ISSN 2386-5414
e-ISSN: 2340-8391

Research article | Articolo di ricerca

Arumã-Handicraft, Innovation and Identity | *Arumã-Artigianato*, Innovazione e Identità.

Iucana Mouco

Department of Engineering, University of Campania "Luigi Vanvitelli", Real Casa dell'Annunziata , Via Roma, 29, 81031 Aversa (Italy), iucana.demoraesmouco@unicampania.it, ORCID: 0000-0002-8088-4293

Recieved:: February 27, 2023 | Accepted: May 10, 2023 | Published: June 29, 2023
https://doi.org/10.25267/P56-IDJ.2023.i3.04

Abstract

Considering the cultural dimension in the path of sustainable development can be an attractive strategy for the development of the territory, the safeguard of the diversity and the enhancement of the economic and social conditions of traditional communities. The employment of the notions in the field of design in the context of artisanal production can foster the development of innovative products that embrace the local culture and traditions, as well as promote synergistic and systemic relationships in which indigenous communities can take an active part. In this scenario, the article will attempt to analyze the relationship between design and local culture, reporting a case study carried out in the Amazon. In this study, a collaboration between local designers and indigenous artisans was born, especially to create new sustainable products that could provide a stable income for the indigenous artisans. A collection of jewelry characterized by a strong Amazonian cultural charge was developed in compliance with sustainable design principles, such as the use of the "Material Driven Design" method. Although it is important to consider the ethical issues when dealing with traditional communities, plan to production and services strategies product-related, to think about a new products and materials that are useful to the society without undermining the millennial heritage held by these groups, it is possible to conclude that a synergy between craftsmanship and design can contribute to the enhancement of culture and territories.

Keywords: Product development, design sustainable, renewable raw material design and territory culture, indigenous handicraft, Amazon.

Sommario

Considerare la dimensione culturale nel percorso dello sviluppo sostenibile può essere una strategia interessante per la valorizzazione del territorio, per salvaguardare la diversità e per l'avanzamento economico e sociale di città e comunità tradizionali. L'intervento del design

nel contesto della produzione artigianale può favorire lo sviluppo di prodotti innovativi che valorizzano la cultura e la tradizione locale, promuovendo rapporti sinergici e sistemici che accolgono e sostengono le comunità indigene. In questo scenario, l'articolo analizzerà il rapporto tra design e cultura locale attraverso la descrizione di un caso studio realizzato nell'Amazzonia in particolar modo riportando le esperienze di collaborazione tra designer locali e artigiani indigeni al fine di creare una linea di nuovi prodotti per stimolare la generazione di reddito e la produzione sostenibile di prodotti artigianali. Come risultato è stata creata una collezione di gioielli connaturati da una forte carica culturale amazzonica, sviluppata sulla base dei principi di progettazione sostenibile nella disciplina del design, come l'uso del metodo "Material Driven Design". Il progetto ha dimostrato che la sinergia tra artigianato e design è capace di contribuire al mantenimento e alla valorizzazione della cultura e dei territori; anche se, è importante tenere in considerazione le questioni etiche nel rapporto con le comunità tradizionali, pensare a strategie di produzione e servizi legati al prodotto e alla possibilità di nuovi prodotti e materiali utili alla società che non entrino in conflitto con il patrimonio culturale millenario di questi gruppi.

Parole Chiave: Sviluppo del prodotto, design sostenibile, materia prima rinnovabile, design e cultura del territorio, artigianato indigeno, Amazzonia.

Introduction

In a wide sense, culture permeates the writing, the language, the architecture, the gastronomy, the tools, the skills, the technology, the customs, the art, etc. We can divide the concept of cultural heritage into two major branches: the material goods (such as buildings, the territory and others) and immaterial goods (such as history, communication, services, use of the product, conservation, etc.). The idea of heritage is similar to the idea of territory in that it considers people's life stories as well as how they create and utilize their objects. The elements of local culture - tangible and intangible, memory, and the sense of belonging – entwine with each other and create a weft that unites the various local scopes (the culture, the nature, the tradition, the ethnography, the history, the architecture, the religion, the language) (Oliveira & Krucken, 2015; Sun, 2022; Brenna et al., 2020; Cabrero & Ochoa, 2016).

Culture directly affects the way man sees the world and his relationship with it and it is therefore very difficult to think of sustainability without considering the cultural dimension. In addition to being a crucial aspect, culture has also become a key factor in the world economy: innovative practices based on culture are perceived as one of the most reliable resources for the economic advancement of cities and communities. Through the tools provided by the discipline of design, it is possible to create products capable of expressing the essence of places. Indeed, it's possible to employ an effective strategy capable of promoting and enhancing the territory's cultural heritage (Ferrara, 2016; Lin, 2022; Myerson, 2017; Sun, 2022; Aparo, 2013).

In this context, design can move into two directions: it can develop new products/services/systems inspired by a specific culture, a process that Sun (2022) defines as "from Function to Feeling", or it can improve existing products/services/systems created by a craftsman or group within a territory, a method that Sun (2022) describes as "Inspiration from culture and ideation from the product". In these regards and in terms of academic research, the project "Sistema Design Italia" of 1998, coordinated by Professor Ezio Manzini, stands out. The research highlighted the territorial dimension of Italian design and its territorial declinations, revealing the strengths, specificities and the most innovative signs for each area of the country.

In summary, design can be applied not only with the aim of enhancing local cultural products, but also to improve services and systems related to that product, such as resources related to the environment, historical and cultural heritage and the collective imagination associated to the idea of place. In this way, the setting could initiate a conversation with the origins while simultaneously indirectly renewing and reconfiguring the area. (Parente, 2016).

The craftsmanship, through its productions, reveals the traditions and the features of a people. As it combines values relating to the regional context, cultural knowledge, and its practices, the piece of craftsmanship serves as a cultural display. Knowledge of the processes and techniques involved, are recognized as Intangible Cultural Heritage (Stefanidi et al., 2022; Mourão, 2019). From the perspective of sustainability, we can define handicrafts as eco-friendly only if they emphasize manual processing and the use of natural and renewable materials (UNESCO, 2023). The indigenous peoples are the ones who stand out the most in terms of regards sustainability in the practice of craftsmanship because their knowledge and customs emphasize the harmony between the natural world and human populations. This formulation can be an interesting path to sustainable production, capable of contributing to the development of modern science and technology (Lin, 2022).

Nowadays, industrialization and globalization have put a strain on traditional handicrafts: large-scale manufacturing, often providing necessities at a lower cost, directly competing with craftsmanship. Moreover, the excessive exploitation of available resources and its aftermath, climate change, compromise the availability of the raw materials necessary for artisanal production. Another important problem is the indifference of the younger population towards craftsmanship because they consider it extremely laborious and incapable of steady income. Another critical issue linked to craft traditions is the phenomenon of "production secrets", by virtue of which the set of knowledge and practices would be for the exclusive use of a single group or a single community and for this reason they risk being forgotten (UNESCO, 2023; Li et al., 2021).

In this sense, the safeguard of diversity and of the peculiar characteristics embedded in the artisan dimension can be a form of mitigation of the effects of globalization, a sign of resistance against a phenomenon that has undermined traditional knowledge and know-how. Cultural diversity is the result of a long process that took place within specific territories (Follesa, 2013). This point is especially important in considering the rising interest in traditional craftsmanship, which is seen as a powerful countertrend to urbanization and industrialization. Many people around the world have come to appreciate craftsmanship as a reification of cultural knowledge and values (UNESCO, 2023).

In this context, a new attitude based on the awareness of environmental issues, on social justice and on the promotion of fair trade in the choice of products or services emerges: the so-called "ethical consumption" (Martins, 2020). A new type of modern-day consumer shows up and is aware of how the choice of products and services reflects the social, cultural and environmental values associated with the initial local production. This new type of consumer is looking for products imbued with identity, because in them is synthesized ancestral knowledge handed down and perfected from generation to generation (Lin, 2022).

It is therefore essential to reflect on the relationship between craftsmanship and design, in particular by focusing on the need to implement practices aimed at improving artisan products, enhancing local culture and tradition, as well as encouraging activities that stimulate the creative ability of craftsmen and the interest of the youngest to keep this tradition alive. In this setting, the role of designers in communities or groups of artisanal productions is growing. The objective is to collaborate in the development of products suitable for the

new needs of the market. The involvement of design in the context of artisan production can foster the development of innovative products and promote synergistic and systemic relationships that embrace indigenous communities. Furthermore, these relationships are a major hotbed for the configuration of environmental models and economic and social sustainability (Mourão, 2019; Souza, 2015).

Through the design that highlights territorial specificity it is possible to formulate a code capable of waving a direct relationship with the material and immaterial resources of a place, a new rhetoric capable of carrying out a process of re-identification with a specific place and re-appropriation of a corpus of knowledge. Design presents itself as a crucial tool for defining a traditional heritage enhancement strategy because it analyses, evaluates and interprets the various cultural factors. In this sense, in a project that involves design and craftsmanship, the designer has access to a complex network of signs, materials, techniques and uses, which constitute the cultural framework of each territory and this must be the starting point for the development of products/services/systems (Follesa, 2013; Aparo, 2013).

However, it is necessary for the designer to accept the challenge of correctly translating and interpreting the characteristics of a local culture as a differential and competitive factor, without interfering with its real meaning. It is also important to promote the true identity of the product's origin place (Mourão, 2019). In the relationship between designer and community/artisan is essential to follow the international regulatory instruments that protect human rights and the rights of indigenous peoples. Based on these considerations, in 2015 the Intergovernmental Committee elaborated twelve ethical principles for the protection of intangible cultural heritage in order to guarantee its survival. These principles pinpoint the best practices for governments, organizations and individuals who directly or indirectly influence this heritage (UNESCO, 2023).

Based on the foregoing, the article analyzes the relationship between design and local culture through the description of a case study carried out in the state of Amazonas in Brazil, in particular by reporting the experiences of collaboration between local designers and indigenous artisans. The cooperation resulted in the creation of new products made up from Arumã (schnosiphon arouma Korn), a perennial and very abundant marantaceae, typical of the Amazon rainforest. As a natural and renewable raw material, this plant is widely used by indigenous populations. With the traditional technique of woven fiber, they produce sieves, baskets, carpets and accessories. Furthermore, objects in Arumã represent an important source of income for local families (Matsuno, 2000; Marques, 2009; Marques, 2015; Rios, 2011).

Methodology

In the following paragraph will be described the project aimed to create new products made with the fiber of Arumã, carried out by two institutions operating in the state of Amazonas, Brazil, the FUCAPI- Foundation, Center for Analysis and Research and Innovation and the SEBRAE/AM- Brazilian Entrepreneur Support Service.

In the project, FUCAPI was responsible for the creation of new products, namely a team of designers in its department of "Tropical Design from the Amazon", made up of a mentor designer, three product designers and two graphic designers. The department specializes in the development of artifacts that can promote regional identity and Amazonian culture, as well as enhance local labor and regional raw materials. The main objective of this department is to provide a sustainable and alternative means of development for the region. Meanwhile, the SEBRAE/AM institute with its craft department supports the artisans of Amazonas in the improvement of their production chain and manages the introduction of their products to the market. In the project, the craft department's objective was to make this sustainable

supply chain, as well as to provide the facility and logistical support necessary for the designers during their first contact with local artisans.

In order to create a line of new products that could enhance the indigenous people's culture of the Amazon, as well as stimulate the sustainable production of handicraft products capable of bringing about a good economic income, the project was divided into three phases. During the first phase, a general survey of the production chain was carried out. In the second phase, a workshop was organized for the exchange of knowledge between craftsmen and designers. In the last phase, new products were developed based on the principles of sustainable design, such as the employment of the "Material Driven Design" (MDD) method and the storytelling as an effective communication tool.

The survey was carried out by one product designer and one graphic designer in the city of São Gabriel da Cachoeira (SGC), 850 km from Manaus, the capital of Amazonas whose concentration of indigenous population is the highest in Brazil (Artesol, 2022; Portal Amazonia, 2022). The city of SGC was chosen due to its close relationship with SEBRAE, great cultural diversity and rich tangible and intangible heritage. In this region items are made with the most diverse materials, all found in the forest and skillfully transformed into baskets, ceramic utensils, biojewels, wooden objects. These products represent the culture and history of each indigenous tribe and bear witness to ancestral techniques reinterpreted in an original way (Foirn, 2022).

In the same phase, in loco data was collected through the observation of production processes, photographic recordings, interviews and informal conversations. It was possible to follow the artisanal production process developed by different indigenous people, especially those living in the urban area. For five days the designers met two groups of artisans and an independent craftsman who presented their products, their uses and their meanings.

The first group visited was the ASSAI (Association of Indigenous Artisans of São Gabriel da Cachoeira), made up of indigenous people of various ethnic groups, who produced baskets and accessories made up from the fiber of the Amazon palm tree Tucum (Bactris Setosa) and with the usage of natural dyes in various colors. The second visit was made to the independent craftsman Duda Gonçalves, belonging to the Kubeo ethnic group, who produces sieves, baskets, bags and jewelry (Figure 1). Such objects are made with Arumã fiber and are created through exquisite and symmetrical weaving, like a textile with sober graphic designs. Natural dyes are also used in hues of black and red (ONIC, 2022).

Figure 3. Baniwa e Coripaco handicrafts. (b) Kubeo handicrafts (Ricardo, 2014; Mouco, 2022).

The third meeting was arranged with the Areal community made up of an indigenous artisans' group, the majority of which belong to the Coripaco ethnic group. The group makes large baskets and sieves decorated with colorful and extravagant graphic motifs by weaving the Arumã fiber (Figure 1). It was possible to observe the working process in all its phases: the varnishing, the fiber removal, the braiding process (Figure 2). The natives who work the Arumã use only the external part of the plant stem, whose flat and flexible surface allows the cutting of strips of few millimeters. To separate the external part of the stem from the internal section the natives use, in precise movements, a knife with which they make small cuts obtaining thin strips. Subsequently, the weaving process begins,

carried out with rigorous symmetry which results in objects with the most precise and diverse textures. Colorful graphic patterns can be created by pre-dying the stripes with natural dyes.

Figure 4. Arumã fiber extraction process and handicrafts (Ricardo, 2014; Mouco, 2022).

For the indigenous people, the main Arumã application is in the handicraft sector which, beyond the economic value, has a high symbolic value and a great cultural charge. For example, for the Baniwa, the traditional baskets made up from the Arumã represent an ancient art: this group believes that the art of weaving has been transmitted by the Gods to the male members of the Baniwa tribe. The graphic representations on the handicrafts derive from petroglyphs of the ancestors and represent a useful means of preserving the memory of past knowledge. Each texture and graphic design tell a story and contains a meaning linked to each indigenous people culture (Ricardo, 2014; Marques, 2009).

All the information gathered by the two designers in SGC was presented to the rest of the team in Manaus and analyzed according to the cultural weight, the quality of the production, the degree of innovation, the risk of disappearance and the availability of raw materials. Based on these parameters, the candidate chosen for the project was the Kubeo craftsman, Duda Gonçalves. His skill, the quality of his products, his peculiar technique of processing Arumã handed down from generation to generation only by his family, stand out compared to other groups of craftsmen and the raw material with which he works is perennial and very abundant in the Amazon (Matsuno, 2000; Marques, 2009).

For the second phase of the project, the "Material Driven Design" (MDD) method was used, a product development method that has a particular material as its starting point (Karana et al., 2015). The method involves four phases: the material understanding (technical and experiential characteristics), creating a visual experience with the material, development of visual models for the created experience, the design of materials and product concepts (Mota, 2021). Based on the MDD method, a five-day workshop was held within the FUCAPI institution with the participation of the craftsman Kubeo and the team of six designers. On this occasion it was possible to learn more about the techniques and finishings created by the craftsman who presented three types of weaving (ant trail, palm leaf and diamond) (Figure 3). Furthermore, the craftsman used three types of finishes: the finishing with thread and resin to fasten the weave, the finishing with soft Tucum fiber thread for a more refined and safer workmanship and the finishing with vines and bindings that give structure to baskets and sieves.

Figure 5. Types of weaving: (a) diamond, (b) palm leaf, (c) ant trail. Types of finishing: (d) with thread and resin, (e) with vines and bindings, (f) with soft fiber thread (tucum) (Mouco, 2022).

The designers proposed the inclusion of new materials and the use of industrial dyes that would facilitate the production process and further enhance the handicrafts (Figure 4). The first experiment involved the employment of copper wire in the Arumã weave: the copper wires were cut to the same length as the fibers and then positioned in sequence (one Arumã fiber, one copper wire and so on), and finally were woven manually. In the initial phase,

the process presented some difficulties, but the craftsman soon became familiar with the new material. The copper wire gave greater structure to the weave and made the final creation more resistant. The metal has also highlighted the different patterns made by the craftsman by making the texture more evident.

Figure 6. (a, b) Experiment with anilines of industrial origin and (c, d) and the intertwining of the copper wire in the Arumã weave (Mouco, 2022).

As for the dye, anilines (concentrated powder dyes to be dissolved in ethyl alcohol of industrial origin) were used to give a greater variety of colors than the traditional red and black dyes used by the natives. It has been observed that Arumã absorbs dye well and the new color palette gives the artefacts a more modern look. However, over the long term it has been noted that aniline dyes tend to fade more quickly than traditionally used dyes of natural origin. After this exchange of knowledge, the designers moved on to the last phase of the project, the development of new products.

Risults

According to Cabrero & Ochoa (2016), the designer is able to unify aesthetic's aspetcs with the perception of a specific territory. He should be able to understand how local experiences have been and will be turned into signs and symbols often codified in an element of design. In this way, it is possible to experience a specific territory through an object. On this premise, the third and final phase of the product line creation was formulated using the ancient Arumã weaving techniques of the Kubeo indigenous people. A jewelry collection called "Arumã" was created (Figure 5) and consists in nine sets, including necklaces, earrings, bracelets. The geometric shapes of the pieces highlight the Arumã weaving and resemble the graphic motifs used for traditional indigenous baskets.

The technique with the 3 types of traditional weaving (ant trail, palm leaf, diamond) of the Kubeo craftsman was used. The materials used ranged from copper threads to silver pieces, to red gold plating, to leather cords. The pairing with these materials gives the Arumã fiber the status of a jewel. In the prototyping process, all Arumã fabrics were woven by the craftsman based on measurements defined by the designer. To recall the texture of the finishings used for the Kubeo baskets, but reinterpreted in a modern key, the designers have conceived necklaces with finishings similar to the traditional ones but using copper threads and leather cords. The silver parts were made with artisan goldsmith techniques based on technical drawings prepared by the designers. The assembly of the silver with the Arumã was done by assembly.

Another interesting point was the development of the graphic material (Figure 5), an important communication tool for the collection, which has greatly contributed to the public exposure and understanding of the work carried out. The two graphic designers have created a catalogue containing the description of the entire collection, photos of the sets, the production process and the development of the collection recorded during the survey at SGC and during the workshop in Manaus. Furthermore, covers containing graphics obtained from the geometric shapes chosen for the creation of each set (square, rectangle, trapezoid, triangle, rhombus, circle) have been included in the catalogue. The use of "storytelling" in product presentation has been a significant communication strategy because it allows consumers to connect with their native land and cultural heritage (Chan, 2021).

After the catalogue was published, the collection was displayed in several exhibitions in different regions of Brazil. The marketing of the sets was also launched in Brazil and in other countries. The collection has been awarded internationally e has

contributed to the diffusion of Amazonian culture and the technique of weaving with Arumã of Kubeo. It gave visibility to the craftsman and obtained a positive response from the public. For these reasons, other products made with the same materials and techniques (objects, bags, and jewels) were created, improving the relationship with industry and innovation.

Figure 7. (a) Set of Jewelry "Arumã" e (b) catalogue (Mouco, 2022).

Conclusion

Through this project was possible to verify the level of appreciation of indigenous craftsmanship by a wider public. The handcrafted products with a strong Amazonian cultural charge have a high potential and stand out from the other products on the market. However, the small-scale production makes it unsuitable for a market that prefers larger production chains. It has been highlighted how it was necessary to rethink the production and distribution strategies in response to the consumption models of the large market and to consider new consumption models.

Promoting a deeper relationship between design and handicraft is an essential method for preserving and enhancing culture and territory. It is essential to carry out an in-depth work, ethically fair and respectful of the values of the individual craftsman and of traditional communities.

Based on the experience with Arumã fiber and with the prospect of promoting a more sustainable approach to craftsmanship, it is important, on one hand, to think of products that do not scathe the millennial heritage held by indigenous peoples; and on the other hand, to look at the opportunities offered by the use of Arumã waste in the development of a new sustainable biomaterial in line with the principles of the circular economy.

References

Aparo, E., & Soares, L. (2013). O DESIGN COMO VEICULADOR DA CULTURA DE UM LUGAR. *Research Gate*. https://www.researchgate.net/publication/334732602_O_DESIGN_COMO_VEICULADOR_DA_CULTURA_DE_UM_LUGAR

ARTESOL, *Artesanato Solidário*. (19 maggio 2022). Associação dos Artesãos Indígenas de São Gabriel da Cachoeira – ASSAI. *Research Gate*: https://www.artesol.org.br/Associacao_dos_Artesaos_Indigenas_de_Sao_Gabriel_da_Cachoeira_ASSAI

Bozzola, M. & De Giorgi, C. (2016). Design and Craftsmanship for Cultural Heritage: The 'Materialmente' Project – An Experience from Italy. *Design Journal*. https://doi.org/10.1080/14606925.2016.1129213

Brenna, L.. (2014). *The Italian Design Research and Practice in Cultural Heritage Exploitation. Polimi.* https://www.academia.edu/945049/The_Italian_Design_Research_and_Practice_in_Cultural_Heritage_Exploitation

Cabrero, J. & Ochoa, A. (2016), PAD- Pages on Arts & Design. *Territory and Aesthetic as tools for product design,* n°13, pp. 155-170. *Research Gate*: https://re.public.polimi.it/retrieve/handle/11311/1018732/194236/Design%20for%20Territories%20as%20reflective%20practice.pdf

Chan, A. (2021). *Storytelling, Culture, and Indigenous Methodology. In Discourses, Dialogue and Diversity in Biographical Research: An Ecology of Life and Learning* (pp. 170–185). *Research Gate*: http://www.jstor.org/stable/10.1163/j.ctv1v7zc0t.17

Couto, R. et al. (2014). *Formas do Design: por uma Metodologia Interdisciplinar*. Rio Books: Rio de Janeiro.

FOIRN, Federação das Organizações Indígenas do Rio Negro. (19 maggio 2023). *Arte Wariró*.

ResearchGate: https://portalamazonia.com/amazonia-az/sao-gabriel-da-cachoeira.

Follesa, S. (2013). *Design & identità: Progettare per i luoghi*. Franco Angeli: Milano

FUCAPI (19 gennaio 2023). *Espaço Cultural do TRT11 será palco da exposição "Design Tropical da Amazônia" da Fucapi*. ResearchGate: https://portal.trt11.jus.br/index.php/comunicacao/731-espaco-cultural-do-trt11-sera-palco-da-exposicao-design-tropical-da-amazonia-da-fucapi

Gaddi, R. (2016), PAD- Pages on Arts & Design. Mapping the territory for cultural development. *The methodological assumptions of Artificio Project, n°13, pp. 155-170. ResearchGate:* https://re.public.polimi.it/retrieve/handle/11311/1018732/194236/Design%20for%20Territories%20as%20reflective%20practice.pdf

Oliveira, P. M. & Krucken, L. (2015). Design as a resource for valuing territorial assets and local cultures: An experimental model applied to Estrada Real, Brazil. *Uemg*. https://www.academia.edu/2487322/Design_as_a_resource_for_valuing_territorial_assets_and_local_cultures_An_experimental_model_applied_to_Estrada_Real_Brazil

Karana, E. et al. (2015). Material Driven Design (MDD): *A Method to Design for Material Experiences*. (n.d.). *International Journal of Design*. http://www.ijdesign.org/index.php/IJDesign/article/view/1965

Xin-Zhu, L. et al. (2021). *The Design and Evaluation of Teaching Activities Combining Traditional Lantern Craftsmanship with Primary Education in the Perspective of Intangible Cultural Heritage*. (2021, May 1). IEEE Conference Publication | IEEE Xplore. https://ieeexplore.ieee.org/document/9526907

Lin, Y. & Lin, M. (2022). Exploring Indigenous Craft Materials and Sustainable Design—A Case Study Based on Taiwan Kavalan Banana Fibre. *Sustainability*, *14*(13), 7872. https://doi.org/10.3390/su14137872

Magnaghi, A. (2001). *Rappresentare i luoghi « LaPEI*. (n.d.). http://www.lapei.it/?page_id=568

Marques, M. (2009, May 19). *Caracterização das Propriedades da Fibra Vegetal de Arumã para aplicação como reforço a Matriz Cimentícia*. https://tede.ufam.edu.br/handle/tede/3481

Marques, Maria Gorett dos Santos. (2015). *Estudo das propriedades físicas e mecânicas e da durabilidade de compósitos cimentícios reforçados com fibra amazônica*. https://doi.org/10.11606/t.18.2016.tde-15022016-091455

Martins, N., Brandão, D., Alvelos, H., & Silva, S. (2020). E-Marketplace as a Tool for the Revitalization of Portuguese Craft Industry: The Design Process in the Development of an Online Platform. *Future Internet*, 12(11), 195. https://doi.org/10.3390/fi12110195

Matos, K., Moreno, M., Seixas, H., Costa, L. Lopes, E.M. & Brito, G. F.. (2021b). Projetando com materiais: uso do bagaço da cana-de-açúcar no desenvolvimento de novos produtos. *Research Gate*. https://doi.org/10.5433/2236-2207.2021v12n3p14

Matsuno, E. (2000). *O impacto da extração da fibra de arumã (Ischnosiphon polyphyllus, Marantaceae) sobre a população da planta em Anavilhanas, Rio Negro, Amazônia Central*. https://repositorio.inpa.gov.br/handle/1/12094

Myerson, J. (2016). Scaling Down: Why Designers Need to Reverse Their Thinking. *She Ji: The Journal of Design, Economics, and Innovation, 2*(4), 288–299. https://doi.org/10.1016/j.sheji.2017.06.001

Mouco, I. (19 marzo 2022). *Coleção Arumã. Research Gate:* https://www.iucanamouco.com/coleo-arum

Mourão, N. (2019). *Design e artesanato: uma prática para valorização cultural e geração de renda na comunidade de Araçuaí*. Blucher

Proceedings. https://www.proceedings.blucher.com.br/article-details/design-e-artesanato-uma-prtica-para-valorizao-cultural-e-gerao-de-renda-na-comunidade-de-araua-33479

ONIC -Organização Nacional Indígena de Colômbia. (19 maggio 2022). *Kubeo*. ResearchGate: ttps://www.onic.org.co/pueblos/126-cubeo.

Parente, M. (2016). PAD- Pages on Arts & *Design. Design for Territories as reflective practice,* n°13, pp. 10-28. Research Gate: https://re.public.polimi.it/retrieve/handle/11311/1018732/194236/Design%20for%20Territories%20as%20reflective%20practice.pdf

Portal Amazônia. (19 maggio 2022). *São Gabriel da Cachoeira Considerada a cidade mais indígena do Brasil, o município conhecido como "Cabeça do Cachorro" abriga 23 etnias indígenas. Research Gate:* https://portalamazonia.com/amazonia-az/sao-gabriel-da-cachoeira

Ricardo, B. (2014). *Arte Baniwa: cestas de arumã.* Instituto SocioAmbiental: São Paulo.

Rios, M. N., & Pastore, F. Jr. (2011). *Plantas da Amazônia: 450 espécies de uso geral. ResearchGate.* https://www.researchgate.net/publication/334615373_Plantas_da_Amazonia_450_especies_de_uso_geral

SEBRAE (19 gennaio 2023). *Brasil Original. Research Gate:* https://www.sebrae.com.br/sites/PortalSebrae/ufs/ba/cursos_eventos/brasil-original-artesanato-da-bahia1808,dcba69fa94326410VgnVCM1000003b74010aRCRD

Stefanidi, E., Partarakis, N., Zabulis, X., Adami, I., Ntoa, S., & Papagiannakis, G. (2022). *Transferring Traditional Crafts from the Physical to the Virtual World: An Authoring and Visualization Method and Platform. ACM Journal on Computing and Cultural Heritage, 15*(2), 1–24. https://doi.org/10.1145/3484397

Sun, Y., Wu, I., & Lin, R. (2022). *Transforming "Ritual Cultural Features" into "Modern Product Forms": A Case Study of Ancient Chinese Ritual Vessels. Religions, 13*(6), 517. https://doi.org/10.3390/rel13060517

UNESCO (19 gennaio 2023). *Tradicional Craftsmanship. Research Gate:* https://ich.unesco.org/en/traditional-craftsmanship-00057

UNESCO (19 gennaio 2023). *Ethics and Intangible Culture Heritage. Research Gate:* https://ich.unesco.org/en/ethics-and-ich-00866

Funding source

FUCAPI. Foundation, Center for Analysis and Research and Innovation (Manaus-Amazonas-Brazil).
In the project, FUCAPI was responsible for the creation of new products, namely a team of designers in its department of "Tropical Design from the Amazon", made up of a mentor designer, three product designers and two graphic designers. The department specializes in the development of artifacts that can promote regional identity and Amazonian culture, as well as enhance local labor and regional raw materials. The main objective of this department is to provide a sustainable and alternative means of development for the region.

SEBRAE/AM. Brazilian Entrepreneur Support Service (Manaus-Amazonas-Brazil).
SEBRAE/AM institute with its craft department supports the artisans of Amazonas in the improvement of their production chain and manages the introduction of their products to the market. In the project, the craft department's objective was to make this sustainable supply chain, as well as to provide the facility and logistical support necessary for the designers during their first contact with local artisans.

Exhibitions

Showroom Design Tropical da Amazonia/ Amazonian Tropical Design Showroom- Amazonas/ Brazil (2014- 2016)
Paralela Gift- São Paulo/ Brazil (2015)
São Paulo Fashion week- São Paulo/ Brazil (2016 and 2017)
MICSUL- Mercado das Indústrias Criativas e Culturais do Sul/ Southern creative and cultural industries market- Bogota/ Colombia (2016)
Design Weekend- São Paulo/ Brazil (2017)
Vogue Fashion Night Out- Amazonas/ Brazil (2017 and 2018)
Brasil Plural, Arte Brasileira/ Brazil Plural, Brazilian Art-Nantes/France (2019)
Design Oriundi- São Paulo/ Brazil (2020)

Awards

Internacional- Objeto Brasil/ Brazil Object - São Paulo/ Brazil (2016)
Nacional- Objeto Brasileiro/ Brazilian Object - São Paulo/ Brazil (2016)

proyecta 56
An industrial design journal