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INNOVATION IN CRAFTSMANSHIP PRODUCTION: ANALYSIS OF DESIGN INTERVENTIONS IN POTIGUAR CRAFTSMANSHIP - BRAZIL

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Abstract: The current article aims to analyze the interventions of product innovation in the handicraft production through design and it is based on the development of three design workshops given between 2005 and 2009 in the Craftsman Association of *Lajes Pintadas*-AALP, located in the municipality of *Lajes Pintadas*- RN, Brazil. The methodology used interactional and observational methods and techniques as well as document analysis. The actors involved in the social construction were the presidents of the association (currently and formerly), fifteen craftswomen from the Association and three design consultants who presented the design workshop at AALP. The results point to the need of involving the craftsmen since the moment of the planning until the final assessment of the workshop, and that the interaction bonds must be consolidated so that cooperative actions in the innovation process provide positive results in favour of the sustainability of craftsmen groups.

Keywords: craft production, ergonomics, anthropotechnology, design, innovation

1. INTRODUCTION

In Brazil, artisanal traditions were of predominantly indigenous origin, whose people were skilled in making weapons for hunting, household tools, and musical instruments. With straw and fibers, they made bags, mats, baskets and baskets for domestic use. The objects had a utilitarian function, an aesthetic meaning and a particular symbolic meaning. With colonization, the way of making indigenous crafts was mixed with the techniques brought by the Portuguese and other immigrants, becoming diversified and being able to contribute to the economic development of the production regions. CASCUDO (2002).

The craft market in Brazil involves an average of 8.5 million people, 3.5 million (40%) in the Northeast. It is estimated that the sector generates around R\$28 billion per year, representing approximately 2.8% of the Gross Domestic Product – GDP (BNB, 2002; SEBRAE, 2006). In 2006, according to data from the Export and Investment Promotion Agency – APEX, Brazil exported R\$ 1 million and 410 thousand in handicrafts (SEBRAE, 2008).

With changes in competitiveness parameters, artisans are sometimes forced to promote changes in their products by increasingly using design resources through development programs. (LEAL and SALDANHA, 2010; Leal, 2011). Between 2005 and 2010, the projects of the Rio Grande do Norte (RN) Crafts Promotion Program supported 2551 artisans.

According to Botelho (2005), when the designer works in artisanal production, in addition to taking care of product development issues, he also plans, organizes and monitors the entire production process, encompassing issues ranging from the treatment of raw materials to the quality of the product. finished product. According to Freitas (2006), the designer must act considering mainly the context in which the artisan lives, seeking to understand the mode of production, promoting increased production and, at the same time, preserve the peculiarities of the process. Leon (2005) states that “designers become a type of marketing consultants, who invent products acceptable to distant markets, at the same time that they seek to rationalize production, reducing the time spent making

objects”. The author draws attention to the fact that design programs for crafts must create conditions and autonomy for artisans, avoiding their dependence on development institutions regarding the creative process.

However, even with the support of development institutions, cooperatives, associations and individual artisans encounter difficulties in maintaining production, whether due to the discontinuity of institutional actions, difficulty in absorbing new technologies and knowledge, or due to little or no ability to commercialization (Leal, 2011).

Several studies have demonstrated that the development and implementation of new product concepts or new production alternatives in the artisanal sector through the integration of knowledge and techniques from Design and Production Engineering, constitute a problem that falls within the field of Anthropotechnology (BARROS, 2009; LEAL E SALDANHA, 2010; SALDANHA E ALMEIDA, 2012)

Anthropotechnology, a term used by Alain Wisner, came from the words anthropology (science that studies humanity) and technology (ordered set of knowledge with specific purposes) and deals with the combination of ergonomic and macroergonomic aspects involved in a technology transfer. (WISNER, 2003; 2004; VIDAL, 2002). Studies in anthropotechnology have shown partial or total failures of many technology transfer experiments. Errors at the beginning of the process are frequent, mainly due to not knowing the reality of the technology/knowledge importer, who in turn, does not actually know the success of the technology in question in the place of origin. Other factors also contribute, including: disregard for geographic, economic, cultural and climatological conditions; conditions of community facilities; difficulty in obtaining parts and raw materials; forms of communication; understanding inside and outside the process and; lack of an accurate assessment of needs. (WISNER, 1999; VIDAL, 2002)

This article aims to analyze, using ergonomics concepts and methods, product innovation interventions in artisanal production through design, based on three design workshops held between 2005 and 2009 at the Associação de Artesãos de Lajes Pintadas-AALP, located in the municipality of Lajes Pintada-RN, Brazil.

2. METHODOLOGY

This research was developed based on the Ergonomic Work Analysis method, using interactional, observational and documentary analysis methods and techniques. The actors involved in social construction were: a) presidents of the association (current and previous); b) fifteen artisans from the association, corresponding to 65.22% of the members; c) three design consultants who taught the Workshops at AALP in 2005, 2006 and 2009.

Initially, a global analysis was carried out at the Association through four on-site visits, lasting 8 hours each, with the aim of getting to know AALP and the artisans, the production process and strengthening relationships of trust. In this stage, interactional techniques were used (conversational actions, spontaneous and provoked verbalizations, a questionnaire to collect global data and the population of artisans), open observations and documentary analyses, enabling the elaboration of a pre-diagnosis and the research instruments to be used. in collective analysis with the artisans.

To analyze the workshops, analysis of the workshop reports, interviews with consultants, conversational action with the presidents (current and previous) of the association, and collective analysis with the artisans were carried out, using a slide presentation with images and information from the workshops, technique of self-confrontation and dynamic script of questions.

The information collected through conversational actions and collective analyzes was transcribed and tabulated using a comment inclusion matrix (Vidal, 2003).

3 RESULTS AND DISCUSSION

3.1 Contextualization of Craftsmanship

at AALP

The municipality of Lajes Pintadas-RN-Brazil has approximately six thousand inhabitants and is located 134 km from the state capital, Natal-RN. Craft work with sisal arose due to the lack of alternative income generation, becoming perceived as a business opportunity. At the beginning of 2000, the artisans began a partnership with a Development Institution and, in 2001, the group's

representative entity was created, the Associação de Artesãos de Lajes Pintadas – AALP, which has its own headquarters and has 23 artisans. Diagnosis carried out by the Development Institution at AALP in 2003 detected the following problems (SEBRAE, 2003): lack of control over production costs; random calculation of the sales price; shortage of the main raw material, sisal; lack of production guidance and management controls and; difficulty in meeting collective demands. From this, between 2000 and 2010 consultancies were carried out on cooperativism, management, market access, and three design workshops. Despite the problems, the Association was awarded SEBRAE's TOP 100 award at national level twice.

3.2 Artisans

At AALP, the 23 artisans who work with sisal are female, 45.2% of the artisans are married, 28.6% are single. They have, on average, three children. The age range varies from 20 to 70 years old, with 46% being between 20 and 40 years old. This is a group made up of relatively young people, compared to other artisanal groups.

Only 5 artisans maintain a work routine at the Association's headquarters. 78% work from home due to the difficulty in getting around and the need to combine craft and domestic activities. Of the 15 artisans who participated in the collective analysis, only 3 create products or make adaptations to existing ones (incremental innovation), the others preferred to copy.

3.3 Production Process

The main raw material, processed sisal, is acquired collectively by the Association. Each artisan is responsible for preparing the material used individually, starting with washing and drying the material. Then, the material is dyed, collectively, to provide uniformity in color. After dyeing, the strands are grouped, untangled, separated into bundles and the ends are cut, so that they have uniform sizes and shine. The equipment and tools used are basically: handloom, thick and fine needles and scissors. In the production of the pieces, the techniques of woven stitch (loom), closed stitch and lace stitch are used (Fig. 1).

The stitch woven on the pedal loom is flexible only in the direction of the sisal thread. Typically used for rectangular pieces such as wallets and placemats. One of the negative points of this technique is the small size of the loom, which limits the shape of the final

product. On the other hand, after preparing the threads on the loom, it becomes a faster technique.

The closed stitch technique makes it possible to produce rounded pieces, basically sousplat, jars and decorative vases. Despite being considered the easiest technique to learn, it is the one that requires the longest production time, a factor that affects the cost of the product.

In the lace stitch technique, the sisal is grouped in the form of a web and, with the support of a cardboard template, the linear path of the point where the needle and thread will pass is delimited (Rocha et al. 2008). With the lace stitch, it is possible to use part of the sisal waste from the production of hats, bags and placemats. Despite being an easy and quick technique, the artisans state that the market presents a certain rejection of the products due to their durability, as the threads come loose easily.

Figure 01: Techniques used in AALP sisal production: woven stitch, closed stitch and lace stitch.



Each technique presents certain limitations to product development that must be considered by design consultants when planning workshops, as reported by artisans when they stated the need for the consultant to come in advance to learn about the techniques.

3.4 Design Workshops at AALP

With regard to the product innovation process, AALP artisans received support from the RN Development Institution through design intervention through three (03) design workshops, in 2005 (bags), 2006 (utilities and objects for decoration) and 2009 (bags) (Figure

2).

Figure 2 – Focus of Design workshops held at AALP in 2005, 2006 and 2009.



Given the amount of actions promoted by the Development Institution, the difficulty in finding consultants or, due to the internal negotiation process, sometimes the workshops were held during periods in which the artisans were unable to effectively participate in the activities, due to the need for produce orders that occur at certain times of the year. Despite this, the dates and times of the workshops were maintained. Each workshop had a 40-hour workload, with activities in the morning and afternoon shifts, for a week.

3.4.1 Design Workshops 2005

The 2005 workshop (13 to 17 June), which focused on the development and production of bags, was taught by an industrial designer who did not visit the Association before the workshop, but had access to the products. According to the consultant, the methodology was participatory and the artisans worked cooperatively. No ready-made pieces were presented, avoiding the copy culture and encouraging the creative process. Finishing done with manual stitches was taught, as sisal is a natural fiber with non-standard thickness, each product requires an individual finish. According to the consultant, the most important thing was the language used, the more the consultant is on a level with the artisans, the easier it is to understand and gain credibility. According to the artisans, it was the most profitable workshop.

3.4.2 Design Workshops 2006

The 2006 workshop (31/July to 4/August) was taught by a visual artist. The demand was related to guidance on improving products, problems with color composition and difficulties in dyeing sisal. The consultant visited the Association before the workshop and

prepared a work proposal. The methodology was based on experimentation practices and exchange of experiences. Decorative and utilitarian pieces were produced, resulting in several innovative products, which led to the TOP 100 award from SEBRAE Nacional. Despite the positive result, the artisans stated that the market does not value this type of product, as the technique is predominantly closed stitch, which requires a lot of time in production, increasing the final price of the pieces.

held in 2005, 2006 and 2009 at AALP.

3.4.3 Design Workshops 2009

The last workshop took place after a three-year gap, focusing on the production of bags. The consultant, an industrial designer, did not visit the Association before the workshop, but had access to the reports from the 2005 and 2006 workshops. According to the consultant, a collective construction methodology was used. The proposal was to combine knowledge of design and crafts, so that artisans actively participated in the process of creating, improving and developing products.

According to the artisans, the production of 50% of the workshop's products was subsequently maintained, as they were unsuitable for the raw material (sisal) and production techniques.

It was found, from the collective analyzes with the artisans and the interview with the consultant, that the artisans became accustomed to carrying out work mirrored in ready-made pieces. Thus, the expectation regarding the workshop was that the consultant would present some pieces ready to be copied. This made the creative process difficult, as the artisans believed they were incapable of making something without first seeing it ready.

3.5 Analysis of Design Workshops

Table 01 presents a summary of the positive and negative aspects of the craft design workshops

Table 1 – Positive and negative aspects of design workshops at AALP.

Workshop	Positive aspects	Negative aspects
2005	<ul style="list-style-type: none"> – Participation group active. – Cooperation encouraged by the consultant. – Inclusion of new techniques. – Improved product finishing. – Improvement in the bag production process. – Consultant's ability to deal with the group. 	<ul style="list-style-type: none"> – Lack of diagnosis by the consultant. – Precarious infrastructure structure (furniture, equipment). – Regulations for weaving macramé. – Difficulties in sewing. – Difficulty in acquisition of raw materials.
2006	<ul style="list-style-type: none"> – Diagnosis carried out by consultant. – Innovative products with high added value. – Exchange of experience – Self-esteem of artisans. – Guidance on color combination. – Skill of consultant in dealing with the group. 	<ul style="list-style-type: none"> – Infrastructure inadequate (machines) – Difficulty sewing sisal (woven stitch/loom). – Low frequency of participants. – Long product production time – High price commercialization.
2009	<ul style="list-style-type: none"> – Guidance on color combination. – New technique of finishing for the zippers of the bags. – Machines enough sewing. – equipment 	<ul style="list-style-type: none"> – Lack of diagnosis by the consultant. – Period of the year holding the workshop. – Low participation of artisans. – Difficulty in obtaining raw materials for the workshop. – Copy culture. – Low self-esteem
	support and structure	

of the appropriate association.

of artisans.

Lack of consultant skills.

Regarding the development institution and the consultants, the artisans (100%) highlighted the lack of diagnosis by the design consultant prior to the workshop as the main problem. They (87%) believe that the lack of adequate planning for holding the workshop is the consultant's responsibility. 97% of artisans consider a 40-hour workload to be adequate, however 87% consider the daily workload to be inadequate, since they also carry out household chores. Regarding the methodology used by the consultants, 100% emphasized the initial difficulty in understanding the technical design language, caused by the inadequate teaching of some consultants.

Furthermore, 87% of artisans highlighted the delay in meeting the demand for design workshops and, considerable distance between one workshop and another, the fact that they did not receive a copy of the design workshop report (100%) and the lack of evaluation of post-workshop results (93%).

The artisans' self-assessment showed a lack of cooperation between them. They are unmotivated, probably due to the low and slow financial return. With regard to participation in workshops, 100% highlighted the lack of commitment to working hours, justifying that household chores are a priority and the occurrence of workshops in periods of high demand for orders.

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Regarding product innovation, 80% said they prefer to copy, as the creative process wastes a lot of raw material until reaching the desired product. Furthermore, they prefer to manufacture products with shorter production times, which is why customers prefer low-value products. As for access to raw materials, they perceive this to be a recurring problem.

4 CONCLUSION

It was found that the absence of a diagnosis that pointed out the demands and characteristics of the products and the institution to be served, a gap found in the operational flow of the Development Institution, directly interferes with the planning of the workshop, mainly in the choice of the method, techniques and products to be used.

Improvements are necessary not only in the design intervention method, but also in the entire planning of the actions of the RN Institution's Crafts Project, so that it is possible to achieve the objectives of the program, which is to guarantee that the method used in the Workshops enable autonomy for artisans, making their activity independent of support from development institutions.

The results of this research allow us to state that, for the innovation process via design intervention to be satisfactory for everyone involved, it is necessary for the artisans to be involved from planning to the final evaluation of the workshop, for the interaction bonds to be consolidated, for cooperative actions in the innovation process bear fruit in favor of the sustainability of artisanal groups.

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