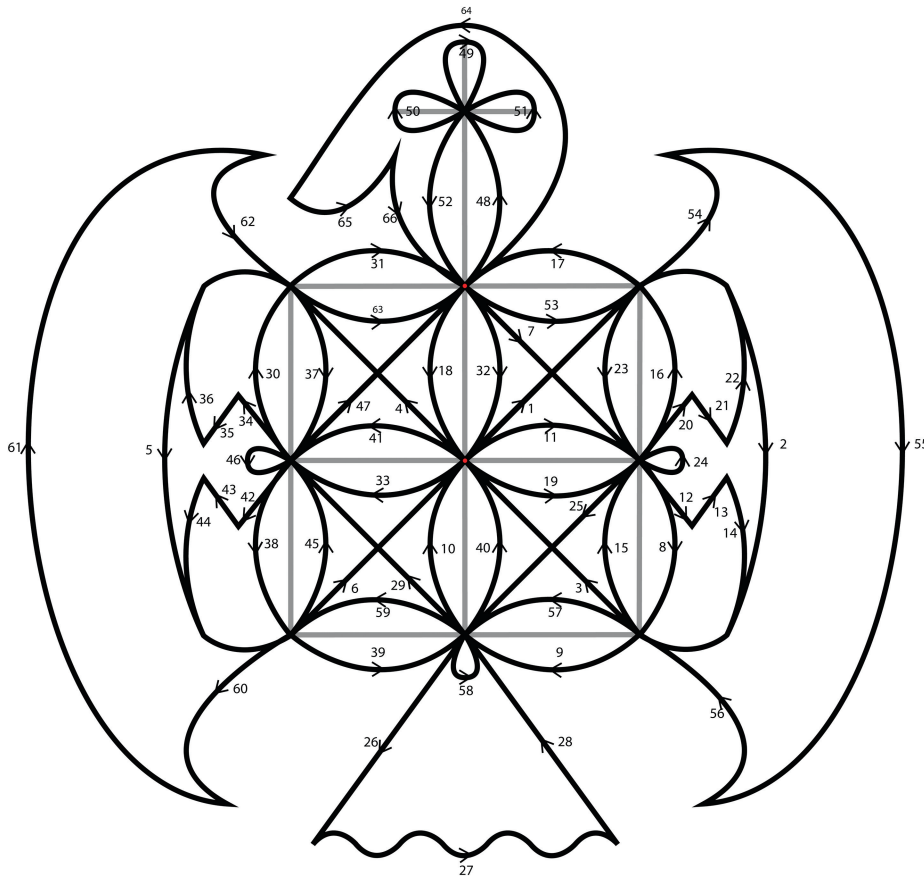


FIGURE 38 Nawimba

plantations in Queensland, Australia (Shineberg, 1999). Many people were taken from Paama and this traumatising era was captured by the blackbirding ship sand drawing (Figure 43).

Another category of sand drawing includes the inherently human experience of making tools to provide agency upon one's environment and is materialised in a series of sand drawings like *silu* (Figure 44) referring to a large slice of wood where vegetables are processed into a paste, *mununun* (Figure 45), a tool use to bail water out of canoes, and *ateli* (Figure 46), a traditional woven bag to transport food or wood logs. Food recipes are also found in the *laplap* sand drawing (Figure 47), and in the *avupuni* sand drawing (Figure 48), a fish dish cooked in banana leaves.

It would be artificial to reduce each sand drawing to only one of these categories, even more so that some drawings have several layers of meaning and thus several kinds of referents. For example, the *hoktsenfai* drawing that is used as part of a ritual that summons a shark spirit is a multi-layered drawing, which would simultaneously fall into the 'fauna', 'spirit' and 'tool' categories. It would therefore seem to be more ecologically valid and methodologically sound to code each sand drawing with a value for each type of referential object rather than pigeonholing them into rigid categories.

There is no doubt that more referential categories will arise as meaningful while others will not, as the research on Vanuatu sand drawing progresses. Once a large enough sample of drawings is assembled it may be relevant to compare the type of referents that are represented within one regional style,

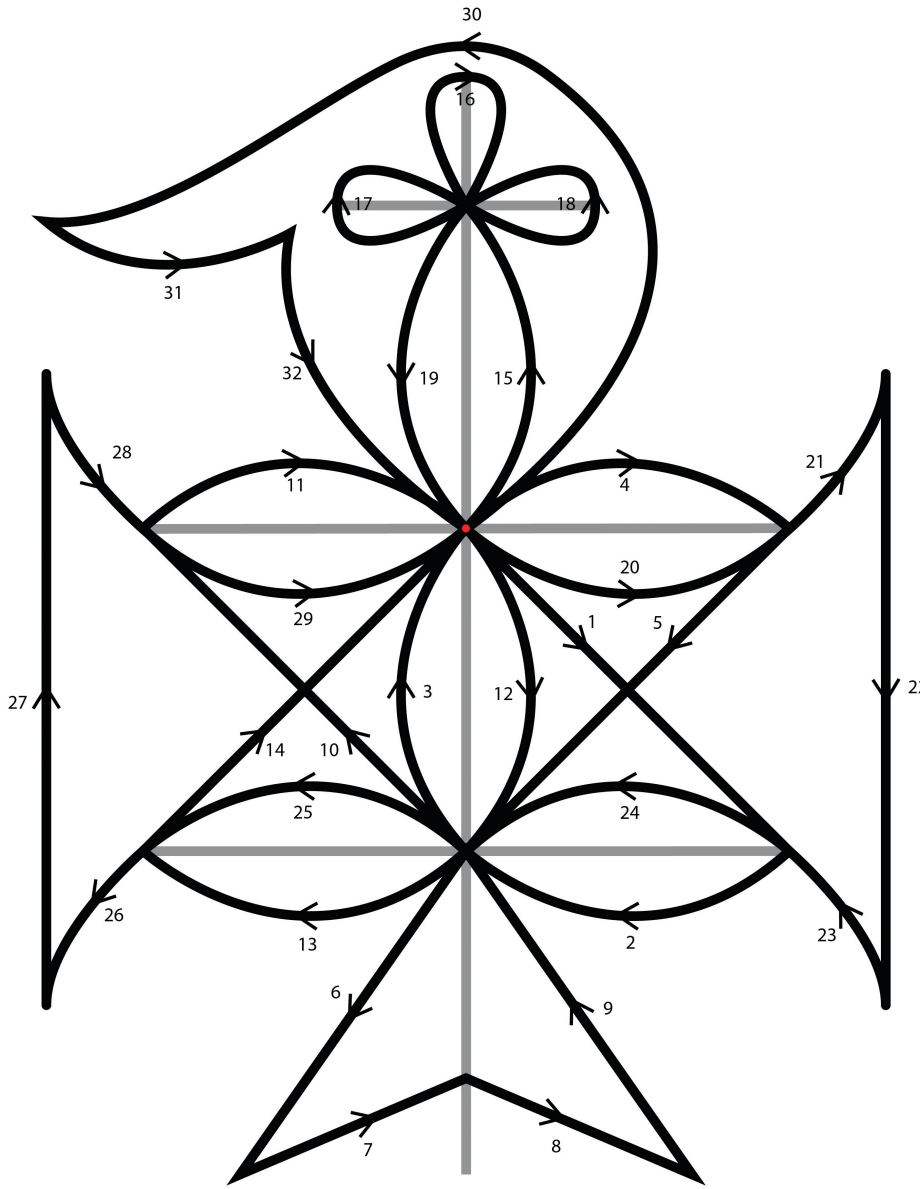


FIGURE 39 Asio

as it will possibly reveal regional specificities that would reflect cultural practices or elements of the ecosystem that are particularly significant for the regional worldview.

4.3 | What sand drawings do

The literature has reconstructed a variety of functions of Vanuatu sand drawings—some more debated than others—from purely referential diagrams to purely aesthetic art forms, mnemonic devices, oath-taking artefacts, communication systems, pedagogical tools, writing systems, accessories to

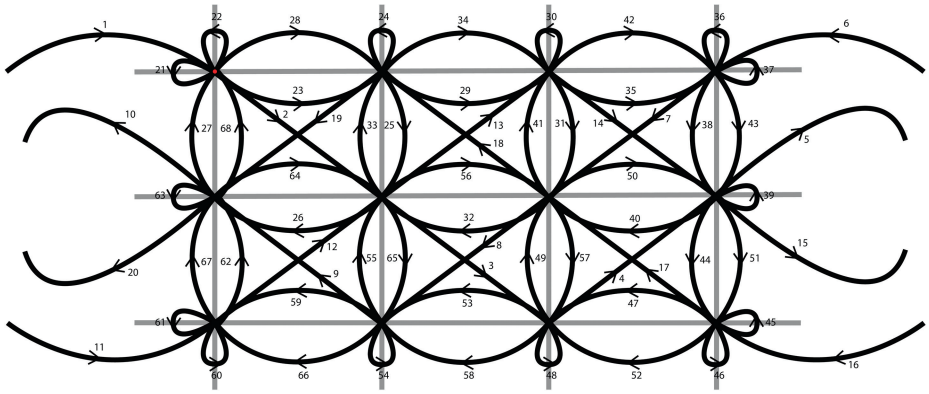


FIGURE 40 Oum

witchcraft rituals, ways to navigate the afterlife and so on. I have found direct evidence for three types of function, which arguably underlies most of those established by the literature: the *pedagogical* function, the *performative* function and the *narrative* function.

John Mark Lunmark, Paama's chief of the chiefs and sand drawer explained that the *avupuni* sand drawing 'comes from us [people of Luli] these two old people they are the ones who are the teachers, old Willie Toungon and Harry Morsen.'[11] Matthew Joe explained that as a child, these two elders took him and a group of young boys to a special place where they taught them the drawings for several days. Old Sam from Nau had a similar recollection of the function of sand drawing when he recalled that 'the ancestors, they sweep the ground and they all draw and it stays on the ground of the *nakamal*, and then us we go and see them. It's like a school.'[12] Maki, an elder from Luli, quoted above, also drew parallels between learning sand drawing and acquiring knowledge from older generations, also using the term *sukul* 'school' in Bislama. A quick look at the *vetah* 'breadfruit' performance[13] (Figure 12) from Old Sam further illustrates the pedagogical dimension of some drawings. Old Sam describes the various parts of the breadfruit and the life cycle of the plant and augments his drawing performance with iconic gestures animating the drawing with vines climbing up trees and flowers blooming. Although sand drawing is obviously different from the botanical, zoological or historical diagrams that we find in western classrooms, the multiple sources and recorded performances make explicit parallels between sand drawing and a traditional way of knowledge transmission. Taken together these accounts provide solid evidence for the *pedagogical* function of sand drawing.

Some drawings are performed 'to make something happen' and can hereby be described as serving a *performative* function in the definition of Austin's (1975) performative speech acts. The action that a performative sentence describes is performed by the utterance of the sentence itself (e.g., *I now pronounce you husband and wife*). The *heart* drawing[14] illustrates this function well. Matthew Joe, explains that this is a ritual that is traditionally performed by a young man who wishes to marry a young woman from another tribe. The young man goes to the young woman's tribe when everyone is gone in their bush gardens and draws this intricate geometrical pattern in front of the young woman's family house. The young man then leaves and comes back the next day. If the drawing has been erased, the young woman or her family rejects the union. If the drawing remains untouched, this means that the marital union has been accepted.

I began my investigation of Vanuatu sand drawing with the bias that all sand drawings were 'telling a story' and was quite frustrated when I would not systematically manage to record narratives complementing the performances. Eventually I realised that some sand drawings do tell a story, but

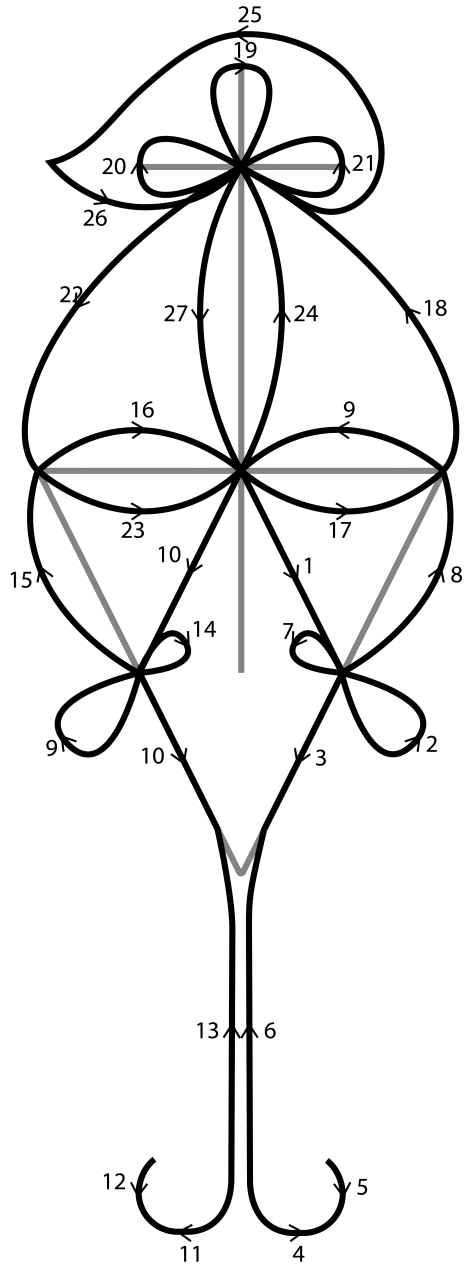


FIGURE 41 Manun

others simply do not. *Lumali timi* 'the twins', is an example of a sand drawing with a *narrative*[15] function (Figure 26). The first segment of the line (vectors 1–14) refers to one brother looking for his twin and drawing the first half of it. The first twin is off to the garden when the second brother finds the incomplete drawing and draws the second part (vectors 15–28). The two siblings are finally reunited and draw together the part described by the sand drawer as *tunien vus ke* 'the end of the story' (vectors 29–66). *Lumali timi* is an interesting meta-narrative: a sand story about a sand story and is not only found on Paama but also in different regions of Ambrym (Baron, 2020; Franjieh, 2018) with variations

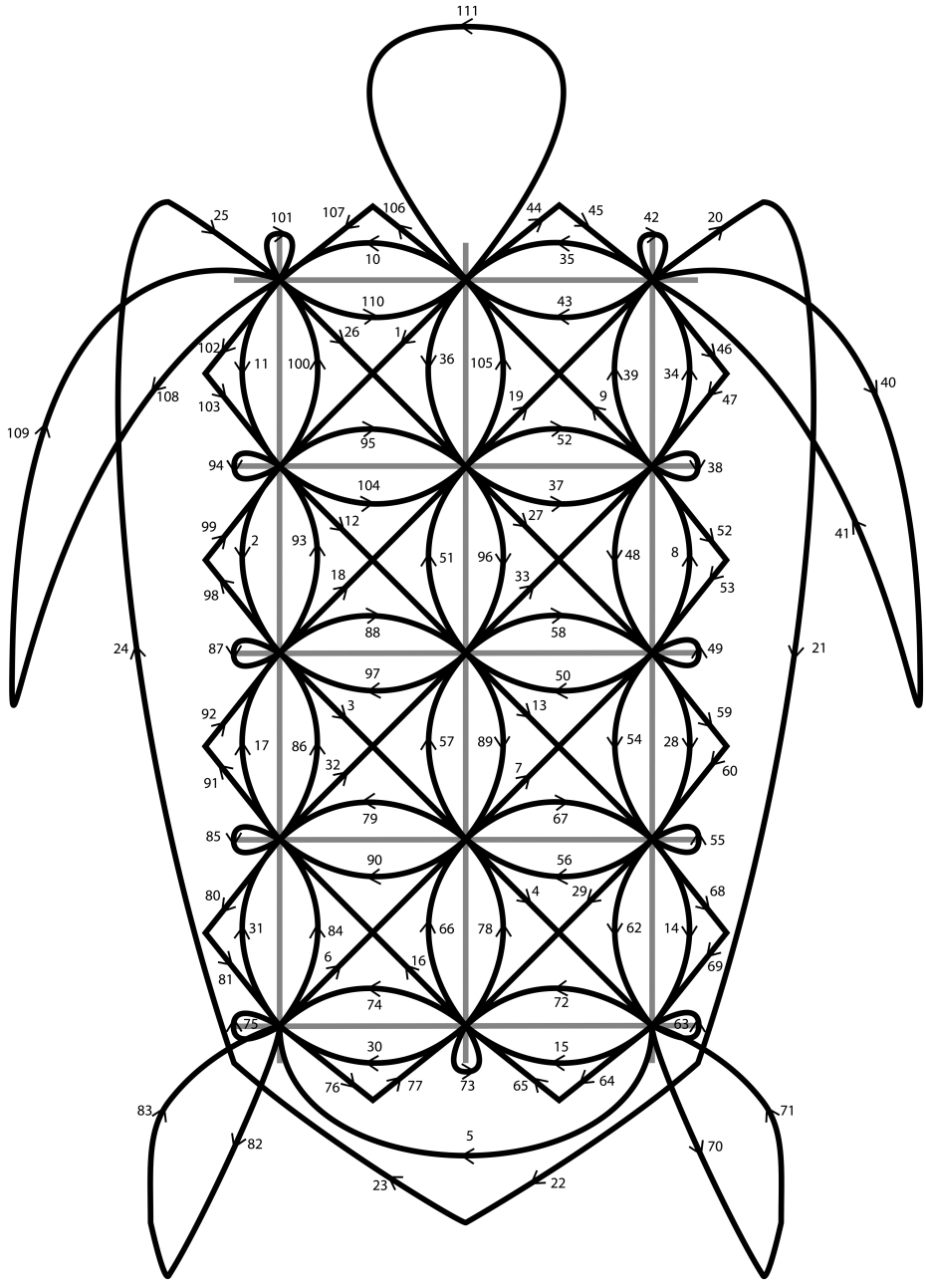


FIGURE 42 Ahu

in its form and narrative. *Lumali timi* does much more than just telling a story as Lind (2018) argues. It brings back to life a sense of intimacy that was shared at the time the drawer learned it from his grandfather, thus bending space and time for an evanescent instant, as well as honouring siblingship and *tai* 'oneness' that connects all Paamese people. Moreover, given its relative morphological complexity and its cross-island diffusion, I suspect that there is a much deeper hidden meaning to the sand drawing than the rather simplistic story reproduced above. The twin narrative oddly resonates with the

FIGURE 43 Blackbirding ship

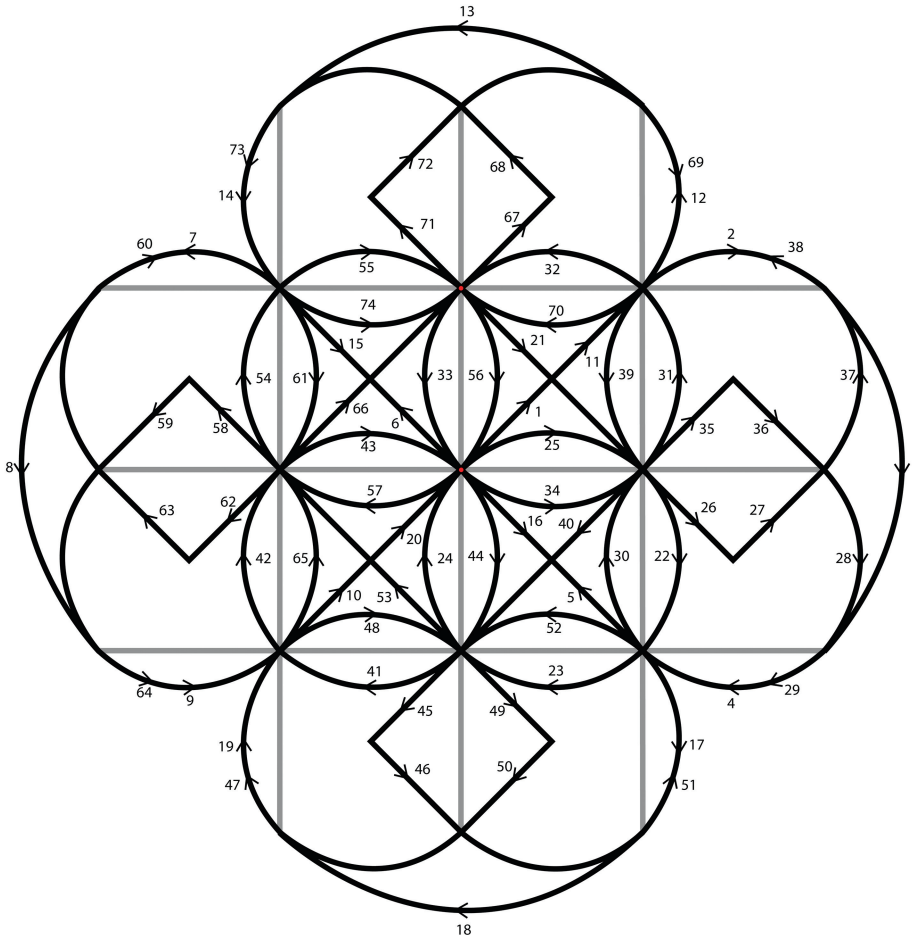


FIGURE 44 Silu

creation myth from the Bismark Archipelago that was initially documented by Kleintitschen (1924) and summarised in the *Oxford Dictionary of World Mythology* as follows:

> A pre-existent spirit, "the one who was first there" … drew two male figures on the ground, cut open his own skin, and sprinkled the drawings with his own blood. He then shaded the figures with large leaves till they emerged as two men, named To-Kabinana and To-Karvuvu.[16]

It is probably not a coincidence that the oceanic languages spoken in Vanuatu and the probable origin of the twin story have the same point of origin (i.e., the Bismarck archipelago). If we go a little further to north coast Papua New Guinea, the twin story is reminiscent of the creation myth of the two brothers Kulbob and Manub, who created Karkar island (McSwain, 1994).[17] Rory (2013) attributes Papua and Austronesian origins to the practice while Zagala (2001, 2002, 2004) advanced the hypothesis from the north of Vanuatu southward based on an evolution of morphological complexity. A systematic and fine-grained analysis of the narratives found in sand drawings within the broader cultural context of the South Pacific region can potentiate insights into the way worldviews are diffused across time and space.

FIGURE 45 Munumun

FIGURE 46 Ateli

5 | NO MAN IS AN ISLAND

A rough estimation is that circa 400+ sand drawings have been collected for over a century in a variety of media and scattered across a manifold of archiving systems, individual publications, or just sitting on personal computers. A common archival system of this immensely valuable knowledge is much needed for the sake of research and conservation of this highly endangered practice. Furthermore, a coherent methodological toolbox must be developed. Baron's (2020) PhD thesis and the present

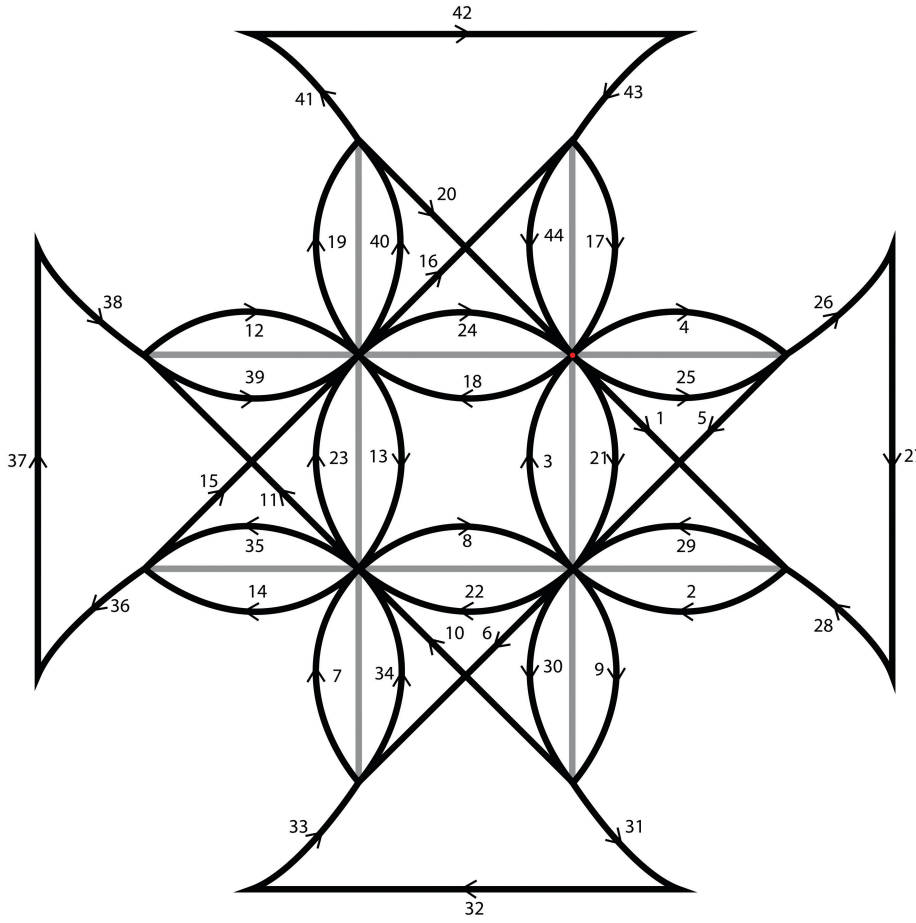


FIGURE 47 Laplap

paper are the first systematic investigations of a collection of sand drawings. But these efforts need to be extended to the other islands where sand drawings are practised so that they can be analysed and compared with a unified method that is applicable to all regional styles.

More than 100 years after the first sand drawings were documented, and 400 collected sand drawings later, it is high time that individual efforts are brought together for the field to make significant steps forwards. This paper aimed to take those first humble steps toward that ultimate goal. I have proposed the development of a systematic coding of the morphology, the meaning and the function of sand drawings. In line with the literature, I have shown how sand drawing is a multi-dimensional practice, and have advocated that its study requires a corresponding multi-dimensional methodology.

Practically, this entails building a large dataset where each sand drawing is given a value for each of the semantic, functional and morphological dimensions identified and described in this paper. Future comparative studies will help us refine this coding system and methodology. It is not unreasonable to aim for a consistent annotation of the 400+ collected sand drawings, which should certainly be enriched by additional targeted fieldwork. Once that benchmark is reached, analysing such a rich dataset will not only give us an unprecedented understanding of Vanuatu sand drawing but also provide insights of a much larger scope: the ways worldviews, beliefs or societal structures travelled throughout the Pacific, and that Vanuatu sand drawings seemed to have captured and encrypted.

FIGURE 48 Avupuni

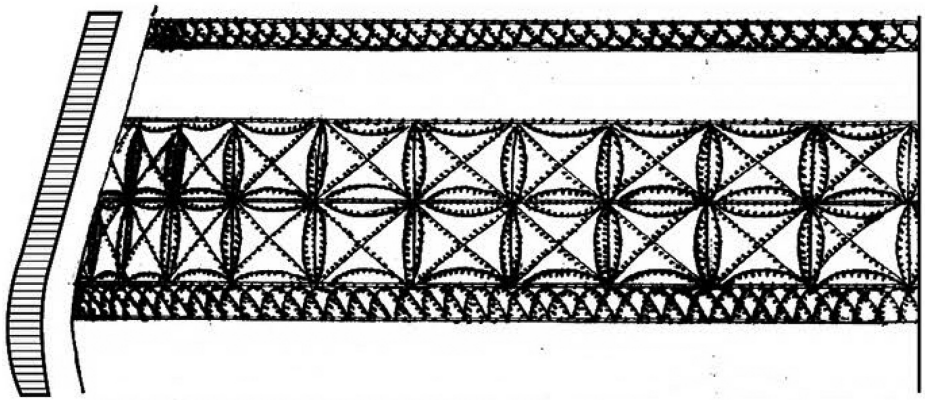


FIGURE 49 Reconstructed Lapita vessel forms and associated dentate-stamped decoration (Bedford, 2019, p. 233)

Integrating sand drawing studies with adjacent fields of research like archaeology or evolutionary anthropology could also potentially contribute to a better understanding of how Lapita culture, the Neolithic Austronesian people, settled regions of Oceania between 1600 to 500 BCE. The striking resemblance between patterns found in some Lapita potteries[18] (Figure 49; Bedford, 2019, p. 233), and the identical pattern made of arcs, lines and loops, found in *every* Paamese sand drawing, gives an idea of how fine-grained, systematic and cross-disciplinary studies of Vanuatu sand drawing studies have the potential to open new horizons of research.

This paper offers the starting point on a long journey, which hopefully will develop into future research and eventually help us connect our archipelago of isolated knowledge.

ACKNOWLEDGEMENTS

This paper is indebted to the Paamese sand drawers and their clans who own these drawings and have allowed this invaluable yet endangered knowledge to be shared: John Mark Lunmark, Samson Daniel, Matthew Joe, and Terry Titomal Mael. I am also grateful to the Paamese People in general for welcoming me with open arms into their lives over the years and for sharing their fascinating culture with great patience, trust, and enthusiasm. I would like to thank tata Kunde Toka, Sam Abel Kaiar, tuo Ezekiel Toka, and Heron Kulukul in particular. Furthermore, I would like to thank Michael Franjieh, Jacopo Baron, Jordan Zlatev, and two anonymous reviewers for their insightful comments and feedback on earlier versions of this paper. Members of the POLYSEM project, the Swedish Research Council, the Crafoord Foundation, and the Endangered Language Documentation Program are also gratefully acknowledged.

AUTHOR CONTRIBUTIONS

Simon Devylder is a researcher investigating the interaction of language, culture, and cognition. More specifically, he studies the interaction of speech, gestures and depiction in the traditional practices of sand drawings and sand storytelling, as well as the extent to which sociolinguistic situations impact on the morphological complexity of indigenous languages like North Saami and Paamese.

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ENDNOTES

[1] The material in this paper (photographs, figures, and citation) has been cleared with the sand drawers and audience themselves but also with the assembly of Paamese chiefs led by John Mark Lunmark, chief of the chiefs who gathered on 3 March 2020. This is in addition to the research permit obtained from the Vanuatu Cultural Centre.

[2] This set up was inspired by Green's (2014, pp. 72–73) collection of Australian sand stories.

[3] https://scribblify.com/

[4] Devylder, 2019 SAND01_AVUPUNI.

[5] Photograph reproduced from Baron (2020, p. 220) with the permission of the author.

[6] Devylder, 2019, SAND01_MESAO

[7] Devylder, 2019 SAND06_VATITIGA

[8] Devylder, 2019 DANCE01-DANCE10

[9] Devylder 2010 KDN32

[10] https://player.whooshkaa.com/episode?id=791316&fbclid=IwAR1zyCh7iBUWaNpuLjBFZOizSR9XSXW-CLevp7leFpMcC5WYnnZuEoYi-GDk

[11] Devylder, 2019, SAND08_AVUPUNI.

[12] Devylder, 2019 SAND21_TITAMOL

[13] Devylder, 2019, SAND19_VETAH

[14] Devylder, 2019, SAND02_HEART

[15] 'A cognitive-semiotic structure that consists of three levels: (a) narration (expression), (b) underlying story (content), and (c) frame-setting (sedimented socio-cultural experiential background)' (Stampoulidis, 2019, p. 33).

[16] 'To-Kabinana.' Oxford Reference; Accessed 9 February 2021. https://www.oxfordreference.com/view/10.1093/oi/authority.20110803104818917.

[17] I am grateful to the anonymous reviewer who brought to my knowledge the existence of this myth and its resemblance to the twin story.

[18] I am grateful to the same anonymous reviewer referred above who mentioned that it would be interesting to look at patterns and motifs found in Lapita culture.

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How to cite this article: Devylder, S. (2022) The archipelago of meaning: Methodological contributions to the study of Vanuatu sand drawing. *The Australian Journal of Anthropology*, *33*, 279–327. Available from: https://doi.org/10.1111/taja.12428