

SLOW DESIGN: EXPRESSION OF CULTURAL IDENTITY IN THE REGION OF CIANORTE/PR THROUGH FURNITURE PARTS

SLOW DESIGN: EXPRESSÃO DA IDENTIDADE CULTURAL DA REGIÃO DE CIANORTE/PR POR MEIO DE PEÇAS DE MOBILIÁRIO

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ABSTRACT

Based on the principles of Ecodesign and Slow Design, this paper seeks to propose an alternative for the use of industrial waste from the city of Cianorte/PR. For that, the designer Domingos Tótora's production processes of using cellulose mass and fabric fiber were investigated and based on the Design Science Research method, the set of Companhia benches was developed. These, in addition to being produced according to Slow Design guidelines, also express the city's cultural identity in visual and tactile elements. Through the development of the set of benches, it was possible to observe how Ecodesign combined with slow design can contribute to sustainable design and to understand the peculiarities of the production process proposed by Domingos Tótora based on the experience of prototyping the Companhia benches.

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KEY WORDS: Ecodesign; Cultural identity; Cardboard; Furniture design

RESUMO

Com base nos princípios de Ecodesign e Slow Design, o presente trabalho busca propor uma alternativa para o uso dos resíduos industriais da cidade de Cianorte/PR. Para isso investigou-se os processos de produção do designer Domingos Tótora utilizando massa de celulose e fibra de tecido e a partir do método Design Science Research foi desenvolvido o conjunto de bancos Companhia. Estes, que além de serem produzidos pelas diretrizes do Slow Design, também expressam a identidade cultural da cidade em elementos visuais e táteis. Através do desenvolvimento do conjunto de bancos foi possível observar como o ecodesign aliado ao slow design pode contribuir para o design sustentável e, entender as peculiaridades do processo produtivo proposto por Domingos Tótora com base na experiência de prototipagem dos bancos Companhia.

PALAVRAS-CHAVE: Ecodesign; Identidade cultural; Papelão; Design de mobiliário.



1. INTRODUCTION

Searching solutions to avoid the negative effects of mass production, the concept of sustainability emerges in Design from the 60s. Since then, few design strategies for sustainability are being developed. In the ambit of this paper, Ecodesign is the highlight, which demands from the designer an ecological consciousness and a better knowledge of the project's tools. It is supposed to introduce and integrate these questions and environmental requirements already in the initial stage of the product's development. It is an embracing conception of design that takes into consideration not only the aesthetical, functional, security, or ergonomics aspects of the products but mostly the environmental factor throughout the product's life cycle, in a way of reducing the environmental impact (PAZMINO, 2007; CESCHIN & GAZIULUSOY, 2020).

Some Ecodesign guidelines, according to Voronovicz and Zancar (2011) are: Reducing the use of natural and energy resources; Using non-exhaustible, non-harmful (dangerous), recyclable, recycled, and renewable materials; Choosing alternative production techniques; Fewer production processes; Little waste generation; Reducing the products' variability; Reducing the energy consumption; Using clean and appropriate technologies; Weight reduction; Volume reduction; Ensuring the modular structure of the product; Raising the reliability and the durability; Eliminating packages or developing recyclable or reusable packages; Turning maintenance and repairs easier; Dematerializing the products.

Karlsson and Luttrupp (2006) define Ecodesign as a method of development of products that aims the reduction of environmental impact and uses creativity to generate products and processes that are more efficient from a sustainable point of view. In Ecodesign, the designer selects and promotes project solutions according to their impact on the product's life cycle: manufacturing, package, usage, parts exchange, and end of life. Tingström and Karlsson (2006), in turn, highlight the multidisciplinary of Ecodesign, estimating that the development of a new product is not a linear and repetitive process, it is complex, due to occasional interactions between the product and the environment in which it finds itself (BORCHARDT, *et al.*, 2007).

Another existing theory is Slow Design, which lines up with ecodesign's techniques, sustainable design, and ecological design proposing the adoption of practices that reduce the consumption of resources and extend the products' life cycle, such as

recycling and reusing. In this approach, the product is developed aiming for its improvement over time, through remanufacturing, that is, taking back the product to improve it, reconditioning, and adapting it in a way of making it more efficient and durable. It consists of a slowdown proposal of the current production processes, for it gives privilege to manners that contemplate conscious and democratic production and consumption of products. This theory was created in a context in which time is becoming something scarce, being that it proposes a better use of this time not in a quantitative way anymore, but qualitative. It is based, still, on the appreciation of local craft processes, recycling, and the products' life extension, just as the use of regional raw materials (VORONOVICZ, ZANCAR, 2011).

The cardboard furniture has been on the Market since 1960 and gained strength for attending the appeals of Ecodesign, reflecting the idea of practices that reduce resources consumption and extend the products' life span, such as recycling and reusing. It is an embracing conception of designing that takes into consideration not only the aesthetical, functional, security, or ergonomics aspects of the products but mostly the environmental factor throughout the product's life cycle, in a way of reducing the environmental impact (BORCHARDT, *et al.*, 2007).

In this context, some designers stand out by proposing new concepts in the development of products that are aligned with Slow Design concepts and Design requirements for sustainability. Among them, we can mention Domingos Tótorá, from Minas Gerais: in the process developed by the designer and artist, the papier-mache had regular paper replaced by cardboard, by Kraft18 paper, and by banana trunk fiber, becoming a moldable cellulose mass. This material serves as a basis for furniture, objects, and sculptural pieces, being molded by hand and sundried (Figure 1). In this process, the cardboard, originated from wood, goes back to its origin, resulting in a material just as resistant as wood and with great durability. According to Tótorá, the follow up of the handcrafted pieces from their elaboration up to the consumer is a fundamental care for the process not to become a mass serial production, or in other words, essentially commercial. The works created by him respect the demand levels and are made in a longer period, when compared to other handcrafted artifacts (TÓTORA, 2020).

The present paper is intended to expose the development process of a conclusion course work (Trabalho de Conclusão de Curso), that took the

project of the designer Domingos Tótorá as inspiration, based on the concepts of Ecodesign and Slow Design. For this, through Design Science Research (DSR), a set of benches was developed based on the cultural identity of the city of Cianorte (state of Paraná), using cardboard and fabric fiber, since the place is characterized by being a textile polo and the volume of these materials is growing each year.

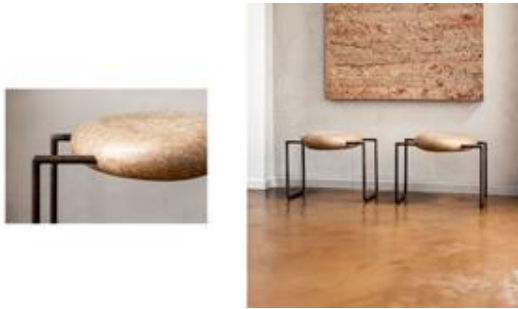


Figure 1 – Banquinho Estação (Season bench). Source: Domingos Tótorá (2021)

2. SLOW DESIGN

Slow Design is a Slow Movement strand, a slowdown concept initiated by Slow Food that is embracing other areas beyond gastronomy. One of these areas was Design because it is, somehow, a movement that cherishes the production of timeless objects, even if more expensive when it comes to the manufacturing costs and even if their conception takes a little longer. Sustainability is one of the foundations of Slow Design, aiming the reduction of environmental impact in the manufacturing process, focusing on reducing the materials used, optimizing the use of labor and the logistics activities in the production, intending to provide more contact of the consumer with the product to prioritize the experience quality and the wellness of each individual. The movement presents a wide range of material and social factors, just as in the short and long-term impacts of the project (RODRIGUES, 2019).

This is still a new and unique concept, however, it has similar characteristics to other artistic movements such as Arts and Crafts, which emerged in the middle of the 19th century. This movement opposes itself to mechanization and mass production, valuing creative craft and handicraft; it intended, still, to integrate project and execution, generating high standards results in both materials and finishes. The members of Arts and Crafts did not oppose themselves to the use of machines, although they intended to restrict the scale and the rhythm of manufacturing to the maximum that these machines could execute with perfection, and

not in terms of quantity or speed. A great contribution of the movement was the idea that design can transform society, reforming consumption patterns and generating radical social changes (RODRIGUES, 2019).

According to the principles of Slow Design, it is necessary to consider the life cycle of products with their future disposal need, beyond the impact of the entire production, transportation, and consumption chain. The connection between Slow and Design happens precisely when the Slow Movement proposes a path towards sustainability since Slow Design ends up focusing on the local production, using an ecological medium (MENA, 2018).

Generally, designers remain designing with the focus on traditional principles of project methodology in design, such as functionality, ergonomics, efficiency, manufacturing costs, and with the aesthetics aimed at the consumer market that is still anchored in fast processes. Facing this reality, Strauss and Fuad-Luke defined Slow Design as an approach that is dedicated to slow the manufacturing metabolism of objects, of people's health, of material sources and industrial flows, being the Slow Lab, then, a platform that stimulates a positive behavioral change in the designer, giving origin to a new paradigm and establishing a series of projectual objectives (Rüthschilling, *et al.*, 2018):

1. Stimulate creative activism (craftivism).
2. Stimulate new design values as project to grant quality to the products, being physical, virtual, or ephemeral.
3. Give support to the design methodology, inserting new project's creation and development logics, valuing a humbling posture and a more evaluative and reflective consciousness concerning ideas, beyond methods and ways of acting and relating with all the agents of the productive chain of design.
4. Incite new ways of access to innovation, compromised with sustainability, through quantitative, qualitative, and intuitive approaches in the generation of possibilities.
5. Recommend effective changes to sustainable development.
6. Encourage a revolution in the relationship among characters: creative designer, manufacturer, product, and user.
7. Create a platform for the evaluation of design's products, meeting future and current needs of the population, of the economy, and the planet.

The product designers, currently, question not only the ecological values but also the perception and

the emotional experiences that materiality can provide to people.

3. DESIGN AND TERRITORY

The term “design and territory” can be defined as being “[...] collaborative approaches in a sustainable appreciation of local resources: strategical partnership promotions and strategies to the appreciation of the natural and the cultural patrimony”; that is, it intends to benefit producers and consumers from a particular region. In addition, it plans activities that value the territorial capital and the social capital simultaneously, in a durable and sustainable conception in an extended period. (KRUCKEN, 2009).

The combination of design with the territory pursues a mutual valuing in which the product values the territory and the territory values the product. Also presents what Krucken (2009) defines as “territorial capital”: all the wealth that characterizes the territory is able to be beneficially explored in cultural, social, and edaphoclimatic terms, establishing connections and bonds between the product and the territory. In this conception, the role of Design as the mediator in the development is fundamental, being able to bring great benefits to both, whether the territory is a street, community, city, region, or country (MACIEL, *et al.*, 2017).

When approaching design and territory, the designer must start understanding the context in which he or she is going to act and generate changes, understanding the changes already in progress and providing new ways of thinking and acting, how the involved local characters operate and what is their position in society, besides realizing what are the necessary changes towards sustainability. That is, the focus would be in transforming the designer in a single creator and author of a product into an agent capable of strengthening, stimulating, and promoting knowledge in society, in a way that it creates and finds the best solutions to its problems, whether it is through the development of products or services (MACIEL, *et al.*, 2017). Krucken (2009) highlights eight essential actions to promote local products, being they:

1. Recognizing: comprehending the environment where the product will be produced, its history, qualities, communities’ lifestyle, material and immaterial patrimony, and others. The designer has the role of listening and observing to identify opportunities, giving shape to the information captured to generate tangible solutions, and articulating the parts that are interested to turn

ideas into actions.

2. Activating: adding competencies, to invest in the development of an incorporated vision of all characters involved, executing researches, and advising legal and financial questions.

3. Communicating: instructing about traditional ways of creating products, their history, and origin.

4. Protecting: reinvigorating the territory’s image, developing a clear and cohesive image of it through the products.

5. Supporting: reinforcing the know-how (to do) and seeking ways and new technologies that contribute to it, without mischaracterizing the product and the territory’s identity.

6. Promoting: raising awareness and sensitizing producers and governors about the pursuit of life quality of the community when it comes to sustainable use of resources; consolidating the production with public policies also aimed to value the local identity; involving businesspersons and local industries and spreading values concerning sustainability to the entire community.

7. Developing: products and services that respect each other and that value the place through understanding the local potential and the assistance of activities related to tourism, parties, and fairs.

8. Consolidating: developing cooperation networks between all the local characters and innovation agents of the territory.

It can be noticed that, when it comes to the promotion of local products, the designer can perform a fundamental role, mostly in the recognition, communication, protection, support, promotion, and development actions. Thereby, one of the main challenges of the designer when mediating cultures, customs, and traditions is to recognize and make the local values and qualities recognizable (KRUCKEN, 2009).

Through design, important aspects of the local culture, which are often unnoticed by the territory natives, are highlighted - it is a part of daily life that is so close it becomes invisible. Every culture depends on symbols and the objects can be considered cultural signs. So, the artifacts produced by Design start to compose the material culture of a particular place, for they gather symbols, information, and behaviors of the culture in which they are inserted (KRUCKEN, 2009).

Regarding the city of Cianorte and analyzing the local identity, it can be said that a great part of the local culture is involved with the garment industry. Due to being a strong fashion polo and considered the Clothing Capital (Capital do Vestuário), according to official data, the city is

responsible for 20% of the entire jeans commercialization in the country, which represents 12 million clothing pieces per month, counting on 450 industrial units that exceed 600 brands (CIANORTE, 2018). However, there is evidence of changes according to Cardoso (2019), in the website Gazeta do Povo, in research from Fiep in 2019, Cianorte had 263 industries (Chart 1).

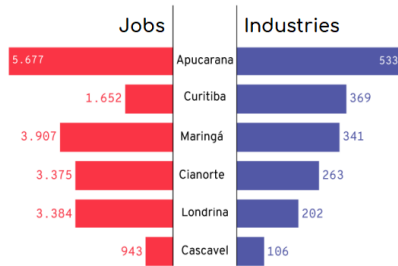


Chart 1 - Industry ranking. Source: Gazeta do Povo (2019).

This local characteristic represented a great starting point in the pursuit of a local expression in this project.

4. METHOD

The current paper was made with the Design Science Research (DSR) method, which has as main characteristic the comprehension of a real problem from the analysis of a context, to create alternatives to solve it through the development, prototyping, and evaluation of an artifact (LACERDA *et al.*, 2013). Chart 2 describes the DSR steps that were applied in the project, just as the activities that were executed and the tools used in each step.

Steps	Activities and tools
Comprehension of The problem	Bibliographic review, interview, and quiz with stakeholders, identifying the key requirements for the system
Generating Alternatives and Development	Visual Panel, creation of sketches, virtual molding, high fidelity prototyping.
Evaluation	Tests with users, aesthetical evaluation.
Reflections	Evaluation of artifact advances concerning the revised theory and the

identified problem, including reflections about development steps.

Chart 2: DSR and tools used. Source: Authors (2021)

5. RESULTS AND ANALYSIS

5.1 Phase 1: Comprehension of the Problem

Sustainable development has several approaches regarding the concept of products, among them the dematerialization, resources usage reduction, extending the life span of products, and others, always proposing a cultural and behavioral change of users. The absence of sustainability occurs due to social, cultural, economic, and environmental problems caused by the adoption of a production system mainly focused on mass production and exploration of non-renewable natural reserves. In a current scenario of vertiginous acceleration of a consumerist society, of technological advances, of access to the diversity of products, and the ephemerality of fashion and volatile trends, the products and consumer goods' life span make them rapidly obsolete.

Mass production is inflexible e makes it difficult to change the design of a production process in which the line is already defined. According to Fábio Scavassa, director and designer of the company Mada Marcenaria, one of the downsides of this type of production is the lack of personality: "A furniture that is created and replicated to several people can even have an identity, but loses in originality. That is inevitable, there are fewer details and there is not that manual labor [...]" (MADA, 2016). Besides, there are other questions about the industrialization problems, such as wastes generated in the production.

The inappropriate waste of the fabric residues and the way that garment industries deal with the accumulation of them are common in Brazilian urban centers, because of the industrialization process and large-scale production. In Cianorte (PR), the companies discard weekly, on average, more than 41 kilos of textile residues that come from the cutting and fitting sections - there is information that four of the city's companies discard their textile residues and discontinued items (such as trims, threads, and tags) in the regular garbage, that is often forwarded to landfills. Thus, the contamination possibility is huge, and when mixed with contaminated garbage they will not be able to be reused anymore (MARTELI, *et al.* 2015).

The furniture industry is also an activity that deserves attention since its acting involves several aspects and environmental impacts, the huge

volume of generated residues, irrational exploration of raw materials, waste of wood and use of toxic substances for example. The ABIMÓVEL (Associação Brasileira das indústrias de mobiliário - Brazilian association of furniture industries) registered, in 2019, a rise of 6,2% in the production in April over March; in the referred month, the volume of furniture production was 34 million pieces, therefore, its rising, in volume, was bigger than the transformation industry - that reached 4,7%. Regarding the apparent consumption, a published report pointed a rise of 6,4% in April when compared to May in the year of 2019 - the consumption of this month was 32,4 million pieces (SENA, 2019).

The cardboard is the most used material for goods' storage and transportation, being commercialized in different structures and it can be plane or wavy, and this last one is characterized as a structure mixed by one or more wavy elements fixated to one or more elements through adhesives applied on top of the waves. Although being widely used, the cardboard in Brazil has not been "discovered" yet to new finalities, being traditionally used to produce packages, mostly because it presents unique characteristics, such as constructive facility, reduced cost regarding its contention capacity, mechanic and thermal resistance, among others. The cardboard consumption per inhabitant is significantly bigger than packages manufactured with materials like steel, plastic, glass, and aluminum. According to Compromisso Empresarial para Reciclagem (Business Commitment to Recycling) in 2011 Brazil manufactured 43,9% of wavy cardboard to produce packages (FRANCO, 2015). In Brazil about R\$ 4,6 billion of cardboard packages are wasted per year, contributing to the rising of residues in dumps and landfills (NANI, 2007).

With the research carried out, this paper intended to solve problems like the cardboard discard, the discard of fabric residues of garment industries originated from cutting, mass production, the loss of identity, and the lack of sustainable development in products.

Considering the presented problem, the concept of

Slow Design presents itself as an alternative to the current large-scale production processes, for it privileges approaches that contemplate conscious and more democratic ways of production and consumption of products, redeeming the appreciation of handcrafted and traditional processes that are focused in maintaining local cultures, highlighting, still, the role of the consumer. Thus, it was chosen to develop an item of furniture with the identity of the local culture as a way of valuing the residues through Slow Design.

5.2 Phase 2: Alternatives Generation

To define the furniture that would represent the city of Cianorte and the project requirements, an interview with pioneers and other inhabitants that are involved with local projects was accomplished. The obtained result was that the products should have references to the garment industry, that was for a long period something that represented the city and contributed to its growth; use the pink peroba somehow, an important material that was mentioned by all the interviewed people for well representing the city since it is a native tree widely used in furniture production and house building; and, finally, have one or more benches as main products, for well representing the local culture since it was a widely used product to promote social interaction among the population.

Based on the interview, an analysis with similar products that represent some cultural identity was accomplished, and it was concluded that for the project development the territorial representativeness, which was applied in the mentioned city characteristic materials, should be used. Thereby, the alternatives generation process was initiated. Both had the city of Cianorte itself as the concept. It was generated, then, a series of alternatives (figure 2, 3), and the choice criteria was the bench collection that better conceptually represented itself and that highlighted the three materials that were present: pink peroba (demolition wood), papier-mache (cardboard), and fabric (textile discard).



Figure 2 - First alternatives generation. Source: Authors (2021).



Figure 3 - Second alternatives generation. Source: Authors (2021).

Of all the alternatives, the one that presented the best use of materials was “set 3”, although, it was necessary to create a visual panel (Figure 5) and refinement of alternatives that represented the

characteristics and attractions of the city of Cianorte. Important shapes and traits present in the pictures were also pursued.



Figure 4 - Third alternatives generation. Source: Authors (2021).

There are in the panel: Cianorte’s gateway; the pink peroba and Cinturão Verde; the quarry of Vidigal (Cianorte’s district); the church of Our Lady Fatima (the Mother Church), its stained glass and the stations of the cross (located on the outside part of the church); the sacred heart of Jesus church (known as the Blue Church); wholesale factory and mall; and, lastly, the urban planning of the city.

From the visual panel, two more benches collections were generated (Figure 6), and to select one of them, a Google form was applied (through Google Forms) to architects, products designers, and students of architecture and design. The alternative number 2 was chosen, but more few refinements were done, such as reducing the number of legs of the benches and using only jeans as the fabric, because it better represents the city of Cianorte since it is a great producer of it.



Figure 5 - Visual Panel. Source: Authors (2021).



Figure 6 - Final alternatives. Source: Authors (2021).

5.3 Phase 3: Development

From the chosen alternative, the 3D modeling, renderings (Figure 7 and 8), and the technical drawings of the benches were executed.

The set had the city of Cianorte and elements that represent it as the concept (Figure 9): the curved handle refers to the nature of the city and its organic shapes; the jeans straps are there because the city has a strong production of clothing pieces in this kind of fabric; its ends in triangles refer to the ends of the Blue Church; the stamp, instead, had this shape because of the stained glasses of the Mother Church, whilst the individual bench legs bring a representation of the pink peroba trees sustaining the seat because for years this was a significant material since this is the native tree of the city and it was widely used to make furniture and houses; lastly, the legs of the collective benches have their shape being more geometric, referring to the city’s garment industry, for fashion is essential to the city and it is responsible for its growth for years.



Figure 7 - Individual bench views. Source: Authors (2021).



Figure 8 - Collective bench views. Source: Authors (2021).

The benches were made to be carried, not having a particular room to be in - they can be brought both to the external and internal areas of the house. Then, a curvature was designed to facilitate their handle when carrying them, making them more practical (Figure 10). Furthermore, as their seats were made of papier-mache, this material brings weightlessness to the bench, making it easier to carry it.



Figure 10 - Bench handles. Source: Authors (2021).

The individual bench has standard measurements: 45cm of height, 50cm of width, and 40cm of depth. The collective bench, instead, has 45cm of height, 126cm of width, and 40cm of depth.

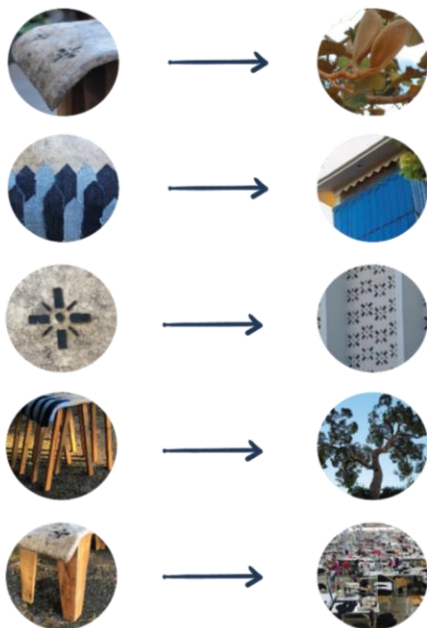


Figure 9 - Cianorte Concept. Source: Authors (2021).

The prototyping step (Figure 11) lasted for 5 months, being a slow process, according to Slow Design concepts. Cardboard reels were donated by clothing companies of Cianorte and were used, being ripped, put in buckets of water to cover them, and left there for 24 hours to soften (1).

After that, the internal structures of the seats were cut, folded, and welded (2). For this, a 6mm solid iron bar was used. In the third step, the molds and the back molds for the seats were made (3). MDF pieces that were marked with the benches sides were used and then they were cut with the fret saw and glued with Tek Bond 793 and Cascorez glue over the sheet (individual seat bench). After drying (1 hour), a 3mm PVC sheet was applied on the back molds, heating it with a hot air blower to settle it at the correct angle. However, it was necessary to nail it due to the delay in cooling. In the mold of the collective bench, alternatively, a galvanized sheet was used and nailed to the MDF back mold.

In the next step (Figure 11), the preparation of the modeling material was initiated (4). Firstly, the cardboard and a certain amount of water (to cover the paper) were blended and then sifted to finally add the glue. The measure of the quantity of glue is equivalent to half of the paper's weight, for example, 140 grams of paper requires 70 grams of glue. Tests were executed using $\frac{1}{4}$ of the paper's weight for the quantity of glue, but the mass was crumbling and it was not compressing. After adding the glue, the mass was well mixed with hands.

Next (Figure 12), the metal structure was put over the mold and then the molding of the seat was initiated (5). After finishing, the glue was added to improve the finish. Right after that, it was put in the sun to help with the drying. After the first seat was finished, it was noticed that something was not applied to facilitate mold removal. Thereby, in the mold of the collective bench, the plastic wrap was added. The metal structure was attached to the mold with the help of wires (due to the bench

being long they were not attaching), then the same processes for the individual bench were executed. The seats dried within two to four weeks (6). They were left in direct contact with the sun in the first 5 days, and after that, they were only left

outdoors, resulting, then, after dried, in the coloring and texture of Figure 12.



Figure 11 - Prototyping 1. Source: Authors (2021).

One of the final steps for the seats was finishing (Figure 12). Tests were made using only the sandpaper or belt sander, but the material had high resistance, which made the process difficult. Grinding discs for grinders in 40, 80, and 120 grits were used then, and to improve the finishing, the sandpaper. For the mass, 150, 220, and 350 grits were used because they showed a better result. A certain difficulty was found when sanding the

bench to level it. After that, the same processes were executed with the seats inverted (7). The legs of the benches were made with demolition wood (pink peroba) and the sheets were initially put in a wood thickener, cut, and sanded (Figure 13). Right after, the woods were varnished with three layers of water-based varnish (8).



Figure 12 - Prototyping 2. Source: Authors (2021).

The tenth step was the mounting (9). Some difficulties were found regarding the bench structure - even though the material was resistant, the collective bench had a long seat, which caused it to bend (even with the internal metal structure). Therefore, it was decided to make a complementary structure of demolition wood (pink peroba) to solve the problem. The individual bench, instead, had the destabilization of the legs, and its rotation as problems, so it was also chosen

to make a structure to improve its fixation. Beyond that, another problem found was concerning the irregularities of the seats - even if sanded, there were difficulties when regulating the legs, being necessary to sand them more few times during the mounting. The seats, legs, and structures were drilled, glued with Cascorez glue, and screwed (except for the legs of the individual bench, in which pegs were applied).

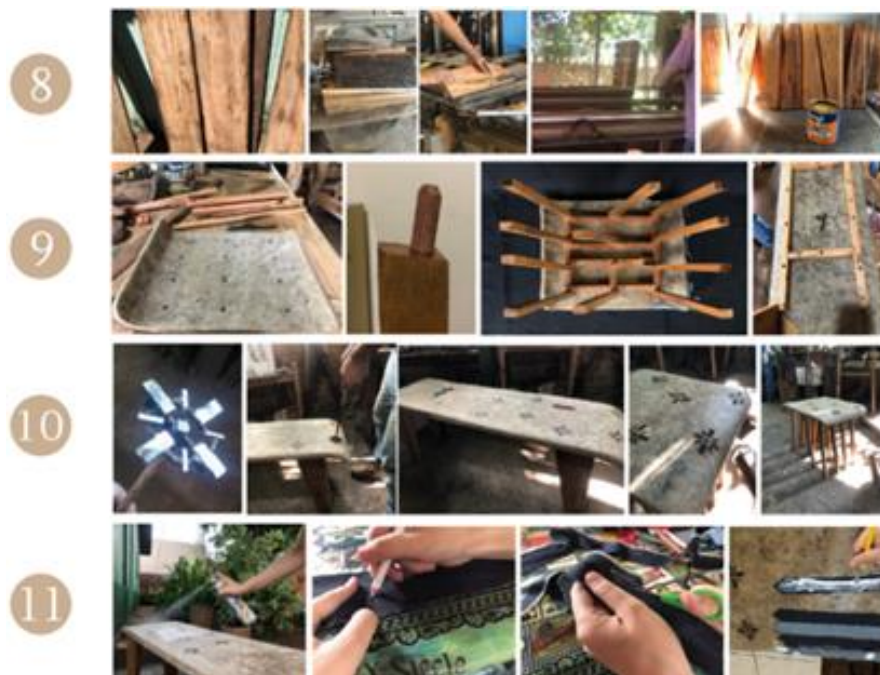


Figure 13 - Prototyping 3. Source: Authors (2021).

In the next step, a metal stamp with the stained glass of the Mother Church was created (10). It was heated with fire and the seat markings were made. Firstly, a test was made to check how the material would react, then the markings were done and after that, the seat was stamped. As the finishing

(11) and as a form of protecting the seats, a colorless spray varnish was applied, and then the seat was sanded with 350-grit sandpaper to make it more matte. It was noticed that some areas of the bench absorbed the varnish, so they were not covered.

To finish the prototyping steps, the jeans straps were marked with a white pencil, cut, and glued with Cascorez glue. So, two rows were made with the straps, with 27 straps per bench (Figure 13). To better differentiate the straps, two shades of blue were necessary; but considering sustainable aspects, it would not be interesting to use washed

jeans straps, so the opposite side of the fabric was used. The prototypes were then finished (Figure 14).



Figure 14 - Final prototype. Source: Authors (2021).

5.4 Evaluation

To evaluate the products that were developed, a guide for the tests with users was established, to identify the aesthetical and ergonomic aspects (handle and comfort) of the benches. It was questioned if it was possible to identify elements in the benches that represented the city of Cianorte, the materials that composed them, their comfort. The users were asked to individually carry the individual bench and the collective bench with the help of someone else, to observe if the handle was being used. Besides that, the users were asked to sit (to identify which side the user understood as the front and the lateral of the bench).

The tests were accomplished with three users. As result, all of them reported that the benches were comfortable. About the seat material, they reported that it was wood, cork, marble, or fiberglass. All users mentioned that the jeans were representing the garment industry. One of them pointed the stamps as the stained glasses of the Mother Church and the others said that they were from some church but did not remember which ones.

6. REFLECTION

During the development of the project, it was possible to conclude that Slow Movement is present in different areas, such as Slow Design, when it values local resources, slow and small-scale

production. It also shows characteristics of design authority, a modality in which the professionals work as designers, executors, and sellers, using concepts and methods from Design. Besides that, Slow Design leans on Ecodesign for it cherishes the rising of the product's life cycle and the reduction of environmental impacts. By incorporating ecodesign's guidelines to slow production, it was possible to reuse the solid residues generated from Cianorte's furniture industries into furniture pieces that have affective value to the inhabitants of the city.

It was possible to observe that this movement proposes an integration of man with nature, fair productive methods, choice of healthier woods, and individuals more conscious about living life, with the choice of their own pace of life (VICTORIA, 2017). In this project, Slow Movement presented itself as an alternative to the reframing of industrialized and mechanized life, because it proposes an invitation to calmness and retaking old customs such as sitting on a bench and chatting.

In contrast, Slow design, for its handmade character, is not a low-cost option to reusing the residues, does not have the capacity for large-scale production, and, consequently, to widely use the residues. It is, then, an alternative that needs to be applied along with other Design strategies for sustainability.

7. FINAL CONSIDERATIONS

From the accomplished research and collected data, it was possible to create the set of Companhia (Company) benches, according to Slow Design principles and expressing the cultural identity of the city of Cianorte (state of Paraná). The history of the city and its vital aspects were brought up, through interviewing pioneers, businesspersons, and other inhabitants. Beyond that, Slow movement and its guidelines were searched, understood, and applied to the project. The production process developed by the designer Domingos Tótora, from the production of papier-mache using cardboard, was also understood and reproduced.

As future referrals, tests with the benches exposed to the weather (rain, for example) will be made, so it will be possible to analyze the transformation of the material. Besides that, the production of the benches will be bigger, manufactured, and not industrialized. Lastly, tests with natural pigments will be made, such as charcoal, in the papier-mache mass, just like in the process made by the designer Domingos Tótora.

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