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Gardens Between Above and Below: Cosmotechinics of Generative Surfaces in Abulës-Speaking Nyamikum

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ABSTRACT

Based on the case of Nyamikum village's Abulës-Speakers ('Abelam') in Papua New Guinea, this paper weaves two parallel discussions: the first shifts our approach of gardens from being horizontal surfaces, covered in assemblages of plants, towards a vertical one, in which gardens are dynamic interfaces upon which recursive processes of generativity and depletion appear in temporal sequences of movement between a space above and another below, acting as a container of capacities. The second discussion focusses on how humans engage with garden plants, enact technics (defined here as a specific configuration of practices/techniques, objects and relations) which facilitate the becoming of plants, in a way that actualises a 'friendly' or 'moral' order elicitation according to principles of enablement instead of extraction. Finally, the paper makes the hypothesis that the transposition of visual forms created by technics to other places, such as the ceremonial house, makes them as efficacious in manifesting and enabling vital processes of generativity. This leads to the conclusion that technics play indeed a central role in the unifying the moral and the cosmic order, because they always contain a part of material self-evidence which does not rest on conventions or beliefs. As a result, it confirms that local notions of efficacious actions are the bases upon which wider vernacular conceptions (of sociality, of generativity or of morality) and logics can be built.

KEYWORDS

Abelam; gardens; technics; cosmotechinics; forms

Introduction: The (Sur)face of the Garden

On a day I was discussing with Robin Kitnyora Galëwarë, my host brother, my transect of his garden, he revealed that people in Nyamikum (an Abulës-Speaking ['belam'] village in the Maprik district, East Sepik Province, Papua New Guinea) also used to draw the ways plants were organised in the garden space.¹ He explained that these drawings, as he showed me in front of his house on the bare ground, were taught to children, so that they could learn the basic rules of plant organisation. Each species had its proper icon, and the drawing was made following the sequence of planting. Fascinated by the parallel to my project, I drew the limits of a 'garden' with its orientation in my notebook,

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and Robin filled it up carefully, as if he was planting them. We replicated the process for gardens dedicated to long yams (Figure 1).²

The theme of this issue leads me to approach gardens as images that present some aesthetic qualities (see also Leach, this issue). This made sense as the people I did my

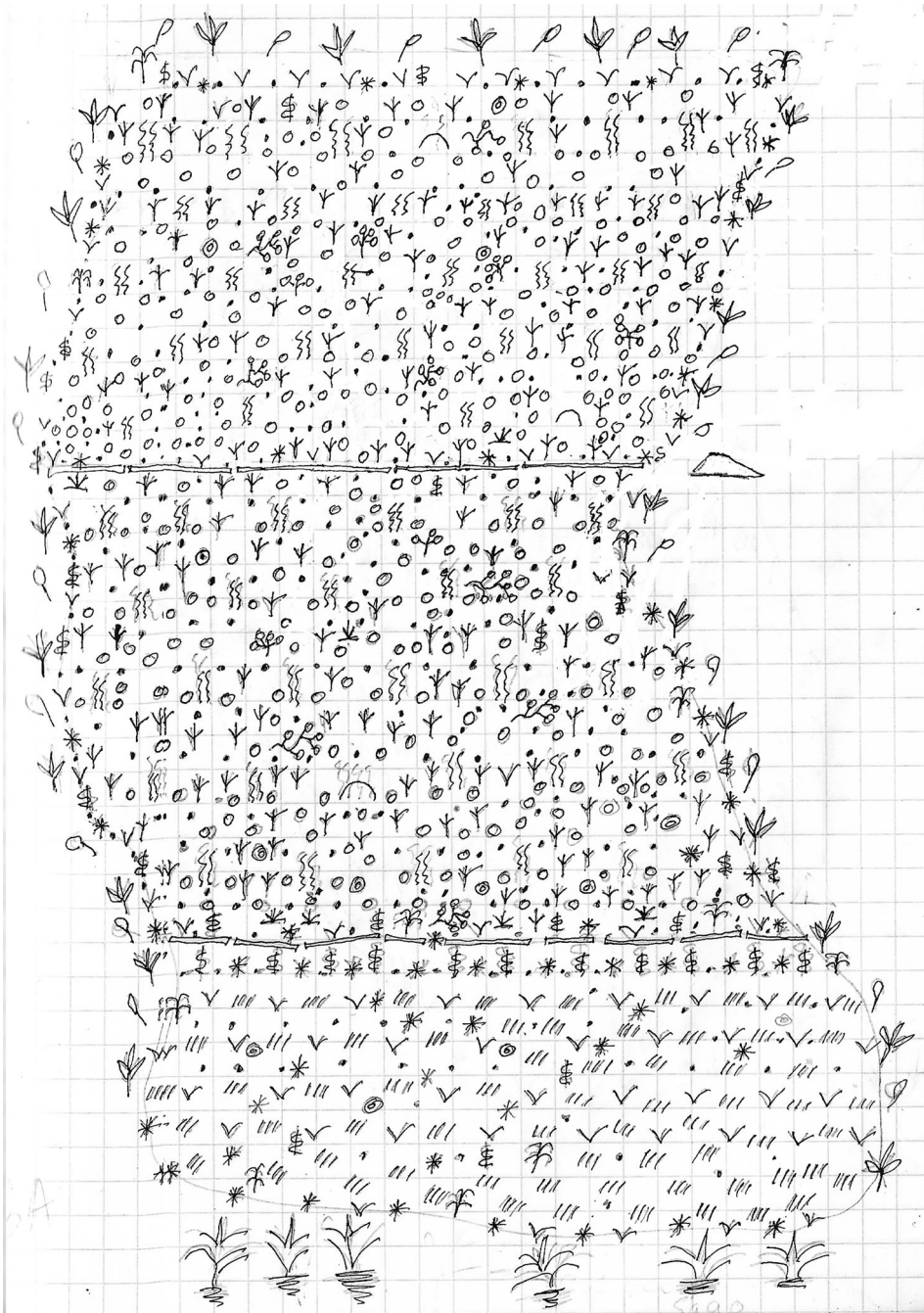


Figure 1. Drawing of plants organisation in Ka Yaawi Robin Kitnyora Galëware July 2014.

fieldwork with, the Abulès-Speakers on whom this paper is based, have been famous in the anthropological literature for the richness and the vibrancy of the images they produced (Forge 1973; Smidt and McGuigan 1994; Hauser-Schäublin [1989] 2015; Coupaye 2017), as well as for displaying decorated long yams. Like others, I note that in the field of Melanesian anthropology, conceptions of ‘technology’ as *tekhne* or *poesis* is definitely not a new theme, as evidenced by previous forays into the investigation of gardening (Malinowski [1935] 1978; Steensberg 1980; Bonnemaïson 1991; Sillitoe 1999; Tzérikiantz 2000; Battaglia 2017; Panoff 2018). I, too, find difficult the separation of technics, arts, morality and cosmology, when dealing with the ways in which Nyamikum people cultivate plants.

The import of this cosmological grounding evokes Yuk Hui’s philosophical discussion of the Anthropocene and the ontological turn, upon which he elaborates his concept of *cosmotechnics* as a call to think about modernity and its alternatives (Hui 2017). I find Hui’s preliminary definition of the term ‘cosmotechnics’ as ‘unification between the cosmic order and the moral order through technical activities’ (2017, 4), potentially useful to qualify what people do in, or perhaps better, do *with* their gardens. In this paper, I thus revisit my own ethnographic material, to explore whether this philosophical concept of ‘cosmo’-technics, as the alignment of a moral order with a cosmological one through technical activities, can find an empirical grounding through an analysis of the ways in which people engage with their gardens.

This paper thus weaves two parallel discussions. The first shifts our approach to gardens from what I would qualify as a horizontal surface which has been covered in assemblages of plants and other things, towards a vertical one, in which the garden is a dynamic surface upon which recursive processes of generativity and depletion appear in temporal sequences of movement between a space above and another below, the latter acting as a container of capacities. As a result, the garden could be analysed as an interface – or perhaps an inter-space – between the underground, where species, in particular yams, grow, and the above, towards which they emerge. The second discussion focusses on the ways in which technical activities of gardening operate according to principles of enablement instead of extraction. As Haudricourt ([1962] 1969) describes, the ways in which humans engage with the communities of plants in the garden, conceived as a miniature forest, enact technics (defined here as a specific configuration of practices/techniques, objects and relations) which facilitate the becoming of plants, in a way that actualises a ‘friendly’ – or ‘moral’ – order of elicitation, allowing for what is contained and potential to manifest itself at the interface – the gardens.

To do so, I first describe gardens’ horizontal dimensions, their inhabitants and gardening techniques as well as their movements and how processes are moulded around the behaviours of plants. Then, based on a local narrative which alludes to the existence of a vernacular perspective based on verticality, I suggest analysing gardens as being as well interfaces – or interspaces – between what lies in the ground underneath and what is above, in relation to this vernacular cosmological organisation. I then use the concept of ‘containers’ to propose approaching gardens as the dynamic surfaces, or interfaces, of containers of generative capacities and how gardening technics are specific actions that enable the potential of the species to manifest themselves at the interface between an inside (below) and an outside (above). I end up with a hypothesis about the forms these (cosmo)technics create across visual and material domains of experience in a way which mobilises and instantiates generative capacities.

Horizontality: The Dance of Friendship between Species in a Miniature Forest

Robin's drawings confirmed my instinctive approach to gardens as horizontal spaces part of a wider territory. In Nyamikum, gardens are called either *abu*³ or *yaawi* – the latter term also designating 'bush', the secondary forest, in contrast with *jëraa*, the primary forest (Lea 1964). Their total size varies between 0.5 and 0.6 ha, cleared from the secondary forest, and they have a general quadrangular-based form, depending on the features and slope of the site. Once opened, they are planted with a succession of crops over a period of three years (more rarely four years), before letting the surrounding vegetation reconquer the space, according to the principle of swidden horticulture (Conklin 1961). People used to wait more than twenty years before reopening a garden in the same space. With the shortening of available land due to pressure from both demography and land mobilised for cash crops, people do not wait as long before reopening the same spot, which means that the secondary forest has less time to regenerate and produce the useful species that people used to know and use for building, vines, fruit, game, medicine and decoration (see also Sillitoe [1996] 2013, 167–228).

In Nyamikum, as in most villages of the area, three types of gardens co-exist. The *Ka Yaawi* (short yam gardens), cultivated by residence groups and affiliates, provides most of the edible food,⁴ in particular short yams *ka* (Tok Pisin [TP, hereafter]: 'mami'; *Dioscorea esculenta*) as well as other crops, including some, such as peanuts, grown by women to be sold for cash in the Maprik market. Depending on planning, a single clearing can be divided into several plots, each then used by kin members and allies. These gardens are located along main footpaths (*yaabu*) for easy access. The second type, *Waapi Yaawi* (long yam gardens) are, in contrast, of a smaller size and located in more secluded areas and are mostly cultivated by men helped by their male kin and allies. Whilst garden names refer to short or long yams, both species can be cultivated in either garden, though the long yams *waapi* (TP: 'yam'; *D. alata*) grown in the long yams garden are usually ones that will be decorated and displayed during the ceremonies and used as valuables. The third type is cash-crop gardens, which have been successively used for coffee, cocoa and, since the beginning of the 2000s, vanilla.

Ka Yaawi are the ones that give to the village life its main rhythm and follow a clearly defined cycle. Gardeners open a new short yam garden every year,⁵ between August and October, which means that at any given moment, they are working on three or four gardens (see Figure 2), typically travelling from one to another, sometimes as far from one another as a one-hour walk. Each garden is identified by a different name, defining their stages: *Kulë Yaawi* is the 'new' garden opened during the current solar cycle; *Waara Yaawi* is a one-year 'old' garden; *Mëlwaara* is a two-year old and gardens of three years old are called *Yësa*. Stage names correspond to both the age of a garden and what crops it hosts.

From a sequential point of view, during the first two years of the garden's life, the harvesting of yams is followed by a new cycle, starting from the planting of a different community of yams, marking its transition from *kulë yaawi* to *waara yaawi*, and the harvest of which the following year transforms it into a *mëlwaara*. These transitions are mainly defined by the rhythm at which short yams enter and exit its space. *Ka* give the garden both its spatial structure and its tempo: they are the first species to enter the newly

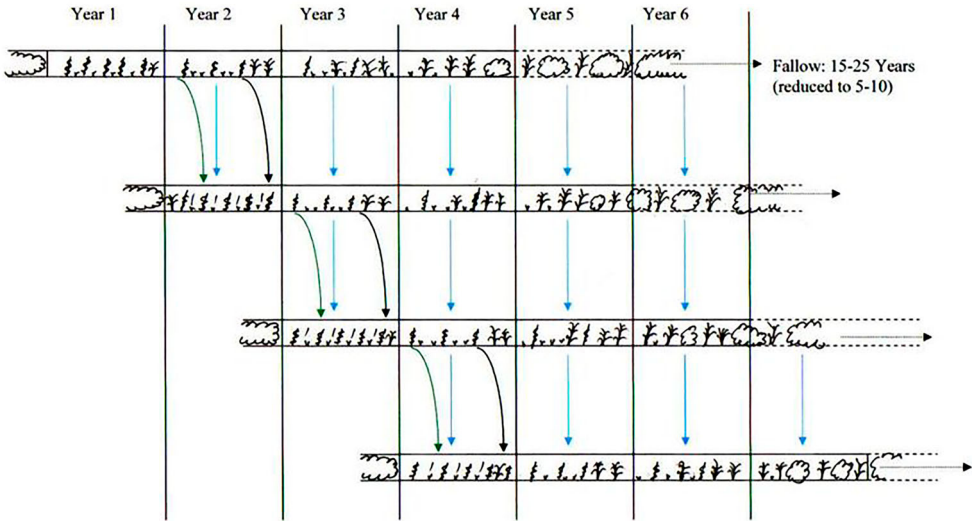


Figure 2. Gardens succession. Green arrows: movements of the ‘new’ short yams. Black arrows: movements of the ‘old’ short yams. Blue arrows: transplanting of ‘secondary’ species.

opened garden, forming a constellation of small mounds spaced about 1 m apart, in between which all other species will be fitted.

Ka enter gardens in two waves: regardless of the cultivars, gardeners identify two main lines of *D. esculenta*: the *kulë ka*, the ‘new yams’ and the *waara ka*, the ‘old yams’, which have never mixed over the short period during which they both are present in the storage house.⁶ While both lines are composed of the same array of cultivars, what distinguishes them are the gardens in which these two lines are planted and harvested and when. *Kulë ka* are always planted in the newly opened garden between November and January by the owner of the plot and a party composed of the members of his residence and hamlet.

In the next months following the planting, the female partner of the gardener will plant the rest of the crops – which I call ‘secondary’, though they might constitute an

Table 1. List of main garden cultivars.

-
- Main cultivars
 - Short yams/*ka* (*Dioscorea esculenta*) – 38 cultivars in Nyamikum
 - Long or Greater Yams (*Dioscorea alata*) – 21 cultivars in Nyamikum
 - Main “secondary” cultivars
 - Yams *lëpma* (*Dioscorea bulbifera*)
 - Taro/ *maayë* (*Colocasia esculenta*)
 - Beans (*Phaseolus vulgaris* or *Psophocarpus tetralobus*)
 - Tobacco/*nyëqwës* (*Nicotinia tabacum*)
 - Aibika/*saakna* (*Abelmoschus manihot*)
 - Edible amaranth/ *baarë* (*Amaranthus tricolor*) *aupa*
 - Papaya/*baalëmenya* (*carica papaya*)
 - Genom or Tulip/*yëvët* (*Gnetum gnemon*)
 - Manioc/ kasava (*Manihot esculenta*)
 - Singapore taro, longkong (*Xanthosoma sp.*)
 - Banana/*laapu* (*Musa spp.*)
 - Pitpit/ *kudiyaa* (*Saccharum edule*)
 - As well as varieties of corn, tomatoes, pumpkins, watermelons ...
-

important part of the diet and contribute to their cash income (see [Table 1](#)). First, shortly after the yams, taro (*Colocasia esculenta*; Ab.: *maayë*), defined as the ‘wife’ of the yams, are planted by women in the space in between the yam mounds, tightening the mosaic; then the different greens and trees such as bananas follow gradually.

Whilst *kulë ka* will remain in the garden until the moment of the harvest all other species can be harvested continuously over the year depending on their maturation. As people pick up food in the garden, be it a tuber or any other plant, they uproot a shoot of another plant, of aibika (Ab.: *saakna*; *Abelmoschus manihot*), pitpit (Ab.: *kudiyaa*; *Saccharum edule*) or even a whole banana sapling, to place it in the loosened ground left vacant, practicing an individual-based crop method.

These secondary species not only inhabit the garden, but as the latter moves to the second stage, they will act as a nursery for the garden that will be opened the following year. This explained my surprise, when, entering for the first time Robin’s, *kadiga*, the yam storage house that every household builds in their residence containing only found tubers and none of these plants. Constructed in the customary model of the two-sided roof that gives Abulës villages their recognisable aspects, the *kadiga* is used to contain the household’s reserve of tubers that have been harvested.⁷ Robin’s *kadiga*, like other’s, looked empty most parts of the year, except for the period during which he used it to store his yam harvest. Even then, however, apart from yams, some taro tubers and the occasional bundle of dried tobacco, I could not find the other crops. This was because, these greens and seeds do not need to be stored, as the garden in which they grow acted as the nursery for the successive gardens. These species, then, cascade from the oldest gardens to the newest ones, as gardeners travel between them, transporting shoots (cf. [Figure 2](#)). By contrast, yam tubers, both *kulë ka* and *waara ka*, transit through the dark enclosed space of the *kadiga*, where they stay until they sprout, making it to me a strange, almost eerie, space filled with thousands of contorted insectoid fingers seeming to reach upwards.

As ‘new yams’ *kulë ka* are harvested six to seven months later, between April and June, from the ‘new’ garden, gardeners replant it with the ‘old yams’ (*waara ka*), in May/July, marking its transition to the next stage *waara yaawi*. These ‘old yams’ are then harvested in January/February. When these *waara ka* are harvested, the garden moves to its final stage, *mëlwaara*, and is only populated by the remainder of the other crops, as well as of odd unharvested yam tubers. Thus, over the course of its life, the garden sees individual plants and entire species entering and exiting its space, acting, according to their age, as nursery for the newest ones, challenging my initial perception of being individually separated spaces. Gardens are thus intertwined through practices and through the species they host.

Indeed, around February/March, the new garden looks like the model of the general ecosystem, brilliantly summarised by Jacques Barrau as a miniature forest (1975, 29; see also Geertz 1963, 16–24): the luscious yam vines, raised on stakes, form the ‘trees’, and a mosaic of taro, beans, amaranth and other crops thrive in the ‘undergrowth’. The garden is populated with a range of plants, forming a community of living beings, each species having its own place, aspect, behaviour and requiring specific type of care. Men and women visit them daily, to weed, prune, stake, harvest what is ready or

ripe, and transplant crops either uprooted from a nearby spot, or coming from an older garden.

There are thus three types of horizontal movements: (1) within the garden itself, moving plants from spot to spot; (2) between the garden and the *kadiga*, the storage house and (3) between the three gardens.⁸ These movements are fluid, contingent on the stages and states of plants, of gardens and of the year, following multiple temporalities. These rhythms are nested and interlocked within one another, each rhythmized by different layers of relations.

Verticality: Containers Cosmology

Another type of movement, more elusive to the ethnographer perhaps, is vertical. It becomes more perceptible when focussing on the behaviour of the yam plant: during the first part of their lives, vines grow and climb out at a relatively high speed, as if shooting off their mounds to climb on neighbouring supports – the stakes installed by gardeners or the elaborated trellis built for long yams *waapi* (cf. Figure 3), in a search for light and rain. Once the vines have reached their maximum heights, they dry up, as if all the nutrients were sucked by the underground tuber. In the case of *waapi*, this is the moment the tuber is said to shoot downward in its hole. The whole process is a succession of two opposite momentums: one upward and outwards, with the plants developing outside in a spectacular way, before this external lusciousness is swallowed down, inward and

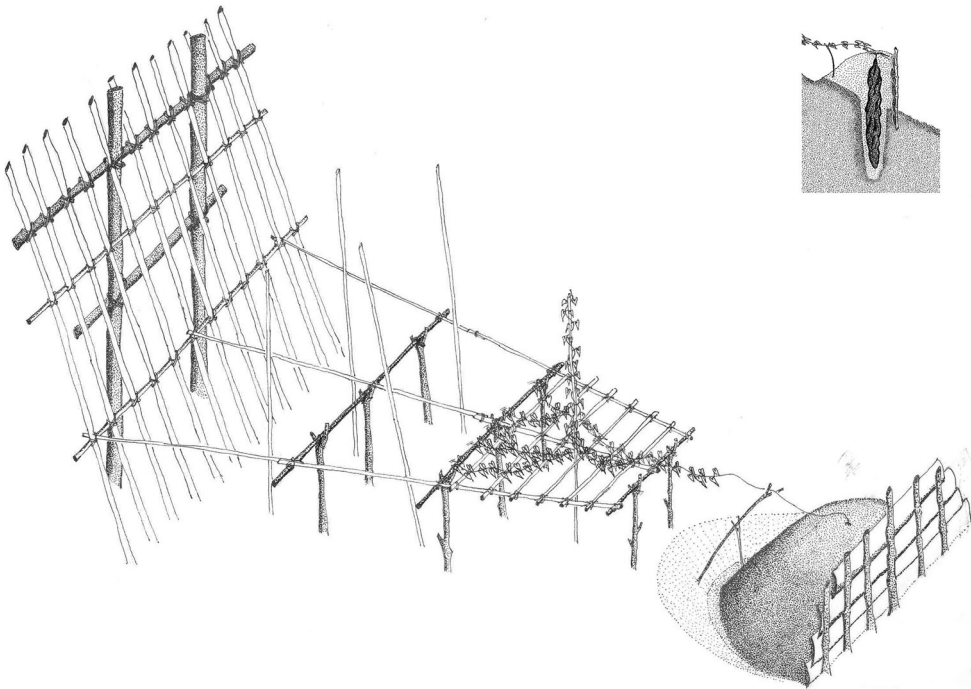


Figure 3. Waapi Trellis (insert: side view of the mound) (1) *tékèt* wall; (2) *kutapmu* mound; (3) *paatë* vine and (4) *jaabë* bed.

downward, by the invisible tuber that ‘goes down’ (*dawulë*, in Abulës) in the deep. This particularity of yams’ developmental behaviour is perhaps what makes it such an important species for vernacular imagination.

My first lead came from a discussion with Lawrence Kawuyet the son of Tepmanyëgi, one of Nyamikum’s leaders, Vitus Kwanjike, who aside from being a policeman in Mparik town, was also one of the main artists of the village, Andrew Sikiti, the village representative, and with Robin about the fact that anthropologists claimed that Abulës-Speakers had no myths. The conversation mused around the *waalë saaki*, the ‘stori’ (TP), that people knew about the origin of yams, such as the tales of two foundational heroes, Wapikany and Sërapwan (cf. Huber-Greub 1988, 147–148, 186; Coupaye 2013, 199–200; Hauser-Schäublin [1989] 2015, 117–118, 2021, 94–95), and other shorter stories about the origin of sago, of the sun and the moon, and other entities and living beings which populate the territory. Moving into the topic of Heaven and Hell in Christian cosmology, they mentioned an Abulës analogy: *Vëmëk*, ‘The-One-That-Watches’ (TP: ‘lukluk’), the sky and *Kamëk*, ‘The-One-That-Eats’, the underground. Humans and other living beings were living in the space in between, indeed under the ever-watching sky and destined to be swallowed by the earth after their passing away. It created, to me an almost claustrophobic image, of most living things being wedged in between. At first, this distinction helped us to sort the different collectives, some that populate Abulës live and play a role in the growing of yams, some of them emergent and contingent, ephemeral, others more permanent (see Coupaye 2013, 159–163; 172–194). To me, *Vëmëk*, as the sky, was the place where birds and entities such as the Sun, the Moon and the stars – who occupy an important part in Abulës cosmology (see Hauser-Schäublin [1989] 2015, 111, 134–136, 182–185) – and the Christian God all reside.¹⁰

Kamëk, composed of *këpma*, the soil/ground, forms the land, which is at times considered as a living entity, who is said to be aware of its gardener (as Huber-Greub discussed 1990, 275–276), and thus able to provide or withdraw its generative power, as it contains food and drink for the plant. In addition to being the space in which dead are buried, it is inhabited by living entities, such as the yams, who are said to be able to travel, should they wish to, as well as others such as the nematodes that can attack the tubers, the giant multi-coloured worm, *baëkwaam*, who act as controllers of the yam growth, or the *waalë*, ubiquitous entities said to reside in water holes and to act as reinforcers of the right of the owners of the land. To me, *Kamëk* evoked a container of beings, processes and movements, all of them mostly hidden from direct view, but the effects of which emerged as indexes at the surface, in forms of features, rocks, water holes and, of course, plants.

It is later, however, when Robin and I discussed it further, that we started to realise that it was also an important trope in Abulës imagination. From this conversation, the relation between *Vëmëk*, above, and *Kamëk*, below, appeared to me as a dynamic one, and the surface where people lived and things appeared, seemed to be acting as a membrane between both. Applying this to my analysis of gardens and combined with other works on Abulës and Melanesian images, it led me back here to ideas of containers, outlined in a previous paper (Coupaye 2018b).

The principle of container, Jean-Pierre Warnier reminds us, is phenomenologically anchored in the lived experience people have of their own body (Warnier 2006, 2007,

25–27; 282). It is not only the matrix of actions, affects and the senses, it is also a vessel, with an inside contained within its skin, and substances and effects are constantly coming in and exiting, be it food, words, smells and other exuvia. Vital processes, such as growth, regeneration (healing) or even degeneration (aging), are capacities (from *capex*, latin: ‘to contain’), the sources of which are partially obscured from experience (Pitrou 2017, 1; Coupaye and Pitrou 2018), manifest themselves on its surface, the skin, giving the body its appearance. It is no surprise then that the body-as-container, in the Sepik area (Stanek and Weiss 2016, 75), can act as a principle, or a paradigm to think through fertility, generativity as well as appearance – even, in some cases, being also synonymous with ‘form’, as Simon Harrison noticed (1990, 164). This idea of container is even more salient, when examining the place that its outer shell, the ‘skin’ occupies in Melanesian imagination, as exemplified by Aletta Biersack in her discussion of Paiela ideology (1984), a trope which Brigitta Hauser-Schäublin re-exposed recently in comparing both riverine and foothills Middle-Sepik societies (2021).

In Abulës, the body is called *sëpëkwaapa*, composed of *sëpë*, ‘skin’ and *apa*, ‘bones’. The skin, in particular, is an important vernacular category intimately associated with the person, as many ethnographies have testified (Read 1955; Biersack 1982; O’Hanlon 1989; Küchler 1992; Crook 2007) – the bones, themselves being the mineral parts contained within the body. More than a mere boundary, the skin is the dynamic surface where external properties and inner qualities and potentialities can manifest themselves in an appropriate form (see Hauser-Schäublin 2021). As an active interface, it contains possibilities and vital processes, but can also transform the appearance of its wearer, as told by numerous myths of humans donning pig or cassowary skins and operating thus a metamorphosis (see Hauser-Schäublin [1989] 2015, 198–204; Coupaye 2013, 166, 200). The skin acts thus as both a dialectical and a transitional space: it reveals and conceals, it manifests and transforms what is behind, inside or underneath. Transforming skin can thus be seen about enabling properties which are contained, such as growth, processes and potential relations, to become visible (Strathern 1988, 377, note 25). Biersack (1984, 132) goes even further in indicating that women cultivate the skin of the ground – gardens – whilst men own its bones.¹¹ This also seems valid in the case of adorning, masking or scarifying humans’ bodies (Hauser-Schäublin 2021, 96–97), the carving and painting of images, at least in the Sepik (Coupaye 2018b; Hauser-Schäublin 2021) – as well as, I suggest, gardens.

It seems that acting on the skin/surface of things, because of its transitional dimension, mobilises and activates the relation interior/exterior – a dual trope pervasive in Nyamikum people’s imagination. *Awulë*, inside, and *agwadë*, outside, as well as verbal forms, *dawulë*, ‘to go down’, and *waarë* ‘to go up’, used in spell-songs, in relations to spaces such as houses, particularly the *kadiga* storage house, yam mounds and the ceremonial house, are terms that pervade metaphors of knowledge, secrecy and power. On the one hand, vital processes that are at the sources of reproduction, growth and maturation of plants and of all living beings are themselves invisible (Pitrou 2017), because contained within their bodies – removed from direct view like the underground tuber or the figures inside the ceremonial house. On the other hand, these processes, in turn, seem to manifest themselves on the surface – a surface which is not a passive reflexion of these inner properties (Hauser-Schäublin 2021, 98), but instead, appears as an actual interface, or

maybe an inter-space, where people, human beings, can make appropriate forms appear through specific efficacious actions, as I will discuss in the next section.

Cosmotecnics: Negative Actions that Make Forms Appear

To make forms appear, processes indeed have to be appropriate. This appropriateness finds its analytical translation in Marcel Mauss's definition of technical acts as 'efficacious and traditional' (Mauss [1935] 1973, 75, original emphasis; Sigaut 2003; Coupaye 2018a, 18–21) and, in this case, technical acts have to be attuned to the properties attributed to the thing upon which they are acting, in order to enable its inner qualities to manifest themselves in an appropriate form. Acting on the humans' bodies, the façade of the ceremonial house or the surface of the carving is performing technical processes that enable potentialities to become visible, relations that enable relations.

This general principle of container also teases out vernacular ideas of the relations between action and generativity. For technical acts on living beings, as *processes working with processes*, to *enable* the manifestation of forms, instead of *imposing* them from outside on a matter, they have to be performed in a way which is attuned to living processes (Letouzey 2020). In swidden horticulture, gardening techniques are thus indeed based on caring for individual plants separately, as both Haudricourt ([1962] 1969) and Barrau (1970, 492) pointed out. Haudricourt, using yams as a paradigm, contrasted the Pacific and South Asian areas' mode of dealing with yams and rice with the treatment of cereals in the Mediterranean area, which he qualified as more interventionist and based on a massal treatment of plants (Haudricourt [1962] 1969, 164). In the Pacific, yam gardening appeared based instead on modifying each plant's environment, so that it could express its behaviour to the utmost. Gardeners create around each individual plant the optimal conditions for its growth, leading Haudricourt to qualify these interactions as 'friendly' ([1962] 1969, 165): each plant is handled with care, its climbing vine gently laid on a trellis or twined around a stake, in order to help its development; shoots are cautiously uprooted to be replanted in a prepared hole; tubers are dug out with attention so as not to damage their skins and avoid decay. This 'friendship' is based on a deep familiarity and knowledge, developed over generations, with the cultigens, their cycle and their behaviours. Each individual plant is treated, at times metaphorically and at other times more directly, like the living beings they are, with attributes such as agency and consciousness.

Technical processes of cultivation are, thus, intimately tuned to the plants' living processes of growth, maturation and ripening (Coupaye and Pitrou 2018). Performed on the upper layer, the surface, they elicit in a 'friendly' way – a moral one then perhaps – plants to take root and grow up (and down for yams), crops to yield and tubers to propagate. Instead of being extracted, generativity is thus encouraged, in what Haudricourt defined as a 'negative indirect action' (Haudricourt [1962] 1969, 164; see also Ferret 2014), whereby the gardener, instead of directly acting on the plant (through modification of or intervention in its reproduction and growth process), acts on its external conditions, its milieu, to encourage the behaviours that s/he desires, or instead, prevent the ones s/he does not.

It is no surprise that yams acted here as a paradigm for Haudricourt's model as well as species central to vernacular imaginations of processes, immanence, life, relations and generativity, for the Abulès-Speakers and elsewhere (Haudricourt [1964] 1987; Strathern

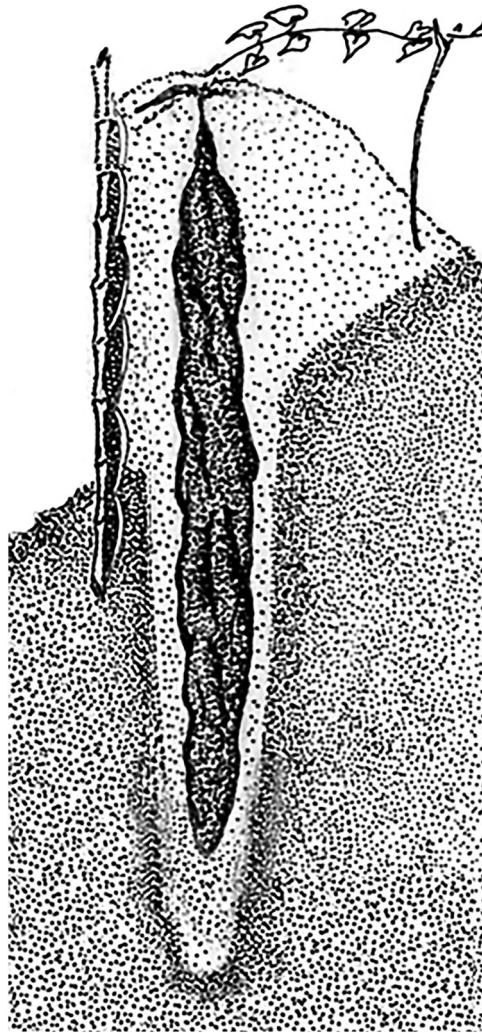


Figure 4. Long yam waapi mound (*kutapmu*) and its supporting wall (*tëkët*).

2017). The technical process that leads to the harvest of a long yam of the *Maabutap* type, the one central to long yam ceremonies, is an enhanced version of what people do for short yams and indeed moulded around the behaviour of the plant.¹² Gardeners dig long vertical narrow holes of more than 2 m deep on the slope of the garden that are then refilled with soil which has been cleaned of its hard lumps, stones and remains. They then build over the hole a conical mound about one metre high, *kutapmu*, supported on its lower slide by a small wooden wall, *tëkët* (Figure 4). This creates a vertical berth of loosened earth that will serve as a guide to the future growing tuber, with the covering *kutapmu* allowing for the development of the root system. The sprouted tuber, *taakwi*, also called the ‘mother’ of the long yam, is then placed gently on the top of the mound and covered, its sprout protruding.

In the first months, the gardener will regularly check the newly formed tubers, and will remove them, bar one selected to be the future long yam one – if not the only – of the very few direct actions which interfere physically with the plant's natural behaviour.¹³ At the same time as the vine, a climber, grows from the tuber, the gardener progressively builds a trellis, upslope, upon which the vine, *paatë*, is carefully installed by hand. As the vine grows and forks, each terminal end (*kutë*) is gently twined around individual sticks, and as they lengthen, a bed (*jaabë*, cf. Figure 3) is built upon which they lie. The process is done daily or so, when visiting the yams, the gardener tending to each one of them with care, breathing on and softly singing spells-songs, *manëgup*, on the *paatë* vines, or adding red hibiscus flowers on the top of the *kutapmu* mound, all as parts of the technical process. As the plant reaches its maturity, the gardener ends the trellis with a line of raised bamboos, the *taawu*, around which individual vines will be twined and made to grow. Around January–February, when the final parts of the *taawu* are built, and the vines have reached their top, the whole form evokes for me a majestic, luscious cathedral pipe organ.

Towards the end of the growth, gardeners dig a hole underneath the *kutapmu*, to reach the growing end of the long yam and to check its total length. Crawling underneath the *tëkët*, they enter the underground to deepen the berth if necessary and to provide the terminal end of the tuber with magical substances, first described by Forge (1962), and to perform more spells-songs. Finally, after eight to nine months, the whole tuber is dug out (now up to three metres long), to be stored inside the *kadiga* house, before its decoration and exhibition during the Waapi Saaki ceremony.

All these actions fit Haudricourt's description of being negative and indirect; they indeed create a photograph's negative of a sort of the future of the plant: the hole is dug into the ground and refilled with loosened soil, so that the tubers can grow at its best; taro and other plants are given enough space too so that their branches and leaves can shoot off the ground easily and fan out. Technics of cultivation are moulded around the vital becoming of the plant, acting on its surrounding, carving out, so to speak, the space allowing immanence to be realised to its fullest, so that its future and potentialities can be actualised in a new milieu.

One would notice that yams' behaviour also manifests itself as a two steps movement: plants first appear to be rooting then sprouting out of the Kamëk towards the Vëmëk. In the case of yams, however, the process is even more remarkable: the vines, *paatë*, start by shooting out towards the sky, as high as the gardeners raise the stakes or build the trellis, before receding, as if sucked in, into the Kamëk, where the tubers proliferate and grow as far downwards as the hole has been dug.

By building up the mound and the trellis, helping the climbing of the vines and digging the hole, enabling the tuber to grow, technical processes also create actual forms, visible on the surface, which are seen as particularly enabling in the actualisation of living processes. It is to these forms, in a more literal sense, that I now turn.

A Play on Forms: Kaleidoscopes of Generative Volumes

In this section, I extend these ideas of the intimate relations between surfaces and containers, making the hypothesis that these form a central principle in Abulës-Speakers' conception of image and generativity.¹⁴

Abulès-Speakers craftsmen are good at showing and concealing relations between things, through their ability to create visual and material forms (Forge 1973, 189; Coupaye 2013, 284–286). The central place that Waapi Saaki yam ceremonies occupied – and still do – in people’s imaginations might come not only from the final result, the huge, decorated tubers, but also from the ‘efficacious and traditional’ – that is *appropriate* – processes that have made their appearances possible. As a result, forms might not be solely indexes of these (technically and morally appropriate) processes, but could also iconically *realise* actual properties, such as generative, reproductive processes, as well as creating visual (visible) forms which then could resonate across domains through (iconic) resemblance (Coupaye 2013, 264ff; see also Hauser-Schäublin 2021).

I thus make the hypothesis that if some forms are seen as efficacious in enabling and manifesting vital processes of generativity, then transposing these forms in different domains could be seen as creating the same milieu. As Anthony Forge’s careful analysis of Abulès-Speakers’ iconography demonstrated, images are not about things, but about relations between things. I push here his remark by suggesting that iconic relations of formal resemblance are not passive representations but also instantiate and actualise generative properties.

I use here Brigitta Hauser-Schäublin’s discussion of the theme of the triangle (1994, [1989] 2015, 177), as a generative form of gendered relations, a pervading structural theme in Abulès-Speaking images (and elsewhere in the Sepik), to build this hypothesis. By combining her discussion of the tetrahedron, the three-dimensional triangle (1994), with the yam mound *kutapmu* and the space it evokes and indeed, *the generativity it contains*, I would not be surprised if, considering the capacity of Abulès imagination to unfold metaphors, indeed the shape not only evoked male–female relations but would also play on the volumes that the triangle emerges from, the tetrahedron.

As described by Hauser-Schäublin, other triangular and derived volumetric forms populate Abulès visual domains: in addition to paintings and head ornaments, the sacred figure of the *Puti* built inside the *kurabu* during the higher stages of initiation ceremonies, carrying a netbag, *wut* in Abulès, on its back, evokes the shape of a tetrahedron, which forms a miniature *kurabu* itself (1994, 150; [1989] 2015, 173). *Wut*, the term, also refers to the female womb, a generative space *par excellence* (Hauser-Schäublin 2011, 53–55). The ceremonial house itself contains several chambers (Smidt and McGuigan 1994), the painted walls of which are themselves called *wut* that replicate its whole shape, tetrahedrons within tetrahedrons.

If I am on the right path in this analysis, the general shape of the whole trellis, and of the *kutapmu* in forms such as the *kurabu* ceremonial house (Figure 4),¹⁵ could establish further analogies which link together the *Puti* figure, the ceremonial house that contains ancestral figures and the *kutapmu* where yams are grown, possibly all manifesting not only the same formal principles but also a principle of container from which (living) things emerge. Like the *Puti*, ‘the personified cosmos that contains everything that humans need’ (Hauser-Schäublin [1989] 2015, 170) that is the origin of everything (Hauser-Schäublin [1989] 2015, 173) and that empties itself (Hauser-Schäublin [1989] 2015, 168), the *kutapmu* mound contains the long yams *waapi*, the harvest of which is the *sine qua non* condition for every food to ‘come out of the garden’ (Coupaye 2013, 106–107), and which itself contains future tubers and relations (Coupaye 2021a).

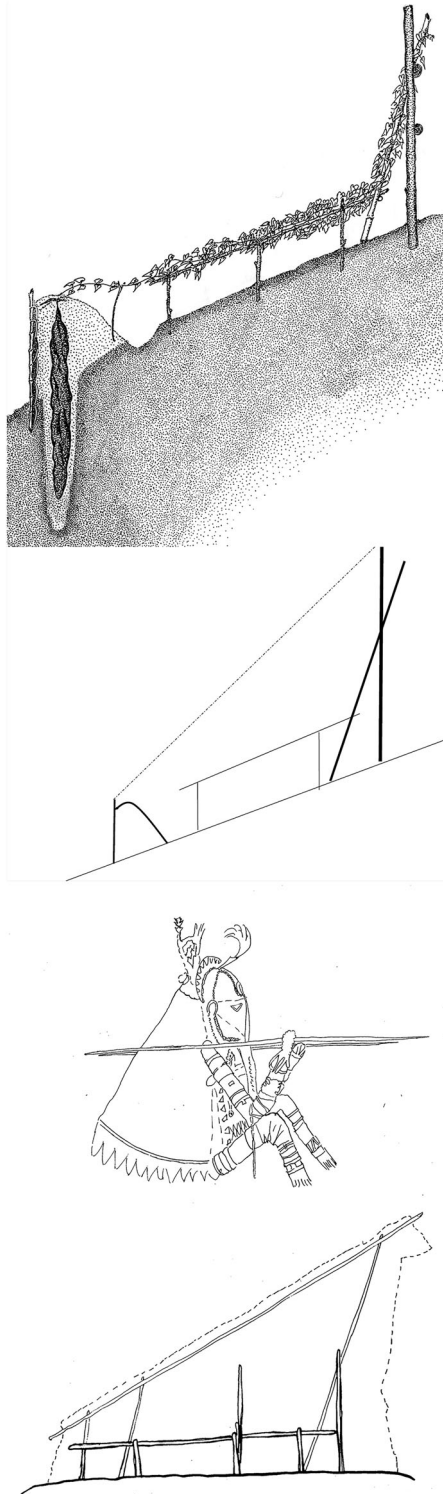


Figure 5. Formal comparisons. From top to bottom: Waapi mound, Waapi trellis structure, ceremonial house (from Hauser-Schäublin [1989] 2015), Puti figure (from Smidt and McGuigan 1994).

Like the ceremonial house, the long yam structure is a play of triangular/tetrahedron forms, some included others inverted, in which the upward slope of the garden, of the trellis and the inverted slope of the mound echo the inclined gable and the sloping roof of the house, its chambers, the Puti figure and its netbag (see Figure 5; Hauser-Schäublin [1989] 2015, 40–58, 177–182). All echo in a kaleidoscopic way, as Hauser-Schäublin aptly pointed out (Hauser-Schäublin [1989] 2015, 179, 2011, 65–66), conjuring analogous properties (making present through what I identify here as iconic relations, see Coupaye 2013, 264–284).

These properties, however, are not solely anchored in forms. They also emerge out of actual practices and behaviours of plants themselves and humans, as well as in the vocabulary. In terms of actual bodily experiences, humans go underneath the *tëkët* wall inside the *kutapmu* mound, literally going underground, to perform magic and initiates crawl underneath the carved *tëkët* frieze to enter the ceremonial house *kurabu* to encounter the *wapinyan* (the ‘children of the yams’) the painted carvings (see Coupaye 2009). Yams, the behaviour of which is encouraged by technics of cultivation, sprout the vines *paatë* vigorously towards the *Vëmëk*, the sky, before being swallowed up in the *Kamëk*, the underground, from whence they emerge as ‘sociality made into yams’ (Coupaye 2013, 296ff.). The term *paatë*, the vine, is not only the term that is used for human lineages, found in descent groups names such as *Nëmapaatë*, the ‘big clan’ or *Wayeknapaatë*, the ‘younger brother’s clan’, but it is also ‘style’, as in ways of behaving and mode of action (Coupaye 2021a, 48, 56–59).

Among *Abulës*-Speakers, yams, their aspects and their behaviours, seem to act as a vernacular paradigm for thinking about what anthropologists would call sociality, almost forming what, after Mauss, we would call a ‘total social object’ (Coupaye 2013, 303). The enduring role of the *Waapi Sakki* ceremonies seems to indicate their centrality for *Maprik* area people’s ways of thinking about their world. This centrality not only comes from their significations, but also from thinking practices and embodied experience. Without going so far as to qualify them as the central forms of which others, such as the *kurabu* ceremonial house or the *Puti* figures, are but declensions, the processes the yams appropriate cultivation requires – as sets of enabling techniques – and the forms that emerge out of them – in the shape of a *kutapmu* mound – tease out what happens in the garden as being one of the main locus for thinking about time, sociality and, possibly, a form of ‘cosmo’-technics.

Conclusion: Gardens as Interfaces: In Between Below and Above

Gardens, thus, operate horizontally, as interconnected places where communities of plants co-exist in models of the general ecosystem and between which they travel, in the careful and enabling care of humans and non-humans. They also operate vertically as the interface upon which human appropriate and caring actions encourage generativity, in a way that relates to their conception of human social lives, in between *Kamëk*, the underground as a container of concealed potentiality, and *Vëmëk*, the space of the visible.

Gardens up until today, act as privileged – and daily – encounter spaces, both horizontally and vertically, where technical activities elicit and enable actual transformations between the potential and the realised, in accompanying species in and out of holes or

whole gardens. Technics, as modalities of these actualisations, thus both manifest in themselves a (moral) order of appropriately ‘friendly’ actions with non-humans, be they plants or technical objects such as stakes, digging sticks or *kadiga* houses, and generate a whole ecological milieu, which is, as Haudricourt hinted, enabling more than directing (Figure 5).

This model of ‘friendly’ technical relations and their particular morality co-exist today with expanding industrial ones (which are increasingly imposing their own ecological and economical milieus), where extracting industries not only reconfigure these socio-economic environments, but also importing new technical activities and objects, such as the Massoia bark essential oil factory, now installed in the lower part of the village, or cash-crop, such as vanilla, contribute to the creation of local versions of industrial cosmologies, and their own ‘moralities’.

The concept of cosmotechnics, forged by Hui, based on how technics are central in the ‘unifying [of] the moral and the cosmic order’ appears here as renewed version of what François Sigaut reminded us (2012, 68): it is because technics always contain a part of material self-evidence which does not rest on conventions or beliefs, that, indeed, it is on the model of efficacious actions that vernacular conceptions (of sociality, of generativity, of appropriateness or of morality) and logics are built.

Notes

1. See also Calandra (2013) on the value of people’s drawings of gardens, in the context of natural disasters.
2. The drawing that I present is somehow misleading, as it is not only the final result that was important, but also the sequence of drawing, which I realised afterwards. It is also important to note that Robin responded to my request, which means that these drawings, based on a delimited space drawn in advance by me, are not representative of the actual customary practice. People would just draw symbols on the ground without necessarily framing them in such abstract space. (I am grateful to Brigitta Hauser-Schäublin for pointing this out).
3. Pronounced “*ambu*”. I am using here Kudama and Wilson (1987) transcription of the Abulès language, revised in the field by my host, Robin Kitnyora. In this form, *ě* corresponds to the “*e*” of *father*, and the consonants *b*, *d*, *g* and *j* are pronounced with a silent nasal sound. Thus, for readers familiar with the ethnographic literature on the Abelam, my spelling of terms such as *nggwal* or *mambutap* will take the form of *gwaal* and *maabutap*.
4. David Gayiningi, one of the most respected elders of Nyamikum, mentioned that sago was in fact the source of food. Sago occupies indeed a very important part of the diet, particularly over the period during which yams are growing between December and May.
5. A new solar cycle is customarily marked by long yam ceremonies, called *Waapi Saaki* in Nyamikum, which are held there around June–July.
6. “New yams” have a special value and were the ones that were used for ceremonial occasions.
7. In main hamlets, one of these *kadiga* undistinguishable from the other also contains a sacred stone, which acts as the source of fertility for crops, as I have described and discussed elsewhere (see Coupaye 2013, 197ff. and 2021b).
8. See also Lory (1982, 260–266) for another example of tuber circulation.
9. With the exception of one cultivar, Malaka, which grows upward (cf. Coupaye 2013, 35).
10. It is interesting to note, the Christian Devil in that conversation was not attributed a specific dwelling, underground or otherwise.
11. I’m grateful to Pierre Lemonnier for pointing this out.
12. See Coupaye (2013, 123–141) for a detailed description.

13. It is nevertheless a “negative” act, which by removing extra tubers that would use up nutrients, and focus them on a single tuber.
14. These ideas stem from an earlier paper on Sepik images (Coupaye 2018b), and lectures given at the Ecole du Louvre between 2017 and 2020.
15. Coming back from the field in October 2003, I showed my field sketches of the long yam trellis to Steven Hooper, my supervisor. “It looks like an Abelam ceremonial house”, he exclaimed. I admit I was dubious at first, still being close to the field. It was only later, when I was redrawing my sketches and captioning carefully the different parts that I realised he was on the right path.

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