ETHNOSCIENTIA

ETHNOSCIENTIA V. 4, 2019
www.ethnsocientia.com
ISSN: 2448-1998
D.O.I.: 10.22276/ethnoscientia.v4i1.202

RESEARCH ARTICLE

# PHOTOETHNOGRAPHY OF CERAMIC CRAFTSMEN FROM TERESINA, PIAUÍ, BRAZIL

## FOTOETNOGRAFIA DOS ARTESÃOS CERAMISTAS DE TERESINA, PIAUÍ, BRASIL

Aníbal Silva CANTALICE [1, 2]; Nélson Leal ALENCAR [1*]

[1]Universidade Federal do Piauí (UFPI), Departamento de Biologia, Laboratório de Etnobiologia e Ecologia Vegetal (LEEV), Av. Universitária, s/n, Bairro Ininga, CEP 64049-550, Teresina – Piauí, Brasil; [2]Programa de Pós-Graduação em Desenvolvimento e Meio-Ambiente (MDMA/UFPI), Núcleo de Referências em Ciências Ambientais do Trópico Ecotonal do Nordeste (TROPEN), Av. Universitária, 1310, CEP 64049-550, Teresina – PI. * nelsonalencar@ufpi.edu.br

Submitted: 07/01/2019; Accepted: 30/04/2019

## ABSTRACT

The record of the social and cultural aspects that lead the human being to use the natural resources has gained evidence in the last decades. The present article aimed to describe the existing techniques in the production chain of the artisans of the Ceramic Pole of Poti Velho, PI, as well as to record the artifacts produced by the manufacture of red clay. The data collection involved semi-structured interviews, the participant observation technique to resolve doubts about the peculiarities of the production chain, as well as photographic record of the production stages. We observed the existence of criteria to determine the best craftsmen within the community, as well as influences that not only divides the activities between craftsmen by gender, but also those that led to changes in the techniques of production and artifacts produced by artisans.

**KEYWORDS:** Clay; Craft; Ethnopedology; Popular culture; Ceramics.

## RESUMO

O registro dos aspectos sociais e culturais que levam o ser humano a utilizar recursos naturais tem ganhado evidência nas últimas décadas. O presente artigo objetivou descrever as técnicas existentes na cadeia de produção dos artesãos do Polo Cerâmico do Poti Velho, PI, bem como registrar quais os artefatos produzidos por meio da manufatura da argila vermelha. A coleta de dados envolveu entrevistas semiestruturadas, a técnica da observação participante para sanar dúvidas sobre as peculiaridades da cadeia de produção, bem como registro fotográfico das etapas de produção. Observamos a existência de critérios para determinar os melhores artesãos dentro da comunidade, assim como influências que não apenas divide as atividades entre os artesãos por gênero, como aquelas que levaram a mudanças nas técnicas de produção e artefatos produzidos pelos artesãos.

**PALAVRAS-CHAVE:** Argila; Artesanato; Etnopedologia; Cultura popular; Cerâmica**.**

## INTRODUCTION

The use of techniques that enable humans to transform natural resources into goods during their social development represents a remarkable step in their social and cultural construction. Each object manufactured during this process carries with it a range of values and symbolism in the form of art that involves the socio-cultural expressions of its artisans and community (LIMA-FILHO and SILVA, 2012). In this perspective, the constructed artifacts serve as political, economic, social, and cultural fragments (SILVEIRA and LIMA-FILHO, 2005).

Ethnopedology is responsible for establishing a relationship between humans and the soil, and research in this field has positioned efforts in soil classification and its genesis, especially to local groups that use land for agricultural production (ALVES, 2005; ARAÚJO et al., 2013). Studies that address other perspectives of land being used by men have gained attention, such as non-agricultural use (ALVES, 2005; LIMA et al., 2014), civil construction (MARQUES, 2001; ALVES, 2005), food, natural dyes, and mining. Thus, research on soil transformation into cultural artifacts is in the background.

Among the various uses, man-made modeling of ores has been described from the earliest times in various civilizations, e.g., Krishnanagar, India (BADSHA, 2015); Bonito, Brazil (CANAZILLES, LUIZ, MATIAS, 2015); Gamo, Ethiopia (ARTHUR, 2014). The modeling has gained a lot of characteristics of use depending on its time and civilization. Although the plurality of use, techniques,

and social representations, several researches still focus their efforts on classifying the soil profile and determining the origin of the materials used (ALVES, 2005; RAMOS, 2008; CABRAL et al., 2015, TSANTINI, 2017). In doing this, they often leave behind the techniques used by the artisans in the process of creation and/or manufacturing, and thus ignoring their singularities and specificities.

The present study describes the steps involved in the use of clay as a raw material in the production of ceramics in a ceramic pole in the state of Piauí, northeastern Brazil. The processes of extraction, transportation, processing, production, burning and sale will be described, as well as the techniques and methods adopted by the local artisans. In addition, photographs are used in order to allowing the reader to observe the production stages.

## MATERIAL AND METHODS

### Study area

The Poti Velho Ceramic Pole (PCPV), Teresina, Piauí (Fig. 1) encompasses in its handicraft production two neighborhoods: Olarias for extraction of clay (5°2'30,55"S. 42°50'17,51"W), and Poti Velho for the production of the pottery (5°2'11,31"S. 42°49'51.18"W). Teresina is located in the Mid-North of Brazil (UN-UNDP, 2013) and has a total population of approximately 814,230, of which 94.27% are urban dwellers (IBGE, 2016).

The regional climate is warm and humid (Aw ') according to the Köppen climate classification system (JACOMINE et al., 1986), with an average annual precipitation rate of 1.393 mm, annual temperature of 27.7ºC with well-defined seasonality of droughts (June to October) and rainy (November to May) (INMET, 2017). The state capital Teresina still maintains some remaining forest areas, as well as many parks and squares with forest cover (MACHADO, 2006).

The Ceramic Pole is located within the Poti Velho neighborhood and is comprised of 49 stores, including the cooperative shop, which results in about 144 direct jobs (according to COOPERART-Poti and ARCEPOTI).

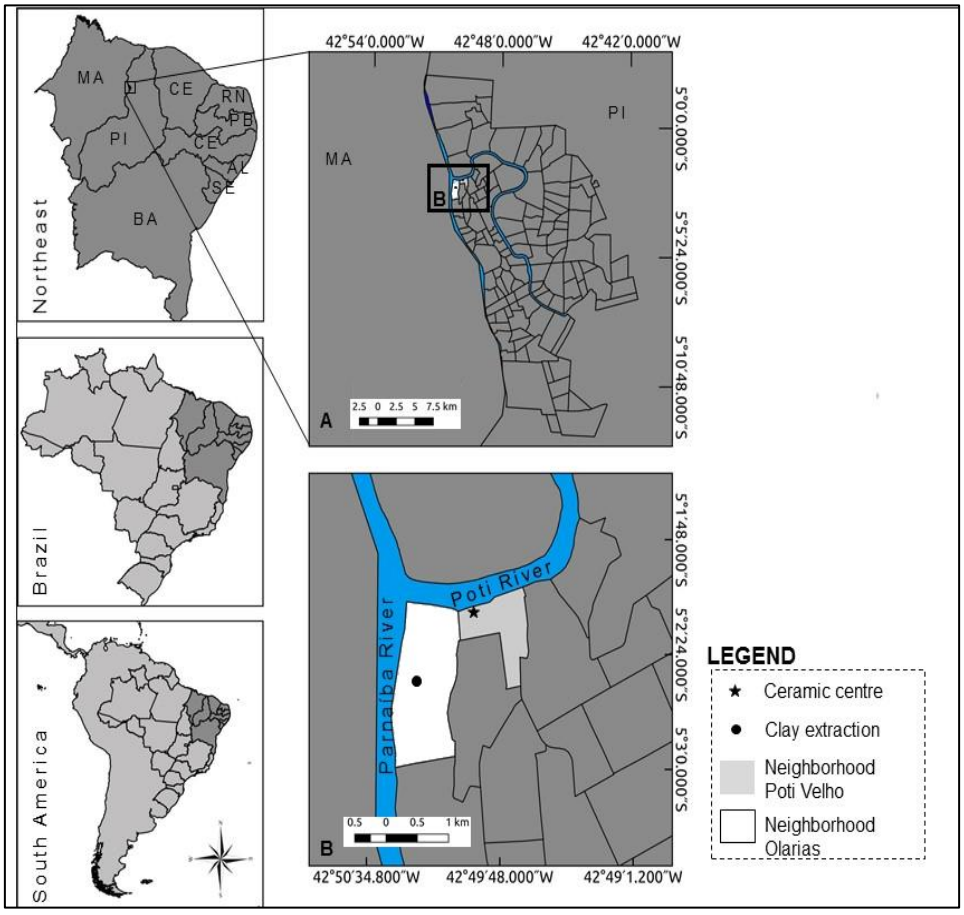


**Figure 1:** Area of Study. Municipality of Teresina, Piauí State. Source: Authors.

**Data collection and data analysis**

Data were obtained using different techniques during field work. Firstly, a connection (*rapport*) with the community was built, allowing the information provided to faithfully represent the reality of the study area. The data were obtained through semi-structured interviews, in which the respondents were indicated by sampling of the snowball technique (ALBUQUERQUE et al., 2014). The interview questions were intended to characterize the local productive arrangement of community artisans, requesting details as elapsed time in each activity or whether there was a distinction of each task by gender.

At the end of the interviews, we performed some participant observation in order to allow outstanding questions during the interviews (e.g., terminology, methods, etc.) to be solved, and also to photograph the activities spontaneously, reflecting the details and the techniques of the effort exercised. All stages of the research were evaluated and approved by the Ethics and Research Committee of the Piauí Federal University (CAAE: 49829514.0.0000.5214).

**RESULTS AND DISCUSSION**

In the community, some activities are determined by gender. It is possible to find such division in the Association in which there are 28 women, and in the Cooperative that has 52 affiliates mostly composed of men. Of the total number of members of the existing Cooperative, three women are also members of the Association, totalizing 77 people affiliated to this activity. It was the use of soil mainly on pottery activity that gave the individuals the pejorative title of "mud eaters" (RORIZ, 2010). The cultural representation in the form of handicrafts originated with the arrival of the craftsman "Raimundo Camburão" in the 1960s, who started the craft of pottery in the region and began to transmit his production techniques to others. These techniques that enable the transformation of the natural resource into a social, economic or cultural pottery should be understood as "intangible cultural heritage" (PELEGRINI, 2008). The techniques of clay transformation into ceramic products are common in several traditional communities (SCHAAN, 2008; PELEGRINI, 2008; SYMANSKI, 2010).

By observing the manufactured products, we can understand the processes of production, as well as the typologies produced in the communities. The processes must be observed both in a macro way, which involves some stages: extraction, processing, part construction, burning, painting and sale/barter (PAZ, HOLLAND, EL-DEIR, 2015; Fig. 2A), and a micro one, where we observe the details of each stage, such as the location, type of tools, gender involved, among others.

In this sense, the PCPV presents a fragmentation of the stages in the ceramic production, leaving those stages that require greater physical effort or health risks to specific members of the community, most of whom are highly socially vulnerable. There is segregation of activities by gender as the manufacture of the products related to the masculine gender and tasks that present greater delicacy and contact with the public are left to the feminine gender. The implementation of mechanized resources or technological advances is only visualized within the productive chain when there is a significant advantage in the production (e.g., mechanized lathe) or economic (e.g., use of wood resources). In addition to the changes in some techniques, the final products have suffered the incorporation of other cultures in order to meet market needs.

**Collection and Processing - Red Clay - Extraction**

The process of creating the handicraft begins with the extraction of clay. This activity is strictly made by men and under the guidance of three families of the community, who control the deposits. This appropriation of space differs from other communities that present in their social construction the division of space with other artisans (LIMA et al., 2014). If there is a native vegetation in the area, it is to be removed (Fig. 2A) after choosing the location of creating clearings for extraction. Both the removal of the vegetation and the opening of the quarry for extraction of the clay occur manually. The "carroceiros", as they are known, use hoes, shovels and buckets (Fig. 2B) to create pits (Fig. 2C) (approximately 3 m deep by 10 m wide) at the location, where the clay is already extracted in the form of balls (Fig. 2D). The use of non-mechanized artifacts is still maintained in certain communities (SCHAAN, 2008). However, in communities that have a high demand for raw materials, they use mechanized machinery to meet demand (CASTILHO et al., 2017).


**Figure 2: [A]** Vegetation found at the clay collection site; **[B]** Carrier support hut; **[C]** Hole opening, creating access steps to the interior; **[D]** Pieces of clays removed from the pit, each piece has a similar size thus facilitating the counting of the clay removed.

Due to a defined seasonality, the artisans can plan the extraction in rainy season. The use of drain pumps at the beginning of the rainy season (Fig. 3A) allows the extension of the collection period to the "carroceiros" until the rains intensify and it is not possible to extract the clay, paralyzing this activity in certain months of the year. After being extracted the material is sent to the Ceramic Pole (Poti Velho) using animal traction carts (Fig. 3B) where the clay will go through processes of beneficiation, "treatment", as described by artisans. In rainy season, several communities use clay storage, so that activities are not paralyzed (CESTARI, CARACAS, SANTOS, 2015).


**Figure 3**: **[A]** Extraction of water in the rainy season. Activity conducted by men and always with two members, one controlling the pump and the other controlling the collection pipe; **[B]** Use of animal traction carts.

## Processing

The sheds are places where clay is benefited to improve its malleability, plasticity, resistance, and uniformity. This step is still closely linked to the masculine gender, since these are tasks that demand a greater work force. The first step is to remove organic (leaves, roots and other) and inorganic materials (stones, glass, plastics etc.) that arrive on site or by influence of rivers or irregular garbage dump and end up being incorporated into the clay.

According to the "carroceiros", there may be the addition of sand or water (Fig. 4A), however it requires a process of mixing these materials, using cylinders (Fig. 4B) that standardize the material making it ready to be sold to the craftsmen. Both the removal of materials and the addition of external

elements to the clay are common (LIMA et al., 2014; PAZ, HOLANDA, EL-DEIR, 2015). However, the beneficiation by a specific actor within the community coupled with the increase of residues incorporated into the clay has made this activity less and less made by the artisans. The clay market is local, being distributed only for the production of ceramic products, and its commercialization is made based on "carroçadas" with 20 balls (Fig. 5C) (~ 25 kg/ball) at a minimum price of R$ 90.00 (August 2018).


**Figure 4**: **[A]** Overview of a treatment shed, with tools used by "carroceiros" for the treatment of clay. Equipment composed of cylinders connected to a motor that facilitates the incorporation of sand to the clay to generate a homogeneous material; **[B]** View of overlapping cylinders; **[C]** Clay molded in balls (~ 25 kg) unit of measurement used by cartwheels for sale.

**Production of ceramic products - Creation of products**

The techniques for the production of the potteries are maintained over the years and passed into and between generations. The exchange of the techniques was always oral and gestural, a method compatible with the transmission of knowledge in most local communities (SCHAAN, 2008). Local production is not characterized by role models that serve as local identity. The only exception to this rule is the production of *Mulheres do Poti* made by COOPERART-Poti, where these potteries were developed in conjunction with the National Service of Commercial Learning (SENAC in Portuguese), which characterize the only pottery that represent the local culture.

Modeling the clay in the ceramist production confers the title of craftsman and the quantities of techniques that the artisan possesses within the modeling determine their *status quo* within the community (MOREIRA, 2007; FILHO and SILVA, 2012; CESTARI et al., 2015). In PCPV, pottery production takes place in four distinct ways that distinguish from one another according to the pieces that will be made, as well as the local prestige of the artisan, since each technique demonstrates the skill level of the artisan with the craft. This number of methods is a characteristic that distinguishes the artisanal production of the PCPV from other communities that present in their role of techniques only one or two, being mostly manual and lathes (WALLAERT-PÊTRE, 2001; LIMA et al., 2014; CESTARI et al., 2015).

In addition to the quantity of techniques, most of them are linked to the masculine gender, which ends up giving to this group the *status quo* of the best craftsmen. The modeling techniques using lathe (Fig. 5A and 5B), and manual modeling (Fig. 5C), are the ones that guarantee a greater prestige followed by the modeling in forms. Modeling with lathe requires that the artisan be able to model pottery at high speed which optimizes the production of various potteries (e.g., water filters, vases, mandalas). Manual

modeling requires an ability to similarly reconstitute people, animals, and saints, among other sculptures.


**Figure 5**: **[A and B]** Moments of production of a pitcher using lathe. The lathe consists of an equipment that moves a circular board connected to an axis driven by a motor. The circular movement allows the clay to move and being modeled behind the movement of the lathe and the hands of the craftsman. **[C]** In this artisanal production the artisan uses only the hands to model the clay creating forms with greater detail and precision. In this image it is possible to notice that he is adding shapes to jars that were manufactured in the lathe.

The lathe and manual modeling (Fig. 6A), as already described by their names, refer to the pieces that are produced in part on the lathe and are finished manually. This type of creation cannot be confused with the next stage of decoration. It allows, for example, the creation of a human trunk in the lathe and the construction of the limbs and head manually. This technique is widely used by certain groups of artisans, where the one with the greatest expertise produces the body of the piece and the other with less skill completes the manufacture (e.g., Womens of Poti). The production using molds (Fig. 6B) is used once there is a negative mold of a certain piece. This mold is filled with clay and then is taken off by the artisan, only to give highlights to some parts that are not explicit in the piece. The latter technique is strongly linked to craftsmen who are starting in the art or women, which does not happen in other communities where it is the females who own and command the pottery production (WALLAERT-PETRE, 2001; CESTARI et al., 2015; MARQUES and CHALUB, 2016).

**Decoration and drying**

Finishing the modeling part does not determine the end of creation, once the artisan can still choose to customize the pottery. Customization transforms pieces of common creation (e.g., vases, mandalas, etc.) using strokes, drawings, contours, etc. (Fig. 7A and 7B) in the decorations creating unique pieces before putting the pottery to dry. The drying process consists of leaving the pottery in an airy environment without direct light for a week or two until they can be polished (Fig. 7C) or not before burning. Up to this point any clay residue (Fig. 7D) can be reused in the manufacture of a new pottery as long as it is rehydrated and goes back to the treatment steps.


**Figure 6**: **[A]** Form built in plaster and used to shape the clay and create pieces in a way that does not need a

greater skill in the crafts. **[B]** Image of Saint Anthony in this representation is built with the use of model; even though it facilitates the handcraft construction this type of piece needs a good personalization in the details once the model has been developed in order to create forms that facilitate the work of the craftsman.


**Figure 7**: **[A and B]** Mandalas are circular dishes that are decorated both by adding other elements, e.g., pieces of clay in different shapes, scratches in different shapes that can portray various local cultural or not. **[C]** Polishing the pottery is one of the points that give the craft production an aspect of perfection and finishes the piece once it corrects defects (scratches, etc.) on the surface of the piece. **[D]** Many processes conducted by artisans generate clay residues that are collected and stored in buckets and rehydrated to go through the treatment processes.

## Parts Burning - Firewood

The transformation of a piece of clay into a ceramic artifact requires burning. The use of the logging resource as fuel is recurrent in several communities (LIMA et al., 2014; ALENCAR-LINARD, SAEED-KHAN, LIMA, 2015). This process is easy to access and it is low cost. In this scenario the wood of the remnants forest around the PCPV is used for burning the ceramic pieces. There is an increase in the searching for more distant forest remnants due to the urbanization and the decrease of forest areas in the surroundings. This acquisition of firewood by deforestation still happens clandestinely. However, the acquisition of wood resources from pruning, rest of construction and donations (Fig. 8A and 8B) is growing. Both the acquisition of wood for burning and the burning itself are destined to specialized social actors of the community known as "burners".


**Figure 8**: **[A and B]** Obtaining wood for burning is a process that has been adapting to problematic removal of plant material directly from nature, since it is an illegal action. The artisans have been resorting to pruning remains and remains of materials used in construction.

## Burn

The pieces are organized in the oven of the largest and/or most resistant downwards followed by smaller and/or fragile pieces above then the oven is sealed with bricks and clay (Fig. 9A). The burning time lasts on average two days and presents two distinct moments: a) the "w*arm*", when the fire is gradually increased using woods with a smaller diameter and density (Fig. 9B); b) the "*caldear*" stage, where the wood used must have a large diameter and density and can maintain temperature burning for a longer time. During the burning there is the observation (Fig. 9C) of the changes in the coloration of the pottery to reddish tones in small holes of the furnace called "*sights*" that serve to alert to the "*burner*" when not add more wood to the process, since the temperature will be the same for about 12 hours.

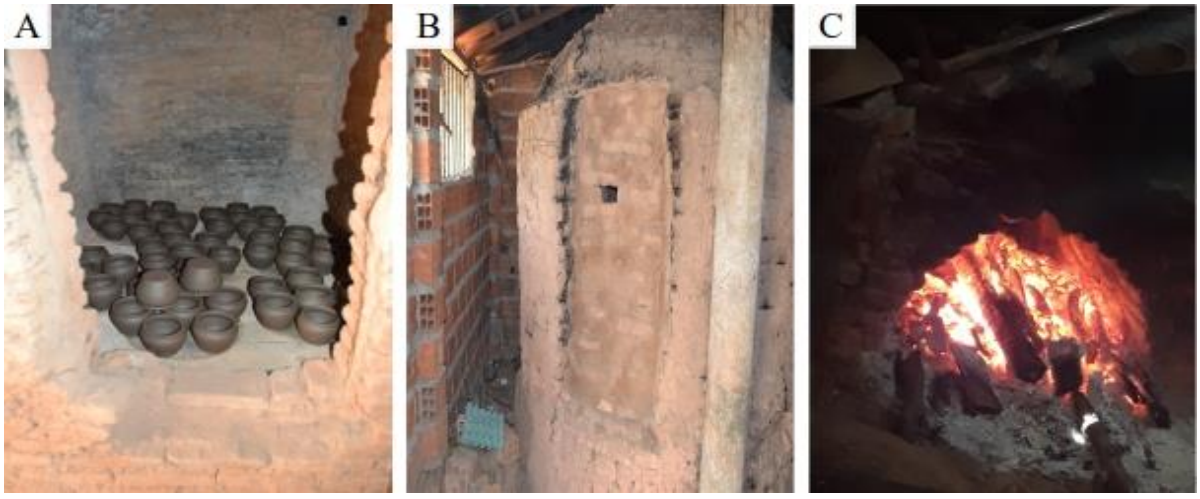


**Figure 9: [A]** The organization of the pieces in the oven according to the fragility of the pieces being the most fragile allocated on top of more resistant pieces. **[B]** Oven sealed so that the firing can take place once it retains the heat inside the furnace, small spaces are kept to relieve the internal pressure and accompany the burning of the parts. **[C]** Burning place, where the wood is allocated and put into combustion; it is possible to notice woods in different points of burning since this activity can last 48 hours.

## Commercialization of the products - Painting

Inside every step of the craft production, this is the only optional step, since some parts are commercialized without painting. When the pottery's paint is sanded, leaving its surface polished, it is then painted with white paint (Fig. 10A) in order to highlight the color to be used next by the craftsman (Fig. 10B). The varnish is the last part of the painting process making the piece impermeable, with a shiny finish, in addition to providing a longer life to the painting (Fig. 10C). The painting is used in several communities, however it differs as for the dyes used, being able to come from natural or synthetic sources (DORSA, CASTILHO, SANTOS, 2015; CASTILHO et al., 2017).


**Figure 10: [A]** Water filters before they are painted; filters are items produced on a large scale during the entire year by specific artisan groups. **[B]** When the artisans decide to paint the pieces, white paint is used as a background. **[C]** After the use of white, the colored inks are used.

## Selling the products

The trade of products with cultural aspects has been gaining ground in recent decades (CANAZILLES, ALVES, MATIAS, 2015; CASTILHO et al., 2017). In the surveyed community women are responsible for this part, and the potteries can be traded in wholesale or retail. According to the classification of the types of handicrafts, we found all kinds of potteries being produced by the PCPV artisans, those being ornamental, decorative, religious, utilitarian, profane, and souvenir. The ornamental pieces are made to be part of any garment; they are accessories such as necklaces, bracelets, rosaries, earrings and others made exclusively by COOPERART-Poti (Fig. 11A, 11B and 11C).


**Figure 11**: **[A-C]** Ornamental pieces built from clay, most of the pieces are necklaces.

The potteries created in the Ceramic Pole are more used in a decorative manner. These are also pieces that present a greater plurality of formats and colors as they are closely linked with the culture of each artisan or with their target audience (Fig. 12A and 12B).

Religious pieces (Fig. 13A, 13B and 13C are produced throughout the year, however the production is intensified close to religious dates of Christianity (Christmas, Easter, Lent and Saints). The utilitarian item represents the oldest potteries created by Raimundo Camburão in the 1960s (Fig. 14A, 14B and 14C).


**Figure 12**: **[A]** Decorative pieces. In the foreground we can see the luminaires in fish and bell formats; in the background in **[B]** we can see decorative objects of wall in the most diverse formats and colors, usually presented in trios with a large, medium, and small piece.


**Figure 13**: **[A]** One of the forms of presentation of the crib, being able to be created in different sizes and formats. **[B]** Representation of St. Anthony. **[C]** Angels and Entities.


**Figure 14**: **[A]** Filters were for years the pieces reminded by local visitors to the community. This was due to their functionality. Large-scale manufacture by craftsmen, items **[B]** and **[C]** were used more than ever; today they are still manufactured for the purpose of use, but customers say they are not an everyday item.

The profane pieces are contradicted in a few stories; however, it is a low demand market to this kind of pottery (Fig. 15A and 15B). Souvenir items, according to community members, refer to any piece developed in small proportions, thus leaving different types of pottery (Fig. 16A, 16B and 16C). The concept of souvenir in society refers to pieces that carry with them or represent a certain locality (Fig. 17A and 17B).


Figure 15: **[A and B]** Semi-nude women or in sensual positions, or male sexual organs are portrayed. According to the artisans these crafts are made by orders since there is no regular selling that takes their production out of that scope.


Figure 16: **[A]** Pieces in small sizes are built for visitors to buy as souvenirs for gifts, within this type of pottery animals, fruits among others are made in miniature size. **[B]** Other souvenirs are sets of bottles in miniature, they sell a lot inside the ceramic pole for presenting an affordable price (R$ 10,00 ~ 15,00 or USD 2,58 ~ 3,86 – August 2018) and different forms and paintings.

This list of artifact production distinguishes itself from other communities because they present basically at most three of these types (SYMANSKI, 2010; LIMA et al., 2014; WALDECK, 2014; CASTILHO et al., 2017). At the beginning of the production and until the moment of the first interventions the potteries created inside the ceramic pole could be summarized in utilitarian and religious items in specific cases. The incorporation of other typologies, according to the artisans, served to meet the market demands and to consolidate the ceramist production in the community e.g., ornamental, pieces, and souvenirs.


**Figure 17: [A]** The pieces called as "Cabeça de Cuia" are constructed to represent a local legend that occurred in the vicinity of the meeting of the rivers and represents the community. **[B]** The *Mulheres do Poti* were developed in partnership with the Brazilian Support Service for Micro and Small Enterprises (SEBRAE in Portuguese) to create a type of pottery that represents all the activities of women in the community.

## FINAL CONSIDERATIONS

Understanding the technical, social and cultural details, as well as the interactions with the environment that surrounds the craftsmanship of the Poti Velho Ceramic Pole supply policy making in the creation of conservation and social-environmental conservation measures, both locally and in those communities similar to the one studied. The work becomes even more relevant as this activity is included in an urban environment, since it is under pressure from urbanization and real estate growth. Such pressures have already been occurring in the community, as the extraction site is threatened by urbanization projects.

The intersection of the narrative with photographic elements allows enlarging narrative details, which permits the visualization of the stages of craft creation.

## ACKNOWLEDGMENTS

The authors thank the community through the names of Raimunda Teixeira da Silva known as Raimundinha, president of COOPERART-Poti since 2006, and the current president of ARCEPOTI, José Carlos Silva, for the knowledge passed on to them. Thank you also for some photos provided by M. Sc. Jorge Henrique e Silva Júnior.

## REFERENCE

ALBUQUERQUE, U. P.; RAMOS, M. A.; de LUCENA, R. F. P.; ALENCAR, N. L. Methods and techniques used to collect ethnobiological data. In: ALBUQUERQUE, U. P.; CUNHA, L. V. F. C.; LUCENA, R. F. P.; ALVES, R. R. N (Eds.). **Methods and techniques in ethnobiology and ethnoecology**. New York: Springer, 2014. p. 15-37.

ALENCAR-LINARD, Z. Ú. S; KHAN, A. S.; LIMA, P. V. P. S. Percepções dos impactos ambientais da indústria de cerâmica no município de Crato estado do Ceará, Brasil. **Economía, sociedad y territorio**, v. 15, n. 48, p. 397-423, 2015.

ALVES, Â. G. C. Conhecimento local e uso do solo: uma abordagem etnopedológica. **Interciencia**, v. 30, n. 9, p. 07-16, 2005.

ARAÚJO, A. L.; ALVES, A. G. C.; ROMERO, R. E.; FERREIRA, T. O. Etnopedologia: uma abordagem das etnociências sobre as relações entre as sociedades e os solos. **Ciência Rural**, v. 43, n. 5, p. 854-860, 2013.

ARTHUR, J. W. Culinary crafts and foods in southwestern Ethiopia: an ethnoarchaeological study of Gamo groundstones and pottery. **African Archaeological Review**, v. 31, n. 2, p. 131-168, 2014.

ATLAS DO DESENVOLVIMENTO HUMANO. **Perfil. Teresina, PI**. Retrieved from: <http://www.atlasbrasil.org.br/2013/pt/perfil_m/teresina_pi>. Consulted in: 02 Feb 2018.

BADSHA, S. A. Clay doll cottage industry of India: a study of Ghurni, Krishnanagar municipality of Nadia district, west Bengal. **Global Journal of Multidisciplinary Studies**, v. 4, n. 8. p. 10-12, 2015.

CABRAL, R. L.; ALVES, Â. G. C.; RIBEIRO FILHO, M. R.; SOUZA JÚNIOR, V. S. D.; RIBEIRO, M. R.; Santos, C. G. R. Peasant and scientific knowledge on planosols as a source of materials in the making of non-industrial pottery. **Revista Brasileira de Ciência do Solo**, v. 39, n. 1, p. 303-313, 2015.

CANAZILLES, K. S. A.; ALVES, G. L.; MATIAS, R. Comercialização do artesanato Kinikinau na cidade ecoturística de Bonito, Mato Grosso do Sul, Brasil. **PASOS. Revista de Turismo y Patrimonio Cultural,** v. 13, n. 5, p. 1171-1182, 2015.

CASTILHO, M. A.; DORSA, A. C.; SANTOS, M. C. L. F.; OLIVEIRA, M. M. G. Artesanato e saberes locais no contexto do desenvolvimento local. **Interações**, v. 18, n. 3, p. 191-202, 2017.

CESTARI, G. A. V.; CARACAS, L. B; SANTOS, D. M. Artesanato tradicional, design e sustentabilidade: com a palavra quem produz cerâmica em Itamatatiua. **Strategic Design Research Journal**, v. 7, n. 2, p. 84-94, 2015.

DORSA, A. C.; CASTILHO, M. A.; SANTOS, M. C. L. F. Artesanato de etnias indígenas: patrimônio cultural de Mato Grosso do Sul. **Interações**, v. 16, n. 2, p. 467-473, 2015.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). **Brasil. Piauí. Teresina**. Retrieved from: <https://cidades.ibge.gov.br/brasil/pi/teresina/panorama>. Consulted in: 02 Feb 2018.

INSTITUTO NACIONAL DE METEOROLOGIA (INMET). **Dados históricos**. Retrieved from: <http://www.inmet.gov.br/portal/>. Consulted in: 02 Feb 2018.

JACOMINE, P. K. T.; CAVALCANTI, A. C.; PESSOA, S. C. P.; BURGOS, N.; MÉLO-FILHO, H. D.; LOPES, O. F.; LAR, M. Levantamento exploratório de solos do estado do Piauí (escala 1: 1000). **Boletim de Pesquisa**, v. 36, n. 18, 1986.

LIMA, L. R.; MIRANDA, L. C.; SANTOS, A. A.; VASCONCELOS, M. T. A arte do barro: Um estudo sobre a perspectiva do conhecimento empírico para o controle patrimonial em Caruaru–Pernambuco. **Registro Contábil**, v. 5, n. 3, p. 111-129, 2014.

LIMA-FILHO, M. F.; SILVA, T. C. A arte de saber fazer grafismo nas bonecas Karajá. **Horizontes Antropológicos**. v. 18, n. 38, p. 45-74, 2012.

MACHADO, R. R. B.; MEUNIER, I. M. J.; SILVA, J. A. A. D.; CASTRO, A. A. J. F. Árvores nativas para a arborização de Teresina, Piauí. **Revista da Sociedade Brasileira de Arborização Urbana**, v. 1, n. 1, p. 10-18, 2006.

MARQUES, J. G. W. **Pescando pescadores:** ciência e escando pescadores: ciência e etnociência em uma perspectiva ecológica etnociência em uma perspectiva ecológica. São Paulo: USP/NUPAUB, 2001.

MARQUES, A; CHALUB, L. As mulheres do barro: um registro etnomatemático das mulheres artesãs de Arraias (Tocantins). **Revista Latinoamericana de Etnomatemática**, v. 9, n. 2, p. 168-179, 2016.

MOREIRA, R. Da paneleira à bonequeira: vida econômica, espaço doméstico e técnica da cerâmica em transformação no Jequitinhonha. **Labor e Engenho**, v. 1, n. 1, p. 77-88, 2007.

PAZ, Y. M.; HOLANDA, R. M.; EL-DEIR, S. G. Uso da argila no processo produtivo da cerâmica vermelha: Um estudo de caso no município de Paudalho, Pernambuco. **Revista Verde de Agroecologia e Desenvolvimento Sustentável**, v. 10 n. 1, p. 283-289, 2015.

PELEGRINI, S. C. A gestão do patrimônio imaterial brasileiro na contemporaneidade. **História**, v. 27, n. 2, p. 145-173, 2008.

PICHLER, R. F.; MELLO, C. I. O design e a valorização da identidade local. **Design e Tecnologia**, v. 2, n. 4, p. 1-9, 2012.

RAMOS, I. S.; ALEXANDRE, J.; ALVES, M. G.; VOGEL, V.; GANTOS, M. A indústria cerâmica vermelha de Campos dos Goitacazes e a inclusão social das artesãs da baixada campista através do projeto Caminhos de Barro. **Cerâmica**, v. 54, n. 331, p. 280-286, 2008.

RORIZ, P. C. O. **O trabalho do artesão e suas interfaces culturais-econômicas**. 2010. 197 f. Dissertação (Mestrado em Psicologia Social, do Trabalho e das Organizações)-Universidade de Brasília, Brasília, 2010.

SCHAAN, D. P. A Arte da Cerâmica Marajoara: encontros entre o passado e o presente. **Habitus**, v. 5, n. 1, p. 99-117, 2008.

SILVEIRA, F. L. A. D.; LIMA-FILHO, M. F. Por uma antropologia do objeto documental: entre a "a alma nas coisas" e a coisificação do objeto. **Horizontes Antropológicos**, v. 11, n. 23, p. 37-50, 2005.

SYMANSKI, L. C. P. Cerâmicas, identidades escravas e crioulização nos engenhos de Chapada dos Guimarães (MT). **História Unisinos**, v. 14, n. 3, p. 294-310, 2010.

TSANTINI, E.; ONTIVEROS, M. Á. C.; MONTANA, G.; RANDAZZO, L. The production of traditional building materials in Oristano (Sardinia, Italy). **Archaeological and Anthropological Sciences**, v. 9, n. 7, p. 1495-1513. 2017.

WALDECK, G. E. "Luta do Barro","Isso do Barro","Nesse Serviço" á cerâmica de Apiaí. **Textos Escolhidos de Cultura e Arte Populares**, v. 11, n. 1, p. 107-128, 2014.

WALLAERT-PÊTRE, H. Learning how to make the right pots: apprenticeship strategies and material culture, a case study in handmade pottery from Cameroon. **Journal of Anthropological Research**, v. 57, n. 4, p. 471-493, 2001.