

# Forest cuisine – indigenous techniques in Amazonian food production<sup>1</sup>

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**T**HIS TEXT explores some indigenous plant food production processes, examining the technical procedures of their transformation outside of historically constructed dualities, such as gathering versus agriculture, domesticated versus wild, native versus exotic, forest versus swidden. We will look at three plant species – the açai (*Euterpe* spp.), the mairá potato (*Casimirella* spp.) and the umari (*Poraqueiba* spp.) – and take a closer look at how they are processed to obtain their fundamental ingredients (dough and *goma* (starch) and their forms of preparation and food products.

As some of the texts in this dossier show, archaeological studies using macro and micro archaeobotanical remains are revealing the use of an increasingly wide biological diversity by human groups in Amazonia, which are equally diverse in their forms of management. In this context, much of the research into the domestication of plants and landscapes adds to and dialogues with archaeological discoveries in the region, and reinforces the importance of the historical and long-term relationship between people and plants in the creation of the forest and its landscapes (Clement, 1999; Clement et al., 2015; Levis et al., 2017; Kistler et al., 2018).

Anthropological research, in turn, occupies a special place in this debate, starting with Darrell Posey's pioneering work on the Kayapó's use and reforestation practices in the Cerrado (Posey, 1985), which served as an important reference for the formulation of a theoretical proposal in Ethnoecology (Posey, 1987). In an attempt to deconstruct the environmental determinism of Cultural Ecology, based on the Handbook South American Indians organized by Julian Steward (1946-1950), field research conducted by William Balée also emerged, carrying out botanical inventories in primary forests and old fallows managed by the Guajá and Ka'apor groups of eastern Amazonia (Balée, 1993), which served as the basis for the creation of the multidisciplinary research program of Historical Ecology (Balée, 1998).

Other anthropological approaches to the study of the relationship between nature and culture have followed different routes to deconstruct the material and ecological conditions of existence as deterministic factors. Lévi-Strauss, although he contributed to the *Handbook South American Indians*, points out in

the introduction to his chapter that: “in tropical South America, the general levels of culture are determined rather by a historical criterion than by local plant resources, since no basic cultural characteristic seems to depend directly on the botanical environment” (Lévi-Strauss, 1997, p.20).

Focusing on a symbolic dimension of the nature/culture relationship, Lévi-Strauss opened a wide horizon for new anthropological perspectives of analysis starting with his works in the 1960s (*Totemism Today*, *Savage Thought* and *The Mythologies*). It is in this context that the work of Descola (1986; 1992) stands out. Based on a rich ethnography among the Achuar, he prefers to emphasize kinship relations between women and cultivated plants, where the garden is seen as a stage for intersubjective interactions, a privileged space for communication between humans and plants, who behave and interact as social subjects. This analytical perspective, condensed into the (new) concept of animism, inspired a series of ethnographic studies in Amazonia, supplanting once and for all the strong echoes of Cultural Ecology within the ethnology of the South American lowlands, deflating the environmental limitations of the material conditions of social life.

In recent years, new studies in anthropology have approached the subject of domestication (of animals and plants), which until then had been the hegemony of the natural sciences. Opening a frank dialogue with archaeology and historical ecology, these studies have sought to bring the cosmological dimension and native conceptual formulations into the debate, as well as showing the limitations of the concept of domestication as a totalizer of relations between indigenous groups and their ways of knowing and relating, especially with plants, in Amazonia (Carneiro da Cunha, 2019; Aparicio, 2020; Fausto; Neves, 2018; Mendes dos Santos; Henriques Soares, 2021).

On the other hand, and in another way, seeking to recover the importance of the material dimensions and bring them to the forefront of observation and analysis, the Anthropology of Technique approach has presented itself as a promising lens for dealing with the technical processes and acts of humans, as shown in the recent collection organized in Brazil by Sautchuk (2017). Technique can be understood in the direction of what Mauss (2003) points out “as effective and traditional acts”, which involves other dimensions of the social and cosmological life of particular groups. However, the technique itself can only be observed from the “doings” broken down into fragmented parts and constituting a larger process.

In a pragmatic and particular way, this approach has vigorously exploited the notion of the operational sequences, or *chaînes opératoires*, consolidated in archaeological studies and revisited by the anthropology of techniques, to document sequences of observed actions. In other words, in its first definition, this notion refers to “a series of operations that brings a primary material from its natural state to a manufactured state” (Creswell apud Lemonnier 1986, p.49).

Coupaye (2017) emphasizes that it is essential to connect the material dimensions of the act itself to the social, conceptual and cosmic meanings of the practices observed in their cultural contexts to produce an operative chain. Because the *chaînes opératoires* method allows us to describe the technical processes observed “live” in a single instant, we can also look back at current techniques, analyzing and reflecting on the processes used in the past, since we are betting on a continuity (permanence) of certain plant transformation practices, as we will discuss below.

The analytical perspective used in this text adds to the efforts of the Anthropology of Technique, but also seeks to associate itself with other approaches, especially those coming from Historical Ecology and Archaeology, to deal with traditional ways of processing and using plants, whether cultivated or not, for food purposes. From this perspective, it adds to the other texts in this dossier to highlight the historic and long-standing positive action of Amazonian groups, which contrasts with the central argument of the Anthropocene in its generalizing view of the damaging and destructive impacts of modern human action on terrestrial biomes.

### **Modes of transformation**

The techniques used in the processing of fruits, roots and tubers for food purposes can be roughly organized into two key mechanisms: obtaining ingredients for food preparation (the production of homogenized dough and the separation of starch, also known as *goma* throughout Amazonia) and altering the state of the plant material through the techniques of drying (in the sun, by fire or by smoking) and fermentation (obtained by soaking or burying dough and *goma*).

The techniques involved in the processing and preparation of dough and *goma* include steps aimed at removing toxins. The dough, raw or cooked, is obtained by grating the fruit and seeds (mesocarp and endocarp) or the starchy roots, then washing and squeezing them in a *tipiti* or *cumatá* (woven strainer basket). The *goma*, in turn, is the by-product of this washing, i.e., the solid matter resulting from the decantation of the liquid squeezed from the dough. Among the starchy fruits of the forest, all can be used to make a dough and some can be further processed to obtain *goma*.

There are many fruits and tubers that produce dough and/or *goma*, such as japurá (*Erismia japura*), umari (*Poraqueiba* spp.) and mairá potato (*Casimirela* spp.). In the Negro River basin, several fruits are mentioned that have no translation in Portuguese, such as uahpe, ihpisa and kabo, in Tukano, which were used in the past to obtain *goma*.<sup>2</sup> Among the uncultivated starchy roots is the mairá potato, also with no translation in Portuguese, also called maúro, mapuso or karaminero potatoes, used in the past by the Apurinã groups, residents of the Middle Purus River, who speak a language from the Arawak language family.<sup>3</sup> In the Table 1 we present a list of plants, and the parts used, the ingre-

dients obtained from them, their processing and associated products. We gave priority to species that occur in the forest or are occasionally cultivated, to the detriment of those traditionally planted in the swiddens and abundant in the literature, such as manioc (*Manihot esculenta*), sweet potato (*Ipomoea batatas*), yam (*Dioscorea trifida*) and yam (*Discorea* spp.).

The dough and *goma* are traditionally used in the preparation of “beiju” (cassava bread), “grolados” (scalded dough), porridge, fermented drinks, and for thickening and “seasoning” fish and game broths, among other dishes. In general, both dough and fruit and tuber *goma* require special treatment to remove toxins and bitterness, which involves repeated washing of the *goma* or cooking and fermentation before culinary use. Today, *goma* is a product that comes almost exclusively from manioc, which is widely cultivated throughout Amazonia and sold on a local and national scale. The dough made from the fruits of the forest, on the other hand, is more diverse and, unlike *goma* which has a neutral taste, it has the power to impart or add a specific flavor to food. It is also worth noting that manioc dough has also achieved supremacy throughout Indigenous Amazonia, used almost entirely for the production of flour (França, 2023).

Fruit is dried by exposing it to the sun or the heat of a fire (smoking), with the main aim of reducing humidity, oiliness or even making it easier to detach the endocarp from the pulp so that it can continue to be processed. Simple drying takes place with the Brazil nut (*Bertholletia excelsa*) and the cutia nut (*Acioa edulis*), whose seeds are exposed directly to the sun and then the kernel is extracted. A slightly more complex case is the umari, whose fruit, after being lightly smoked, provides a large kernel used to produce a type of “beiju” (marapatá) – see the process below.

Historically used by the groups of the Madeira River basin, the seeds of the puxuri (*Licaria puchury*) are lightly smoked as soon as the unripe fruits are collected, placed in a large pot and taken to a clay oven heated by embers. In this container, they are constantly moved by a paddle to prevent them from burning. Once heated, the seeds release their surface seed coat, acquiring a whitish color. They are then exposed to the sun for around 10 days, turning a dark brown color. Once in this state, the seed is grated (traditionally and preferably on the “tongue” of the pirarucu) to obtain a very fine powder, which is used to make drinks or as a spice, adding aroma and flavor to food (Graça, 2003).

Special smoking processes can be identified in the traditional treatment of guarana seeds (*Paullinia cupana*) by the Sateré-Mawé, in the interfluvial of the Amazonas and Tapajós Rivers. A species widely known for its current use in the soft drinks industry, guarana is handled after its unripe fruit has been picked from the bunch. The seeds are peeled, soaked in water and put on the fire to be roasted. They are then peeled and pounded in a mortar and pestle with a little water to moisten them. The thick dough obtained is molded into the shape of a stick, which is then washed again and taken to the smoker (Lorenz, 1992).

The plant transformation processes that use the fermentation technique are mainly associated with the production of dough and *goma*. Fermentation is the technique par excellence for altering the state of plant matter. In addition to preparing alcoholic beverages, Amazonian peoples have acquired the expertise to ferment various fruits of the forest, which can be done by two main means: water (soaking) and soil (burying). Sometimes these processes are used together to prepare the same dough.

Fermentation provides, on the one hand, a change in the initial conditions of the product, i.e., a softer and smoother consistency of the raw material, which also makes it easier to handle and, on the other hand, the elimination of toxicity and/or the attenuation of the bitter taste of the fresh dough, giving a distinctive taste to the food made. The process also alters the nutritional properties of the fruit. According to Dufour and Zarucchi's (1979, p.80) nutritional analysis, the fermented dough of japurá (also called butter) and uacu (*Monopterix uacu*) have significantly higher energy (kcal), protein and fat contents compared to the fresh and cooked fruit.

The mass of some fruits can still be used when fresh, i.e., right after they have been dried, as is the case with the louro abacate (*Pleurothyrium cuneifolium*), the pajurá (*Couepia bracteosa*) and the umari. Most, however, seem to undergo some level of fermentation, as is the case with japurá, uacu and cunuri (*Micrandra spruceana*). In general, these doughs are first boiled and then placed in sturdy baskets and buried or soaked for a few months to ferment. To bury them, the baskets need to be covered or protected, which is usually done using broad leaves, such as those of sororoca (*Phenakospermum guyanense*), and these must be replaced regularly.

A special way of processing and storing fermented dough is pão-de-índio (Indian bread), a compacted product made from a variety of plants processed by different technologies and stored in the ground. An apparently ancient practice and found almost everywhere in Amazonia, little is known about it so far. Recent research has identified the complex processing used to make it, as well as its purpose, since it is a technique no longer practiced by existing communities (Mendes dos Santos et al., 2021).

### **Operative sequences (chaînes opératoires) links**

Next, we will present the technical processing methods of two significant species that are widely distributed in Amazonia: the mairá potato, a tuberous forest liana, and the açaí, traditionally used, along with other palms, to make “wine”.

#### ***Mairá potato***

An important starchy plant from the Icacinaceae family, the mairá potato is widely distributed in Amazonia and its root can weigh more than 200 kg (Ribeiro, 2018). Abundant in open areas of terra firme, its use by Indigenous Peoples in the past appears to have been expressive, possibly one of the most

important sources of carbohydrates present in Amazonian rainforests. Starchy traces of its root have been discovered in recent research into the composition of Indian bread (Mendes dos Santos et al., 2021).

The Paumari of the Middle Purus River used the mairá potato for the production of “beiju” (flat bread) and “grolado” (scalded dough). *Goma* was also obtained from the root, which had to be cut into small pieces given its large size, then washed and grated. The mass obtained was dried in the *tipiti* or on a piece of cloth, and then used for food purposes. The resulting liquid, in turn, was left to stand to decant the *goma*, which had to be washed repeatedly (seven times), always discarding the liquid part to eliminate its poison. The *goma* could also be packed for transportation or storage in a straw basket (paneiro) well sealed with sororoca leaves, where it was deposited in layers interspersed with grated mairá potato dough itself. The first and last layers in the container should be *pomace*<sup>4</sup> to protect the *goma*. Once filled, the basket was submerged in the waters of a stream, where it remained for two to three months to preserve the condition and flavor of the *goma*, which was then removed in the quantities needed for domestic use (Mendes dos Santos, 2022).

Today this starchy species of the forest has been completely excluded from the indigenous diet, having been supplanted by its cultivated competitor, manioc. Although well known, its current use is basically restricted to those Indigenous Peoples in a state of voluntary isolation, such as the Hi-merimã of the Middle Purus River (Frente de Proteção Etnoambiental, 2014).

## Mairá potato: starch extraction



1) The entire tuber



2) The tuber peeled and cut



3) Grating the tuber



4) Squeezing the dough



5) starch decanted and submerged in water



6) washing the starch to remove toxicity

Photos by Gilton Mendes, Manaus, 2015

Figure 1 – Operative sequences (chaîne opératoire) to obtain mairá potato starch.

## *Palm “wines”*

Palm fruits are generally used to make wine, a term used by Indigenous People and riverside dwellers throughout most of Amazonia to refer to a refreshing drink obtained from pulp that has undergone slight controlled fermentation, halfway between the raw state and the fermented state. Unlike grape wines, which require fermentation to achieve their final result, Amazonian wines do not include this procedure and are more like juices. However, the biological process of transforming the sugar contained in the fruit at room temperature, with the action of bacteria present in the air, can lead to a slight fermentation a day after its preparation. In this case, it is usually consumed in the form of porridge (*goma* with fruit wine). The main species used to make wine are açáí (*Euterpe* spp.), buriti (*Mauritia flexuosa*), bacaba (*Oenecarpus bacaba*), patauí (*O. batana*) and tulia (*Mauritiella armata*) (França, 2023).

## “Wine” of açai



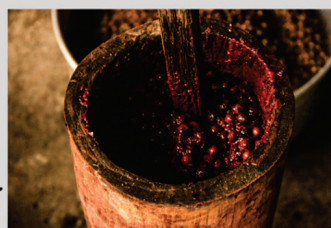
1) A woman separates the açai fruit from the bunch



2) Fruit transported in an artisanal basket and 3) warmed in basin with hot water.



4) Pounded açai



4) Pounded açai



5) Açai wine being strained

Photos by Lorena França. São Gabriel da Cachoeira (AM), 2018

Figure 2 – Operative sequences (chaîne opératoire) to obtain “wine” of açai.

Below we present some moments in the chain of operations for açai, taking it as a technical process of reference, whose model is applied to the other palm fruits mentioned. There are certainly variations in the technical choices and materials, but the description presented seeks to condense the variations into a single, comprehensive narrative.

After harvesting, the fruit is washed in clean water to remove any small particles that have adhered to it. Water is heated in a basin or saucepan and, when very hot, poured over the stones, adding cold water until the ideal temperature is reached and the fruits are covered. Normally, the fruits are left to soak for about half an hour and when they are soft, they are transferred by hand to another container, usually a large saucepan or directly to the pestle. Whichever option is chosen, a wooden stick is used to pound the fruits with a little water until they form a very thick paste. Water is added little by little to help the paste form. Once they have been pounded enough, more water is added to the

fruit to better dissolve the paste, after which, with the help of a gourd, the açaí is placed in a large, fine sieve (made of arumã (*Ischnosiphon* spp.) or plastic) and the liquid is collected in an aluminum bucket or cauldron.

If the fruit has been soaked in warm water for long enough (about an hour), a second mashing is usually not necessary, but if the fruits are not completely pulped, the process is repeated, now adding the liquid (and no longer pure water) acquired from the first mashing. Finally, the drink is strained once more, usually using a small sieve to remove the remaining fine residue. The final presentation is usually a well-diluted drink, the typical açaí wine (França, 2023).

### **Indigenous cosmotechniques**

For greater analytical accuracy, however, all these techniques need to be understood in the light of indigenous cosmologies and/or ontologies, in other words, from their conceptions of the order of the world and the nature of things. Inspired by Heidegger's reflections in *The Question of Technique* (1953), Chinese philosopher Yuk Hui (2020, p.39) suggests an approach to the subject based on the notion of cosmotechniques: "the unification of the cosmos and morality through technical activities". His intention is an attempt to highlight the ontological plurality on which technical diversity is based. In this way, a technique cannot be understood from the perspective of a unified universal notion, based on the Western construct of the concept (*techné*, in Greek); it is necessary to understand it in its specific historical and cosmological context. Thus, the concept of cosmotechniques can offer a sensitive lens that allows us to access a genealogy of indigenous thought, that is, to take a deeper look at the long-term history of technical processes in their connections with particular cosmological and ontological enunciations.

To make what we are saying here clearer, let's look at the techniques used to process the umari fruit (*Poraqueiba sericea* and *P. paraensis*) and their connections with other dimensions of cosmological and social life in indigenous Amazonia, especially in the northwestern region, circumscribed by the great Negro River basin. The umari fruit allows for a wide range of technical transformations and food possibilities. Its mesocarp is eaten fresh and its endocarp can be used to make dough and *goma*, offering greater variety in food preparation. The umari is a plant native to Western Amazonia, distributed in the terra firme forests of the Negro, Solimões and Madeira River basins, and can also be cultivated in swiddens, fallows and home gardens (Rabelo, 2012). The Indigenous People of the Upper Negro River distinguish three different types, with different colors of fruit (yellow, purple and green), two of which are cultivated in swiddens and fallows, and the third type, with a green rind, is found in the forest and is less appreciated (França, 2023).

For processing, the fruit is picked before it ripens and stored for a few more days until it reaches the ideal point for consumption. Its skin is thin like that of a peach, smooth, purple or dark yellow in color. The flesh is soft, not very

fibrous, yellow and fatty, enclosing a seed that is proportionally large for the size of the fruit. At the peak of its ripeness, the fruit gives off a sweet, distinctive smell. Among the indigenous groups of the Negro River basin, as well as being eaten directly, without any kind of preparation, the pulp of the umari can also be simply added to drinking water, providing a juice to which manioc flour is added, producing xibé of umari.<sup>5</sup> The umari seed can also be roasted directly on the coals, causing the kernel (endosperm) to loosen. The seed is then broken open to access the bitter-tasting kernel.

*Marapatá* is the most complex recipe made with the umari fruit. The term has been used for a specific type of flat bread, a kind of flat cake with the color and appearance of meat, baked wrapped in a banana leaf. It is possible to identify three ways in which the people of the Negro River prepare umari “beiju”, as summarized in the panel below (Figure 3).

In the first chain of operations, the seeds are exposed to the sun for seven days or more, depending on the intensity of the heat, until they are very dry. The right point is reached when the kernel detaches from the seed coat and makes a noise when shaken. The seed is then broken, and the kernel grated. The resulting mass is washed, and the liquid is left to stand to extract the *goma*, the decanted solid starch. This *goma*, even after decanting, is immersed in clean water, which must be changed 3 to 5 times until the bitter taste, which represents its toxin, is eliminated. This *goma* is then mixed with the dough to make “beiju”<sup>6</sup> (França, 2023).

The second way to prepare umari is to put the seeds in a *giran* to smoke for an indefinite period until the seed coat comes off. The kernels are then soaked in a bucket of water for about 2 or 3 weeks. The third method is to immerse the seeds directly in a sack in the river, where they remain for one or two months. In either the second or third form of preparation, the fruit is removed from the water and then the softened and fermented inner kernel is extracted using a spoon. This mass of seeds is grated and then dried in the *tipiti* to be sieved and finally prepared as “beiju”. In these two processes, which merge into one, the procedure of removing the *goma* is not applied, since much of it has been dissolved and carried away by the water. The taste of this “beiju” is more pronounced than the previous one, since it has the fermented flavor of the dough.<sup>7</sup>

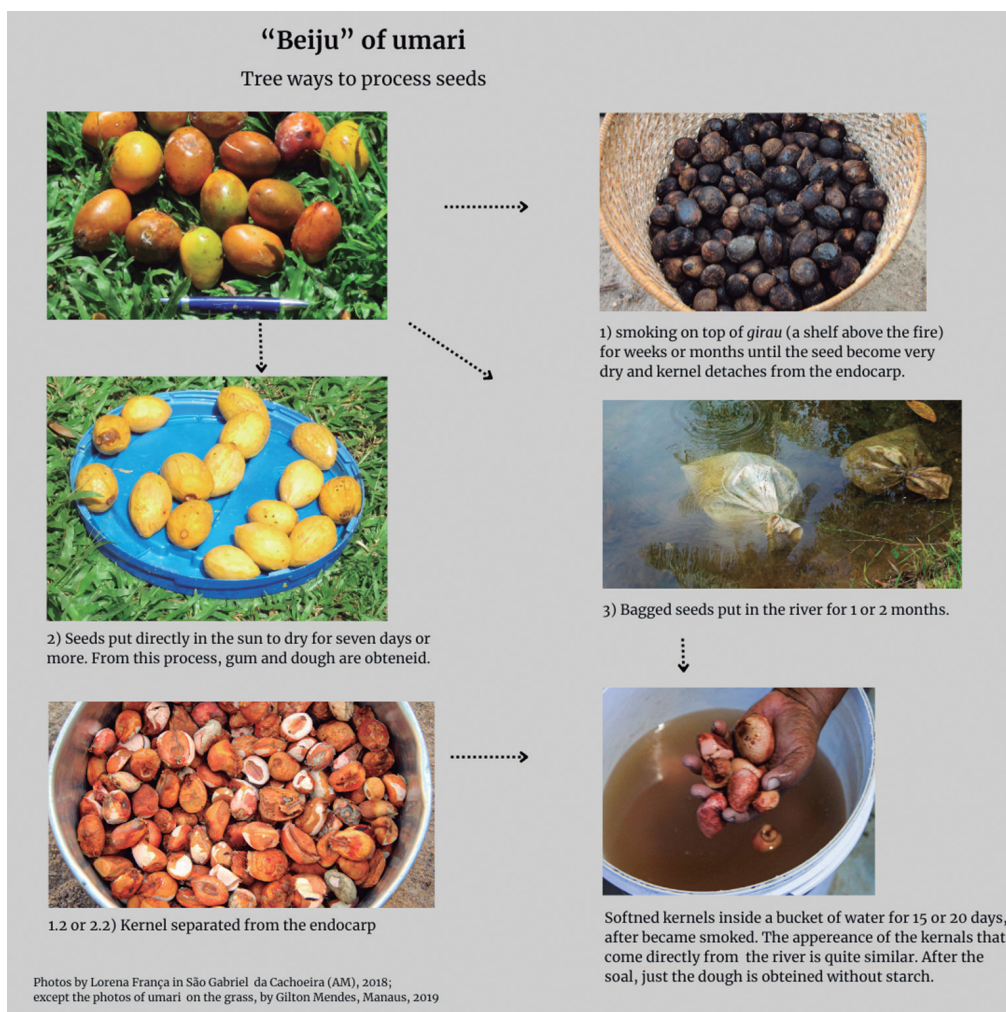


Figure 3 – Operative sequence (*chaîne opératoire*) to obtain “beiju” of umari.

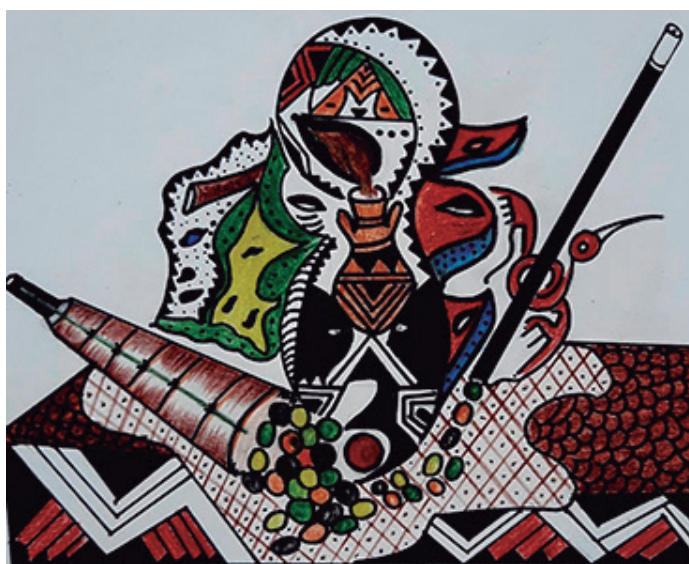
Among the Tukano/Yepamahsã peoples, umari is a prominent fruit in food offering rituals called Dabucuri (in Nheengatu) or Poose (in Tukano). Traditionally, four Dabucuri rituals were held annually – fruit, fish, hunting, and larva – in which a large quantity of food was offered to guests (relatives), reinforcing interdependence among exogamous groups through communal eating (Maia, 2018). In the Ayã (Jararaca) constellation according to the Yepamahsã calendar, umari and other forest fruits, such as inga (*Inga* spp.), cucura (*Pourouma cecropiifolia*), and tucumã (*Astrocaryum* spp.) from the river, are collected to be offered at the ‘fruit festival’, accompanied by the characteristic flutes of the region (Rezende, 2023). Below, we present a narrative about the origin of the (dabucuri) umari performed by the cosmic organizers and the waimahsã.<sup>8</sup> As can be read, this fruit, in its different types, is associated with the origin of specific places in the landscape of the Uaupés River in northwestern Amazonia:

In the past, the umari fruit belonged to the hero *Yepaoãktht*. One day, during the fruiting season, he decided to offer a Dabucuri to his brother-in-law *Umthkolmahst* on the day of wi'i, and all the animals attended. *Yepaoãktht* offered the guests *wāmthkara*, which is umari fruit without the seed, without the pit. However, only one of the fruits had a seed. Drunk on kahpi (ayahuasca), the party attendees did not notice that the offered fruits were seedless. However, the old Tapir was attentive, took the fruit with the seed, swallowed it, and regurgitated the pit when she got home, where she planted it. After trying to plant the seedless fruits served at the Dabucuri, the guests discovered that only the Tapir was successful. After some time, the Tapir was invited to make the umari Dabucuri. Other animals also wanted to taste the fruit and begged the Tapir to offer it to them. On the day of the Dabucuri, all the animals were present and very attentive to the Tapir's steps, trying to find any clues about the desired seed. At the end of the feast, the Tapir left the place and returned to her home on the Uaupés River. However, one of the participants, *Yepaoãkthtũ*, disturbed by the absence of the seed in the fruit, turned into a *têhẽ* (tick) after the feast and clung to the Tapir's belly unnoticed. Once she arrived and lay down to rest from the tiring journey, *Yepaoãkthtũ* took the opportunity to search the Tapir's house for the seed, eventually finding it at the back of the house where the platform was, and discovered the five types of umari. Taking advantage of the old Tapir's sleep, *Yepaoãkthtũ*, with the help of a blowgun, collected the seeds and immediately started his journey back. When she woke up, the old Tapir immediately noticed the absence of the five umari seeds and went after *Yepaoãkthtũ*, who, noticing her approach, turned into Bohso (cutia). Desperate and fearful of the Tapir, the cutia crossed the river swimming, taking the fruits with her, but was caught at the place where the main port of Iauaretê is now, where we can see the five stones that represent the five fruits of umari. (Maia, personal communication, 2022)<sup>9</sup>

The illustration (Figure 4) – by Jaime Diakara, a Dessano artist and doctoral student in Anthropology at the Federal University of Amazonas (UFAM) – depicts in rich detail all the elements involved in the origin myth of the (festival/dabucuri) umari.

The black masks in the center of the image represent a couple of tapirs. Above them is the ceramic vessel (in orange and black, with graphic designs), representing the camuti (pot) for the kahpi drink, poured from a cuia. The conical piece on the left is the jurupari flute used in the fruit Dabucuri (yukuduhka posse), spouting the different types of umari. The three pieces in red, blue, and black, against a white background, represent the three stone hills located in Iauaretê, in the Upper Negro River. The blue color surrounding them symbolizes water. The black stick on the right side is the blowgun, seen by the Tapir shortly after *Yepaoãkthtũ* escape. Behind the stick, in red and black, is the depiction of a heron, representing all the animals invited to the party. In green, yellow, and white on the left side of the drawing, the main elements of the ceremony are shown: caxiri, ipadu, and tobacco. At the base, with a checkered pattern of

red squares with black dots on a white background, is the representation of the mat where the seeds were hidden – here it replaces the platform from the myth.



Source: Jaime Diakara.

Figure 4 – Cosmological origin of umari.

The black dots at the top of the figure symbolize the tick, and the vertical figure, with black and white lines, represents the caterpillar (larva) tapuru, responsible for predation on the umari. Above the tapuru is represented the ant (black diamond) which, like the caterpillar, also devours the fruit of the umari. Above the ant, figure in black, appears the beetle that attacks the umari plant. The red and black graphics at the top of the drawing represent the fight and death between the animals over the umari. At the top, the graphic figure in orange and black represents the maloca, the primordial place and sustainer of the narrative. On the right and left sides, the black and red scales represent the snake at the bottom of the waters in the world of *wām̃t̃kara*.

In Tukano thought, the term umari (*wam̃t̃*) also appears as a ‘conceptual resource’ to refer to the cosmos and human genesis, intertwined with the various techniques of its processing. *Wam̃t̃diá* (lit. ‘river of umari water’) is the name of one of the three levels that make up the Yepamashã cosmos (Barreto et al., 2018, p.54). It is inhabited by the wamumahsã (umari people), the underwater world where the first attempts at human emergence occurred, and where they later came to inhabit the terrestrial space.

### Collection and complexity – Final considerations

Ethnological research on the lowlands of South America over the past five decades has vigorously explored Indigenous epistemic dimensions, producing fruitful syntheses for understanding their worldviews (e.g., Descola, 1986; 1992; 1996; Viveiros de Castro, 1986; 1996; Arhem, 1996; Lima, 2005; Fausto, 2008;

Kopenawa; Albert, 2016; Barreto, 2022). This extensive body of work reveals, as foundational references, two fundamental principles of Indigenous thought that support the issue of technique: intentionality and the transmutation of beings and things (constructions, artifacts, ingredients, foods etc.). These principles have also been employed to provide an anthropological perspective on material production, art, and objects in Indigenous contexts, as highlighted in the works of Gell (1998), Lagrou (2007), and Barcelos (2012), among others.

Technical processes are also expressions of continuities, evidencing a continuum between the past and the present. This is where anthropological studies of technique intersect with archaeology. Archaeobotanical analyses of bread-like substances and macro and micro remains identified at sites throughout Amazonia have revealed the presence of countless phytoliths and starch grains from different wild and cultivated species altered by grinding, cooking, and fermentation processes (Furquim, 2018; Mendes dos Santos et al., 2021; Watling et al., 2020a). Additionally, there are numerous unidentified ('lost') starches, as the few reference databases are still very incomplete and based mostly on cultivated plants (Cascon, 2010; Watling et al., 2020b).

The present-day inhabitants of Amazonia are both the links and the heirs of pre-Columbian populations, revealing the temporal and conceptual depth of their management practices and technical skills, as William Balée highlighted in his pioneering reflections on the "Amazonian forest culture":

Most cultivated species, or those that contemporary Indigenous people exploit in primary forests and secondary growth areas, are also neotropical, which shows another connection with the pre-Columbian past. Many present-day Amazonian Indigenous people certainly still resemble their ancestors regarding their plant resources and the ways they use these resources (Balée, 1993, p.392)

On one hand, we praise this precious legacy left by Amazonian people whether in the repertoire of domesticated plants or in positively transformed landscapes. On the other hand, it seems that we are not free from the old notion of foraging, as opposed to agriculture, perpetuating and amplifying the narrative of a practice devoid of complexity, incomplete, and seasonal, seen as a voluntary and errant activity of nomadic groups always in search of fulfilling their immediate desires. Thus, foraging has always been associated with simple modes and rudimentary techniques, a lower level or stage of evolutionary scale, preceding the achievement of agriculture. Agriculture, in contrast, is seen as honorable and civilizing, responsible for complex socio-political structures and movements marching towards the formation of states and technological advancement. However, this image has been completely deconstructed by the recent work of Graeber and Wengrow (2022).

The opposition between foraging and agriculture obscures a myriad of creative and refined actions, experiments, relationships, and possibilities offered by the former. As we seek to demonstrate in this essay, there is a fascinating di-

versity of ways to process and consume plant species among the traditional peoples of Amazonia, which, in turn, unfolds into distinct ways of knowing, producing, and promoting the forest's biodiversity. The richness of techniques and transformation processes, built up over time and connected to cosmological formulations, has been and continues to be employed in the broad transformation of plants, whether cultivated or not, domesticated or wild, from agriculture or foraging, native or exotic, from the fields, the forest, or the secondary growth. Viewed this way, technique emerges as a fruitful tool for dissolving these and other antinomies, which we have historically used to describe the intertwined relationship of Indigenous peoples with the Amazonian forest, thus helping to bring to light the Amerindian ways of coexistence and world-building in close communication with other species and entities with whom we share the Earth.

Table 1 – Variety of plants and their transformation into food.

| Plants processed for food production |                              |           |            |                      |                                |
|--------------------------------------|------------------------------|-----------|------------|----------------------|--------------------------------|
| Portuguese name (or tukano name)     | Scientific name              | Used part | Ingredient | Process              | Food Product                   |
| açaí                                 | <i>Euterpe sp</i>            | mesocarp  | dough      | soak                 | "wine"                         |
| buriti                               | <i>Mauritia flexuosa</i>     | mesocarp  | dough      | soak                 | "wine"                         |
| bacaba                               | <i>Oenecarpus bacaba</i>     | mesocarp  | dough      | soak                 | "wine"                         |
| patauá                               | <i>Oenecarpus bataua</i>     | mesocarp  | dough      | soak                 | "wine"                         |
| tulia                                | <i>Mauritiella armata</i>    | mesocarp  | dough      | soak                 | "wine"                         |
| mapati/<br>cucura                    | <i>Pourouma cecropifolia</i> | mesocarp  | dough      | soak                 | fermented drink                |
| uacu                                 | <i>Monopterix uacu</i>       | mesocarp  | dough      | soak                 | soup                           |
| japurá                               | <i>Erismia japura</i>        | mesocarp  | dough      | soak                 | soup                           |
| pupunha                              | <i>Bactris gasipaes</i>      | mesocarp  | dough      | cook, roast and bury | "wine", flour, fermented drink |
| uxi                                  | <i>Endopleura uchi</i>       | mesocarp  | dough      | soak                 | scalded dough                  |
| cunuri                               | <i>Micandra spruceana</i>    | mesocarp  | dough      | soak                 | soup                           |
| guaraná                              | <i>Paullinia cupana</i>      | endocarp  | dough      | drynk and smoking    | beverage of guaraná            |
| inajá                                | <i>Maximiliana maripa</i>    | mesocarp  | dough      | drynk and smoking    | "beiju"                        |
| ingá                                 | <i>Inga edulis</i>           | mesocarp  | dough      | fermentation         | fermented drink                |
| babaçu                               | <i>Attalea spp</i>           | mesocarp  | starch     | decanting            | porrigde                       |
| seringa                              | <i>Hevea brasiliensis</i>    | endocarp  | starch     | decanting            | "beiju"                        |

|                    |                                                         |                    |                        |                            |                                       |
|--------------------|---------------------------------------------------------|--------------------|------------------------|----------------------------|---------------------------------------|
| pakua catíngá      | <i>Renealmia aromatica</i>                              | fruit              | dough                  | cooking, steeping          | butter                                |
| caratinga          | <i>Dioscorea spp</i>                                    | root               | dough and starch       | cooking                    | “beiju”                               |
| ariá               | <i>Goeppertia allouia</i>                               | root               | dough                  | cooking                    | fermented drink                       |
| duhtu              | <i>Canna edulis</i>                                     | tuber              | dough                  | cooking, fermentation      | fermented drink                       |
| ihpisa             | ?                                                       | endocarp           | dough                  | decanting, bury            | “beiju”, porridge                     |
| kabo               | ?                                                       | endocarp           | dough                  | decanting, bury            | “beiju” porridge                      |
| batata mairá       | <i>Casimirella sp</i>                                   | root               | dough                  | decanting and soak         | “beiju”, scaled dough                 |
| maúro              | ?                                                       | tuber              | dough                  | decanting                  | “beiju”, scaled dough                 |
| mapuso             | ?                                                       | tuber              | dough                  | decanting                  | “beiju”, scaled dough                 |
| karaminero         | ?                                                       | tuber              | dough                  | decanting                  | “beiju”, scaled dough                 |
| uahpe              | ?                                                       | endocarp           | dough                  | decanting                  | “beiju” porridge                      |
| pajurá             | <i>Couepia bracteosa</i>                                | mesocarp           | dough and starch       | decanting and soak         | “beiju”                               |
| castanha-de-cutia  | <i>Acioa edulis</i>                                     | endocarp           | dough and starch       | decanting and soak         | “beiju”                               |
| louro abacate      | <i>Pleurothyrium cuneifolium</i>                        | endocarp           | dough and starch       | decanting and soak         | “beiju”                               |
| faveira-da-várzea  | <i>Eperua leucantha</i><br><i>o Vatairea guianensis</i> | endocarp           | dough and starch       | decanting and soak         | “beiju”                               |
| umari              | <i>Poraqueiba sericea</i>                               | mesocarp, endocarp | pulp, dough and starch | decanting, drying, smoking | beverage, “beiju” and fermented drink |
| ucuqui             | <i>Pouteria ucuqui</i>                                  | endocarp           | dough and starch       | decanting and soak         | porridge                              |
| pequiá             | <i>Cariocar sp</i>                                      | endocarp           | dough and starch       | decanting and soak         | “beiju”                               |
| puxuri             | <i>Licaria puchury-major</i>                            | endocarp           | kernel                 | smoking                    | condiment                             |
| castanha-do-Brasil | <i>Bertholetia excelsa</i>                              | endocarp           | kernel                 | drying                     | “beiju”                               |

Source: Gilton Mendes dos Santos.

## Notes

- 1 Thanks to Charles Clement for his careful proofreading of the English version.
- 2 According to Higino Tenório Tuyuka (personal communication, 2020), uahpé is a fruit the size of umari (*Poraqueiba sericea*), and ihpisa is smaller than this, while kabo is described as the fruit of a liana-type species.
- 3 Sources: Mendes dos Santos (2016; 2021; 2022), França and Fontes (2022), Freitas Filho (2017), Silva et al. (2008), Maia (2018).
- 4 The pomace refers to the mass of the potato after the *goma* has been extracted.
- 5 Xibé is a beverage widely consumed throughout the Rio Negro basin, characterized by adding flour to potable water. It is also possible, as mentioned before, to make a xibé with a specific fruit
- 6 This processing of extracting the gum from the umari seed was documented among the Eastern Tukano people who inhabit the Tiquié River, on the right bank of the upper Rio Negro (França, 2023).
- 7 This processing of extracting the seed mass from the umari was documented among the Baniwa people who inhabit the Içana River, on the left bank of the upper Rio Negro. (França, 2023).
- 8 Waimahsã can be understood as ‘proto-humans.’ They are a variety of invisible beings that inhabit all spaces of the cosmos and build their residences, taking care of the places. (Barreto et al., 2018).
- 9 Gabriel Maia, a Tukano, was writing a doctoral thesis on the subject of fruits, but his writing was interrupted by his passing. e doutorado sobre o tema das frutas, cuja escrita foi interrompida por seu falecimento.

## References

- APARICIO, M. Contradomesticação na Amazônia indígena: a botânica da precaução. In: CABRAL DE OLIVEIRA, J. et al. (Org.) *Vozes vegetais: diversidade, resistências e histórias da floresta*. São Paulo: Ubu Editora; Institut de recherche pour le développement. 2020. p.189-212.
- ARHEM, K. Human-nature relatedness in the Northwest Amazon. In: DESCOLA, P.; PÁLSSON, G. (Org.) *Nature and society. anthropological perspectives*. London: Routledge, 1996. p.185-204.
- BALÉE, W. Indigenous transformation of Amazonian forests: an example from Maranhão, Brazil. In: DESCOLA, P.; TAYLOR, A.-C. (Org.) *La remontée de l'Amazonie: anthropologie et histoire des sociétés amazoniennes*. L'Homme, 126-8. Paris: École des Hautes Études en Sciences Sociales, 1993. p.231-54.
- \_\_\_\_\_. *Historical Ecology*. premises and postulates, in *Advances in Historical Ecology*. New York: Columbia University Press, 1998. p.13-27.
- BARCELOS, A. La (des)animalización de los objetos: ofrendas de comida y subjetivación de máscaras y flautas entre los Wauja de la Amazonía Meridional. In: SANTOS GRANERO (Ed.) *La vida oculta de las cosas – Teorías indígenas de la materialidad y la personificación*. Abya Yala: s.n., 2012. p.177-206.
- BARRETO, J.P. *O Mundo em mim: uma teoria indígena e os cuidados sobre o corpo no Alto Rio Negro*. Brasília, DF: Mil Folhas (IEB), 2022.

- BARRETO, J. P. et al. *Omerô – constituição e circulação de conhecimentos Yépmahsã (Tukano)*. Manaus: Edua, 2018.
- CASCON, L. *Alimentação na Floresta Tropical: um estudo de caso no sítio Hatahara, Amazônia Central, com base em microvestígios botânicos*. Rio de Janeiro, 2010. Dissertação (Mestrado em Arqueologia) – Universidade Federal do Rio de Janeiro.
- CARNEIRO DA CUNHA, M. Antidomestication in the Amazon. Swidden and its foes. *HAU: Journal of Ethnographic Theory*, v.9, n.1, p.126-36, 2019. <https://doi.org/10.1086/703870>
- CLEMENT, C. R. 1492 and the loss of Amazonian crop genetic resources. I. The relation between domestication and human population decline. *Economic Botany*, v.53, p.188-202. 1999.
- CLEMENT, C. R. et al. The domestication of Amazonia before European conquest. *Proceeding of the Royal Society B*. London, v.282. 2015. <http://dx.doi.org/10.1098/rspb.2015.0813>.
- COUPAYE, L. Cadeia Operatória, transectos e teorias: algumas reflexões e sugestões sobre o percurso de um método clássico. In: SAUTCHUK (Org.) *Técnicas de transformação: perspectivas antropológicas*. Rio de Janeiro: ABA Publicações, 2017. p.475-94.
- DENEVAN, W. M. Pre-European forest cultivation in Amazonia, in: BALÉE, W; ERIKSON, C. L. (Ed.) *Time and Complexity in Historical Ecology*. New York: Columbia University Press, 2006. p.153-64.
- DESCOLA, P. *La nature domestique: Symbolisme et praxis dans l'écologie des Achuar*. Paris: Maison des Sciences de L'Homme, 1986.
- \_\_\_\_\_. Societies of nature and the nature of society. In: KUPER, A. (Ed.) *Conceptualizing society*. London: Routledge, 1992. p.107-26.
- \_\_\_\_\_. Constructing natures – symbolic ecology and social practice. In: DESCOLA, P.; PALSSON, G. (Org.) *Nature and society – Anthropological perspectives*. London: Routledge, 1996. p.82-102.
- DUFOUR, D. et al. Monopteryx Angustifolia and Erisma Japura: Their Use by Indigenous Peoples in the Northwestern Amazon. Botanical Museum Leaflets, Harvard University, v.27, n.3/4, p.69-91, March-April 1979. Published by: Harvard University Herbaria.
- FAUSTO, C. Donos demais: Maestria e Domínio na Amazônia. *Mana. Estudos de Antropologia Social*, v.14, n.2, p. 329-66, 2008.
- FAUSTO, C.; NEVES, E. G. Was there ever a Neolithic in the Neotropics? Plant familiarization and biodiversity in the Amazon. *Antiquity*, v.92, n.366, p.1604-18, 2018. <https://doi.org/10.15184/aqy.2018.15>
- FRANÇA, L. *Comer e viver: o sistema alimentar indígena do Rio Negro*. Florianópolis, 2023. Tese (Doutorado em Antropologia Social) – Universidade Federal de Santa Catarina.
- FRANÇA, L.; FONTES, F. Alimentação na Floresta: relações entre frutos, comidas e os yóopinai entre os Baniwa, Alto Rio Negro. *Maloca Revista de Estudos Indígenas*, v.5, p.1-36, 2022.
- FREITAS FILHO, A. *A roça, a colheita e a festa: uma etnografia dos roçados apurinã*

- da aldeia Terra Nova. Manaus, 2017. Dissertação (Mestrado em Antropologia Social) – Universidade Federal do Amazonas.
- FRENTE DE PROTEÇÃO ETNOAMBIENTAL. Relatório. Funai, 2014. (mimeo).
- FURQUIM, L. *Arqueobotânica e mudanças socioeconômicas durante o Holoceno Médio no sudoeste da Amazônia*. São Paulo, 2018. Dissertação (Mestrado em Arqueologia) – Museu de Arqueologia e Etnologia, Universidade de São Paulo.
- GELL, A. *Art na Agency: An Anthropological Theory*. Oxford: Clarendon Press, 1998.
- GRAÇA, R. *Puxuri: uma potencialidade do município de Borba*. Monografia (Graduação em Tecnologia Modalidade Indústria da Madeira). Instituto de Tecnologia da Amazônia, Manaus, 2003.
- GRAEBER, D.; WENGROW, D. *O despertar de tudo – uma nova história da humanidade*. Trad. Denise Bottemann e Claudio Marcondes. São Paulo: Cia. das Letras, 2022.
- GRUBER, J. G. (Org.) *O livro das árvores*. Benjamim Constant: Organização Geral dos Professores Ticuna Bilíngües, 1997.
- HUI, Y. *Tecnodiversidade*. Traduzido por Humberto do Amaral. São Paulo: Ubu Editora, 2020.
- KISTLER, L. et al. Multiproxy evidence highlights a complex evolutionary legacy of maize in South America. *Science Journal*, v.362, n.6420, p.1309-13, 2018.
- KOPENAWA, D.; ALBERT, B. *A queda do céu. Palavras de um xamã yanomami*. Rio de Janeiro: Cia. das Letras, 2016.
- LAGROU, E. *A fluidez da forma: arte, alteridade e agência em uma sociedade amazônica (Kaxinawa, Acre)*. Rio de Janeiro: Topbooks, 2007.
- LEMONNIER, P. The study of material culture today: toward an anthropology of technical systems. *Journal of anthropological archaeology*, n.5, p.147-86, 1986.
- LÉVI-STRAUSS, C. O uso das plantas silvestres da América do Sul Tropical. In: *Suma Etnológica Brasileira*. Belém: Editora Universitária, 1997.
- LEVIS, C. et al. Persistent effects of pre-Columbian plant domestication on Amazonian forest composition. *Science*, v.355, n.6328, p.925-31, 2017. <https://doi.org/10.1126/science.aal0157>. 2017.
- LIMA, T. *Um peixe olhou para mim*. O povo Yudjá e a perspectiva. São Paulo: Unesp; ISA; Rio de Janeiro: Nuti, 2005.
- LORENZ, S. da S. *Sateré-Mawé, os filhos do guaraná*. São Paulo: Centro de Trabalho Indigenista 1992.
- MAIA, G. S. *Bahsamori: o tempo, as estações e as etiquetas sociais dos Yëpamahsã (Tukano)*. Manaus: Edua, 2018.
- MAUSS, M. Técnicas do corpo. In: \_\_\_\_\_. *Sociologia e Antropologia*. São Paulo: Cosac&Naify, 2003.
- MENDES DOS SANTOS, G. Plantas e Parentelas: notas sobre a história da agricultura no Médio Purus. In: MENDES DOS SANTOS, G.; APARÍCIO, M. (Org.) *Redes Arawa – Ensaios de Etnologia do Médio Purus*. Manaus: Edua, 2016. p.19-39.
- \_\_\_\_\_. Transformar as plantas cultivar o corpo. In: CABRAL DE OLIVEIRA, J. et

al. (Org.) *Vozes Vegetais - diversidade, resistências e histórias da floresta*. São Paulo: Ubu Editora; IRD, 2020. p.140-53.

\_\_\_\_\_. A gigante da floresta – uma breve descrição sobre a batata mairá (*Casimirella* sp) na Amazônia indígena. *Maloca – Revista de Estudos Indígenas*, v.5, p.1-20, 2022.

MENDES DOS SANTOS, G. et al. Pão-de-índio e massas vegetais: elos entre o passado e o presente na Amazônia indígena. *Bol. Mus. Para. Emílio Goeldi. Cienc. Hum.*, v.16, n.1, 2021.

MENDES DOS SANTOS, G.; HENRIQUE SOARES, G. Amazônia Indomável – relações fora do alcance da domesticação. *Mundo Amazônico*, v.12, n.1, p.281-300, 2021.

POSEY, D. Indigenous management of Tropical Forest ecosystems: the case of the Kayapo Indians of the Brazilian Amazon. *Agroforestry System*, n.3, p.139-58, 1985.

\_\_\_\_\_. Introdução – Etnobiologia: teoria e prática. In: RIBEIRO, B. (Coord.) *Suma Etnológica Brasileira/1*. Petrópolis: Vozes; Finep, 1987. p.15-25.

RABELO, A. *Frutos nativos da Amazônia comercializados nas feiras de Manaus-AM*. Manaus: editora Inpa, 2012.

REZENDE, J. *A Festa das frutas: uma abordagem antropológica das cerimônias rituais entre os Utãpinopona (tuyuka) do alto rio Negro*. Brasília, Editora Mil Folhas, 2023.

RIBEIRO, R. G. Estudo etnobotânico e físico-químico da batata-mairá (*Casimirella* sp. – ICACINACEAE). Manaus, 2018. Dissertação (Mestrado em Botânica) – Instituto Nacional de Pesquisas da Amazônia.

SAUTCHUK, C. E. (Org.) *Técnicas de transformação: perspectivas antropológicas*. Rio de Janeiro: ABA Publicações, 2017.

SILVA, A. G. et al. *Aldeias indígenas Mura*. Manaus: Edua, 2018.

STEWART, J. (Ed.) *Handbook of South American Indians*, v.1-6. Washington: Smithsonian Institution, 1946-1950.

VIVEIROS DE CASTRO. *Araweté e os Deuses Canibais*. São Paulo: ANPOCS; Jorge Zahar, 1986.

VIVEIROS DE CASTRO, Eduardo. Os pronomes Cosmológicos e o perspectivismo ameríndio. *Revista Mana*, Rio de Janeiro, v.2, n.2, p.115-44, 1996.

WATLING, J. et al. Phytoliths from native plants and surface soils in the Upper Madeira basin, SW Amazonia, and their potential for paleoecological reconstruction. *Quaternary International*, 2020a. doi: <https://doi.org/10.1016/j.quaint.2020.03.045>

WATLING, J. et al. Arqueobotânica de ocupações ceramistas na Cachoeira do Teotônio. *Bol. Mus. Para. Emílio Goeldi. Cienc. Hum.*, v.15, n.2, 2020b.

**ABSTRACT** – There is a great diversity of ways in which the traditional peoples of the Amazon process and consume plant species, which unfolds in different ways of knowing, producing and promoting the biodiversity of the forest. A wealth of techniques, built up over time and connected to cosmological formulations, have been and are used to transform plants in a wide range of ways, whether they are cultivated or not, domesticated or wild, from farming or gathering, native or exotic, from the fields, the forest. In this work, we present a selection of three plant species – *açaí* (*Euterpe* sp), *mairá*

*potato* (*Casimirela* sp.) and *umari* (*Poraqueiba sericea*) – looking at the ways in which they are technically transformed in order to obtain key ingredients (gum and dough) or to change the state of the plant material (smoking, fermentation). Indigenous peoples conceptual and practical elaboration of fruit is expressed not only in the material ways in which it is processed, but also in cosmologies and rites, as we tried to show in our analysis of the umari among the Tukano peoples. This cultivated and uncultivated fruit, present in the capoeiras and in the forest, and its various forms of processing help us to think about how technique presents itself as a useful tool for dissolving antinomies adopted historically to talk about the intertwined relationship between indigenous peoples and the Amazon Forest.

**KEYWORDS:** Vegetal transformations, Cosmotechinic, Gathering, Indigenous peoples, Amazon.

**RESUMO** – Há uma grande diversidade de modos de processar e consumir as espécies vegetais pelos povos tradicionais da Amazônia, o que se desdobra em distintos modos de conhecer, produzir e promover a biodiversidade da floresta. A riqueza de técnicas, construída ao longo do tempo e conectada às formulações cosmológicas, foi e é empregada nas transformações de plantas de modo amplo, cultivadas ou não, domesticadas ou silvestres, da agricultura ou da coleta, nativas ou exóticas, da roça, da floresta ou da capoeira. Neste trabalho, apresentamos um recorte sobre três espécies vegetais – o açaí (*Euterpe* sp.), a batata mairá (*Casimirella* sp.) e o umari (*Poraqueiba* sp.) –, observando os modos de transformação técnica que permitem a obtenção de ingredientes fundamentais (a goma e a massa) ou a alteração dos estados da matéria vegetal (defumação, fermentação). A elaboração conceitual e prática dos povos indígenas sobre os frutos está expressa não apenas nos modos materiais de transformação, mas também nas cosmologias e nos ritos, como procuramos evidenciar na análise sobre o umari entre os povos tukano. Esse fruto cultivado e não cultivado, presente nas capoeiras e na floresta, e suas diversas formas de processamento nos ajudam a pensar como a técnica se apresenta como uma profícua ferramenta de dissolução de antinomias adotadas historicamente para falar da imbricada relação dos povos indígenas com a floresta amazônica. Assim compreendidos, como uma *cosmotécnica*, os modos de transformar os vegetais são um exemplo cabal de práticas antiantropocênicas, uma vez que sua orientação se assenta numa episteme indígena equiestatutária entre as espécies e outros sujeitos habitantes da Terra.

**PALAVRAS-CHAVE:** Transformações vegetais, Cosmotécnica, Coleta, Povos indígenas, Amazônia.

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