ISSN 2525-2828

Diálogo

COM A ECONOMIA CRIATIVA

v.8, n.23, may./aug. 2023

Apoio: FAPERJ ESPM

Responsible Publisher: Veranise Jacubowski Correia Dubeux

Associate Editors: Isabella Vicente Perrotta
Lucia Maria Marcellino de Santa Cruz
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Managing Publisher: Joana Martins Contino

Editorial Production: ZEPPELINI PUBLISHERS

Cover Image: Matheus Dias de Oliveira

Diálogo com a economia criativa [recurso eletrônico] / Escola Superior de Propaganda e Marketing, v. 7, n. 21 (set./dez. 2022) – Rio de Janeiro: ESPM, 2022.

Quadrimestral.
Modo de acesso: <http://dialogo.espm.br>
eISSN: 2525-2828

1. Economia da cultura. 2. Indústria criativa. 3. Criatividade nos negócios. I. Escola Superior de Propaganda e Marketing (Rio de Janeiro). II. Programa de Mestrado Profissional em Gestão de Economia Criativa.

CDU 330:316.7

e-ISSN 2525-2828

Magazine of the Professional Master's Program
in Creative Economy Management ESPM

Catalog sheet prepared at the ESPM Rio Library.

ESPM Rio
Vila Aymoré – Ladeira da Glória, 26 – Glória, Rio de Janeiro, RJ
Telephone: +55 (21) 2216-2066
revistadcec-rj@espm.br

Summary

ARTICLES

https://doi.org/10.22398/2525-2828.8233-4

The cover image
Imagem da capa

Joana Martins Contino[I], Matheus Dias de Oliveira[I]

"Ọja oja ni awọn mejeji."
The market counter has two sides[1].

Èṣú[2], who is on the cover of issue 23 of the journal *Diálogo com a Economia Criativa,* is the *Òrìṣà* bearer of the *Àṣe*[3], the regulator of justice, honor, and prosperity of a community. *Èṣú* may prove to be sweet, sour, or bitter, but that depends solely on us. He is always willing to point us to the best path. His blessings are given with caution, as free will allows us to make any choice, including the worst. He never leaves us, but neither does he exempt us from the consequences of our actions. His sense of justice lies in ensuring that each action is reciprocated by fair retribution, be it positive or negative. His sense of honor lies in staying true to the consequences.

His sense of prosperity lies in guiding the path to prosperity. Contrary to the cumulative logic of capitalism, a space of accumulation that often involves expropriation and exploitation, the *Èṣú* market is based on the creation of bonds of responsibility in relation to the work of other people who produced, produce, and will produce what we need, but which we are unable to produce at a given moment. His acumen is capable of transforming misconceptions into correct answers, achieving two objectives with a single movement. *Èṣú* has a dense, but viscerally transforming pedagogy, which is based on the non-tolerance to error, not to punish, but rather to teach how to avoid mistakes. His nature is joyful, but make no mistake, for *Èṣú* is not naive. He is serious, but never moody.

According to William (2020), *Èṣú* speaks all languages, eats everything the mouth eats, drinks everything the mouth drinks. *Èṣú* is African, Yoruba, black, but his presence can be felt anywhere and in any form. His omnipresence is one of the many aspects that define him, moving through a logic between space and time, hitting a bird yesterday with the rock he only threw today, making even a past mistake become correct in the

1 Concept formulated by Professor PhD Babalorixá Sidnei Nogueira.

2 Whenever possible, I will use Yoruba words in italics, as they are spelled. Beniste (2006) clarifies that, in some letters, a dot is used underneath them. Ṣ acquires the sound of X or CH. Without the dot, it has the original sound of the letter S. I make this choice understanding the relevance of orality in the preservation of this language, while recognizing the importance of disseminating its written form as another contribution to the vast knowledge that circulates in worship spaces.

3 It is spelled as: *axé!* It means life, the vital force that sets everything in motion. We would not be able to provide a simple definition of what it actually is, because of the wider dimension of its meaning. Every particle of life, every thought force, every creative impulse, every feeling, whether positive or negative, is a driving force that is only permeated by the *Àṣe*.

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Received on: 07/10/2023. **Accepted on:** 07/10/2023.

present. *Èṣú* strengthens us to achieve our best achievements, versions, and inspires us to creativity. *Èṣú* is the dynamic principle of life, the communication in motion, the messenger between worlds. *Èṣú,* in addition to his multifaceted nature, also has an intimate connection with creativity. He is a patron of the arts and creative expression, inspiring those who seek to explore their imagination and innovation. *Èṣú* brings with him the energy of creative flow, encouraging people to think outside the box and to find original solutions to the challenges they face. His presence on this cover reflects this relationship with creativity.

The image creation process began with the exploration of a variety of drafts related to *Èṣú*, his elements and distinctive characteristics. Then, I established a solid concept to guide the entire visual set, mainly focusing on the idea of exchanges and interactions associated with *Òrìṣà*. As aforementioned, the market is intrinsically linked to these exchange dynamics, involving payment and receipt actions. Thus, I made the decision to incorporate references from market posters, incorporating vernacular typography into the project, in order to convey a more authentic and territorial message. Using visual elements that refer to design and cultural references, I sought to convey the essence of *Èṣú* as a catalyst for ideas and inspiration and to demonstrate his inspirational force.

The cover proposes the exploration of creative potential and freedom of expression, encouraging readers to embark themselves on a journey of discovery and experimentation. The presence of *Èṣú* in the illustration also represents the importance of honoring and valuing our cultural roots in the search for creative expression. The cover is an invitation for us to explore, experience, and celebrate the richness of artistic expression, guided by the positive and transformative influence of *Èṣú*. It is a visual and symbolic representation of the *Òrìṣà*, conveying the essence of his characteristics and his connection with creativity, because it is He who enhances human creativity, reinforcing what is intrinsic to human beings: we are all creative!

Láàróyè, Èṣú! (Long live the messenger, *Èṣú*!)

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WILLIAM, R. **Apropriação cultural**. São Paulo: Sueli Carneiro; Jandaíra, 2020. 208 p. (Feminismos Plurais.)

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https://doi.org/10.22398/2525-2828.8235-8

Editorial
Editorial

Marco Aurelio de Souza Rodrigues[I]

Dear readers,

John Howkins (2002), in his work *The creative economy: how people make money from ideas*, stated: "We are living in extraordinarily creative and inventive times" (free translation). This book was published in 2001. I wonder what the author would say about our present moment, when machines and systems supposedly capable of creating proliferate — which, therefore, raises questions about the very nature of what is called *creativity*.

After all, according to the aforementioned book of Howkins (2002), creativity can be defined as the ability to create something out of nothing or as the ability to give a new meaning to a preexisting thing. In both situations, creativity is considered a favored process when an individual confronts the familiar with the strange, something the author describes in his book as "leaving the comfort zone to explore other 'places' and establish new relationships" (free translation). Likewise, Margaret Boden (2004), a researcher dedicated to the field of artificial intelligence, defines creativity as the "ability to conceive ideas or artifacts that are (i) valuable, (ii) new, and (ii) surprising" (free translation).

These definitions invite us to reflect on something that, not so long ago, would have sounded absurd: can machines be creative? Although this editorial does not intend to exhaust this subject, it is worth dedicating a moment to ponder, albeit preliminarily, on the ability of machines, such as generative artificial intelligence systems, to be creative seeking to have a better understanding of their impacts on the creative economy.

To this end, it is necessary to understand what a generative artificial intelligence system is, whose variants have been conquering the media for their ability to create texts, images, software codes and, some would say, even poetry. These systems use complex machine learning models to predict the next word based on previous word sequences, or the next image based on words that described previous images.

Considering the growing popularity of these systems, it is assumed that their production is perceived as valuable by their respective users, which would meet the first criterion of what is considered creativity, as proposed by Margaret Boden (2004).

Nevertheless, one should reflect on whether what these systems deliver is, in fact, new — another criterion indicated by Boden (2004) to define creativity. Now, as pointed

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Received on: 07/10/2023. **Accepted on:** 07/10/2023.

out by Franceschelli and Musolesi (2023) in the article "On the creativity of large language models," such systems complete a sentence, for example, by searching for the words that would form a text close to others that were written in the past. The degree of dissimilarity and, therefore, novelty, would be limited by the very nature of the generative artificial intelligence system.

Furthermore, it is worth reflecting on whether what these systems offer their users is surprising — the third and final criterion recommended by Boden (2004) to establish what creativity is. Generative artificial intelligence systems, as argued by Franceschelli and Musolesi (2023), are trained to identify patterns according to large volumes of data. In short, they seek probable relations, whereas surprise and, consequently, creativity emerge from unlikely relations. Could this characteristic limit the ability of these systems "to leave the comfort zone to explore other 'places' and establish new relationships," as characterized by Howkins (2002) as a trait of what is called *creativity*?

Indeed, a skilled user could stimulate the system to produce surprising content with greater *novelty* content by creating unusual prompts (i.e., commands) for such a purpose. In that case, the following discussion would be pertinent: who was creative? The system or the user who designed the prompt capable of inducing the system to produce something? Would this production with a *hint* of novelty be surprising to its creator, given his/her full mastery over the system?

So many unanswered questions indicate that *creativity* is a fluid concept, which impacts the most diverse sectors and technologies and is impacted by them. Hence, more than ever, it is necessary to maintain a frank debate about how creativity manifests itself in the most distinct spheres, to deepen the understanding of how it can be used as an engine of economic and social development in this rapidly approaching future.

In this issue of *Diálogo com a Economia Criativa*, the journal reinforces its commitment to fuel this debate, offering the reader 10 articles whose authors explore manifestations of creativity in different contexts, some of which — the first five of this issue — were papers selected as the best studies of the 14th Brazilian Congress of Research and Development in Design.

"Surface design in the field of health and wellness: a study on the characteristics of three-dimensional textures applied to the myofascial roller product," by Carolina Corrêa Araujo and Cyntia Santos Malaguti de Sousa, presents a study on the use of creativity in the context of health. The authors delineate the elementary characteristics of the three-dimensional textures applied to the surface of the myofascial roller, which are important for the praxis of the surface designer who seeks to work in the health field.

"Design management applied to the assistive technology service provided by occupational therapists: a case study," by Daniela Amaral, Giselle Merino and Ana Karina Cabral, investigates the impact of design management and, therefore,

creativity on the provision of assistive technology service performed by occupational therapists.

"A Project Guide as a tool to improve the design process in a metal-mechanic industry in the city of Caruaru-PE," by Aniele Marques and Germannya D'Garcia Silva, proposes a protocol to optimize the execution of product projects through design. This is a research based on practical applications of creativity for process improvement.

"Analysis of the Brazilian academic production on typography: a survey in the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel," by Maíra Woloszyn and Berenice Santos Gonçalves, investigates the academic production about typography, defined as the creation and use of orthographic and para-orthographic symbols, to indicate incipient topics that can point to potential axes of future research on this field.

"Design teaching in the pandemic of COVID-19: perspective of teachers and students in the city of Rio de Janeiro," by Paola de Lima Vichy and Ligia Maria Sampaio de Medeiros, ponders on future scenarios for the teaching of design, a fundamental activity for disseminating creative thinking, from the perspective of the COVID-19 pandemic.

"Innovation practices based on creative industry: a study in the Paranhana region, Rio Grande do Sul, Brazil," by Eduardo Zilles Borba, Valmir Mateus Portal and Marley Rodrigues, provides a pertinent reflection on innovation and creativity practices and their impacts on regional development in southern Brazil.

"Analysis of the dynamics and specialization of creative activities in Brazilian capitals and Unesco creative cities," by Jonas da Silva Henrique, analyzes the growth of creative activities that interface with tourism in 27 Brazilian capitals and in the creative cities of Santos (state of São Paulo) and Paraty (state of Rio de Janeiro).

"History of psychiatry management at Instituto Municipal Nise da Silveira: creative and cultural actions that impact asylum deconstruction in the Brazilian society," by Ana Cláudia Pinheiro, Fabio Araujo and Miguel Pinheiro, provides a reflection on how creative and cultural actions of this institute impact the deconstruction of the need for clinical hospitalization in closed institutions and on the deinstitutionalization of madness in Brazilian society.

"Live streaming: an analysis of the motivations for subscribing to channels on the Twitch platform in Brazil," by João Renato de Souza Coelho Benazzi and Luiz Felipe Milazzo Barbosa, investigates the factors that stimulate the consumption of a new form of digital entertainment, the live streaming, pondering on the emergence of creative careers.

Finally, "Creative economy in the face of the complexity paradigm," by Romilson Marco dos Santos, investigates the emergence of new creative paradigms, which can destabilize institutionalized creativity.

Enjoy the reading!

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Article

https://doi.org/10.22398/2525-2828.8239-35

Surface design in the field of health and wellness: a study on the characteristics of three-dimensional textures applied to the myofascial roller product

O design de superfície no campo da saúde e do bem-estar: estudo sobre características das texturas tridimensionais aplicadas ao produto rolo miofascial

Carolina Corrêa Araujo[I], Cyntia Santos Malaguti de Sousa[I]

ABSTRACT

This qualitative and experimental study is part of an ongoing master's research to map the elementary characteristics of the three-dimensional textures applied to the surface of the myofascial roller, and its projectual and interactive configurations that are important for the praxis of the surface designer working in the medical field. To do so, this study is supported by theories of surface design practices, product design, ergonomics and sensory perception. Semi-structured qualitative interviews were carried out with physiotherapy professionals, in order to understand the importance of three-dimensional textures for the field, along with a systematic review of the literature. Finally, netnography was done on YouTube and on complementary websites. The requirements used for the selection of the analyzed products were availability of digital patents and presence of grid on the surface (term most used in the segment, synonymous with three-dimensional textures). To correlate the collected data with the theories presented, an analysis was made to generate representative content for the field.

Keywords: *Three-dimensional textures. Health. Design.*

RESUMO

Este estudo qualitativo e experimental parte de pesquisa de mestrado em curso, buscando mapear características elementares das texturas tridimensionais aplicadas à superfície do rolo miofascial, suas configurações projetuais e interativas, importantes para a práxis do designer de superfícies que busca atuar na área médica. Para tanto, apoiou-se nas teorias de práticas do design de superfície, projeto de produto em design, ergonomia e percepção sensorial. Foram realizadas entrevistas qualitativas semiestruturasdas com profissionais da fisioterapia, a fim de compreender a importância das texturas tridimensionais para o campo, e foi realizada uma revisão sistemática da literatura. Por fim, fez-se a netnografia no YouTube e em sites complementares. Os requisitos utilizados para a seleção dos produtos analisados foram: disponibilidade de patentes digitais e presença de grid na superfície (termo mais utilizado no segmento, sinônimo de texturas tridimensionais). Para correlacionar os dados levantados com as teorias apresentadas, foi feita uma análise para gerar conteúdo representativo para o campo.

Palavras-chave: *Texturas tridimensionais. Saúde. Design.*

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Received on: 12/12/2022. **Accepted on:** 03/25/2023

INTRODUCTION

In the search for the creation of increasingly suitable products, Baxter (1998) defines that the success of the product development process is due to the construction of well-defined parameters prior to the start of the project. The study and application of ergonomic concepts contribute to adapting objects to human beings, maintaining, above all, safety, comfort, and operational efficiency (GOMES FILHO, 2003). Furthermore, nowadays, user experience has become fundamental for the performance of both product and company in the market. In this sense, sensorial exploration is also an important factor to be considered preliminarily in the project, in the search to understand how more integrated experiences of use can be created.

About the senses, touch may be understood as responsible for the perception of skin contact, being related, therefore, with the way the world around us is felt. Skin, the organ that covers our body, is rich in tactile receptors, playing an important sensory role. It allows interacting with the environment and distinguishing objects, even without seeing them (HAINES, 2006). By sight and — especially — by touch, three-dimensional textures stand out for their notorious interaction with users. They are part of people's daily lives, residing on the surfaces of most objects that surround us. Textures can be arranged in the most diverse types of materials and, according to Kunzler (2003), the most important factors for the perception of surfaces are thermal sensation, hardness, and texture.

By presenting a three-dimensional texture, objects add elements that are not only aesthetic, but also semantic and practical, the latter of greatest interest in this article. According to Falcão (2015), three-dimensional textures applied to the surfaces of objects — such as pedals, buttons, glasses, and cutlery — fulfill functions such as: inducing intuitive use; providing non-slip property; increasing performance in manual activities; preventing vandalism; conferring structural resistance to materials; and even facilitating the dissipation of heat, light, and sound (considering leaked textures).

Surface design is responsible for designing the layer that surrounds or configures the artifacts, that is, surfaces. According to Schwartz (2008), the design activity in this field attributes to the object not only aesthetic, semantic, and practical characteristics (functional and structural), but mainly — through visual, tactile, and embossed textures — it expands sensory-cognitive interactions. By mastering the projective technique for developing new products and, consequently, their surfaces, product designers are also active agents in the field of surface design.

The functional importance of surface design extends from the field of objects to graphic design and fashion, improving user experience in many ways. In order to investigate their contribution to health and well-being — in line with Sustainable Development Goal 3, goal 3.4 (IPEA, 2019) —, a specific niche of products was investigated: those used in rehabilitation activities. Based on an exploratory survey, the myofascial roller was the object selected for its remarkable performance in health care (CHEATHAM; STULL, 2019), in the so-called light physical rehabilitation

(non-permanent health problems), and for its projective potential from the perspective of surface design.

Research problem

Rehabilitation may be defined as the restoration of maximum functional potential in the course of an illness, injury or damage occurrence (SHAH *et al*., 2015). Rehabilitation levels relate to different limitations and deficiencies presented. However, the Brazilian Unified Health System (*Sistema Único de Saúde* – SUS) is dedicated to serving only people in very severe and evident rehabilitation conditions (blindness, deafness, impossibility of locomotion, etc.), which covers only 2.3% of the population with motor impairments. "Human rights are guaranteed to all Brazilians [...]. However, the primary focus [...] is the segment of people with severe disabilities." (SECRETARIA DE DIREITOS HUMANOS DA PRESIDÊNCIA DA REPÚBLICA (SDH/PR); SECRETARIA NACIONAL DE PROMOÇÃO DOS DIREITOS DA PESSOA COM DEFICIÊNCIA (SNPD), 2010).

In this way, people with limitations resulting from rehabilitation, or with disabilities and mild disabilities, remain without any medical assistance in the country. Thus, this study sought to observe one of the products used for light rehabilitation, the myofascial roller, aimed at health conditions such as performance problems and capacity limitations without obvious deficiencies, as exemplified by the World Health Organization Family of International Classifications Network (CCOMS, 2003). There are several factors that may lead healthy individuals to light rehabilitation treatments, such as sports practices — which can cause muscle fatigue, sprains or fascial displacement — and recovery treatments after illness, as has been the case with people affected by covid-19 with side effects, such as muscle weakness and atrophy, due to prolonged rest, causing muscle disuse (ANTONIO, 2021).

Currently, on the market, there are several myofascial rollers with different three-dimensional textures applied to the surface, commonly called grid (a word that indicates the creation of textures from an invisible "grid", "net" or "weave", with a regular repeating pattern, a "constructive mesh"). This leads to several questions about which would be the best product and the reason for the diversity of grids available. Based on this concern, the objective of the study was to gather information about the characteristics of the three-dimensional textures applied to the surfaces of myofascial rollers, seeking to observe which are the important requirements for the adequate development of new products in the field of health and well-being, in addition to inform potential users on which ones can provide a better user experience and serve that unassisted part of the population.

Theories that support this study are: surface design techniques; product project in design; ergonomics; light rehabilitation; trigger points; and sensory perception.

Delimitation of the theme: applied three-dimensional textures

Present in several fields of design practice, according to Manzini (1993), textures can have an imitative nature, simulating other materials, such as leather, textiles or

natural elements such as leaves and flowers. They can also function as a second skin for objects, which usually happens in the furniture industry, in the lamination of different materials and colors for tables, cabinets, and chairs. In addition, textures can arise as a result of industrial processes, such as parts from foundries, for example, which have an irregular surface, with high roughness. For some authors, the apparent roughness is considered the texture itself, due to the tactile perception it causes. However, Del Curto, Fiorani and Passaro (2010) mention that this "appearance" is one of the constituent parts of texture formation, not being synonymous with it, but a property of the surface due to irregularities.

This study demanded dedication to observe and highlight the three-dimensional textures idealized through projects that have a different concept from those presented above. The idealized three-dimensional textures are those that go through a creation process with interference from designers concerning their details and geometric constitutive elements, such as: shape aspects (graphic motifs); repeating modular pattern (minimum repeatable units constituting the textured surface set); arrangement (mesh of the graphic motif on the surface); and number of repetitions within the analyzed area (density). Thus, the way in which these textures occur will, in fact, be linked to a certain design intention.

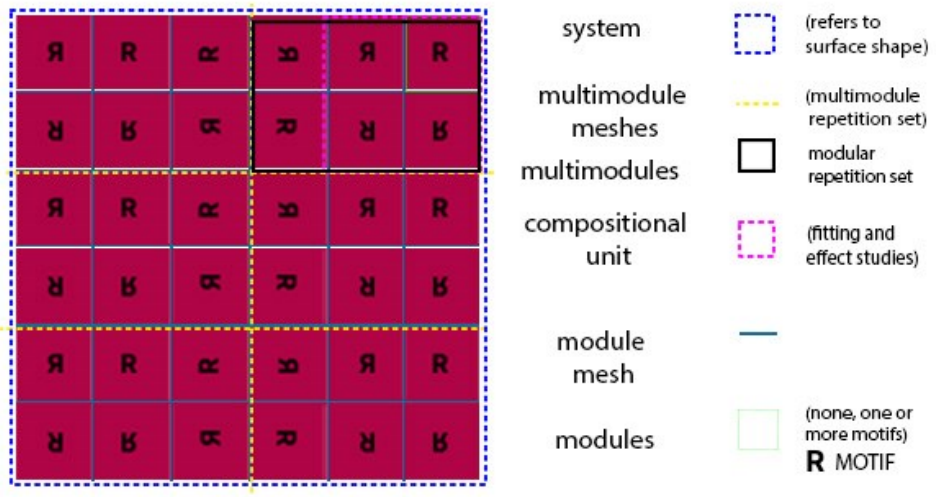
Three-dimensional textures can have several graphic motifs, but the geometric ones were chosen for this study, which are very similar to the element called "embossment", used in the field of architecture and the arts, due to its intrinsic property of presenting volume and the tactile response it provokes (DONDIS, 2000). However, by the definition of the Encyclopedia (ITAÚ CULTURAL, 2018), embossments are the variation of values on the "z" axis from a flat surface, while three-dimensional textures (although they carry the concept of embossment) can be applied in different base surface geometries, not just plane ones. Visual information is represented by visual, tactile, and embossed textures, while haptic information is represented by tactile textures and embossments, as well as the sensation that the visual texture can evoke.

LITERATURE REVIEW

Surface design is a specialty that shares some general principles common to all design specialties, such as: engagement with matter; technique; and presence of a creative purpose (FREITAS, 2011). The foundations of surface design came from continuous patterning techniques, which used matrices as a mediation for rotary printing. Even today, with the advancement of technology, these principles are considered as guidelines for new projects.

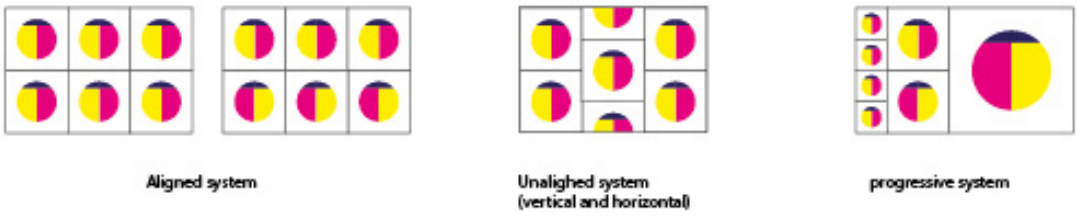
In his study, Schwartz (2008) outlines a kind of grammar that operates in the plastic-structural configuration of surface design. Figure 1 shows these elements: motif; modules; module mesh; multimodule; multimodule meshes; and system.

As a definition, the author infers that the role of the "*motif*" is to visually translate the message projected by the designer (SCHWARTZ, 2008). It can be composed of figurative or abstract, geometric or organic elements, have the same formats or variations in color and size. The "*modules*" are one or several compositional

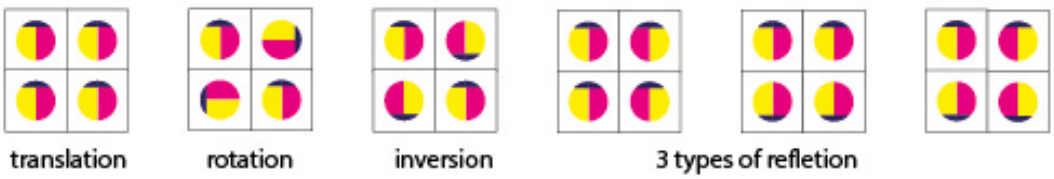


Source: prepared by the authors based on Schwartz (2008).
Figure 1. Relationship of structural elements to the surface design project.

elements (with motifs) that need to be circumscribed in a unit that *will be repeated in the width and length of the surface*. The *module mesh* is the link between modules that focuses on how the fittings between modules work and what effects can be exploited, but which differs from *multimodules*. These are composed of smaller modular systems, as explained by Rüthschilling (2008). This is because the multimodule only exists when this set of smaller modules is repeated from a modular repetition system that is basically configured in three types: aligned, non-aligned, and progressive (RÜTHSCHILLING, 2008) (Figure 2). However, when repeating the module, it is possible to modify its axis and its orientation without changing its design, these modifications are named translation, rotation, inversion, and reflection (Figure 3).



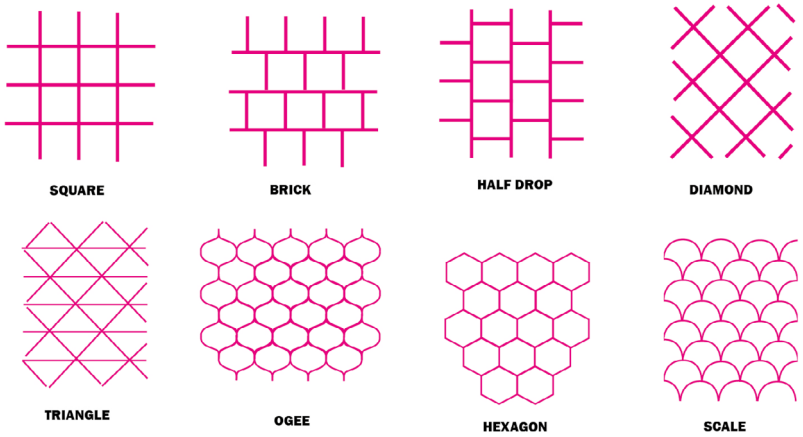
Source: prepared by the authors based on Schwartz (2008).
Figure 2. Relationship of structural elements to the surface design project.



Source: prepared by the authors based on Rüthschilling (2008).
Figure 3. Relation of structural elements to surface design project.

Associated with these concepts is the notion of *rapport*, a French term that means "repetition". It Brazil, it is more often used in areas related to surface design, to designate the fitting in all directions of the module. In the context of surface design, *rapport* is understood as the adaptation of the module in the printing or manufacturing process. Mcnamara and Snelling (*apud* SCHWARTZ, 2008) point out some of the most used rapports: full drop (translation); half drop (translation); brick (translation); stripe (inversion); turn over (reflection on two axes); and mirror and its variations (translational bending, single-axis reflection, and translational reflection). In adapting the module to *rapport*, the adopted repetition system must be considered.

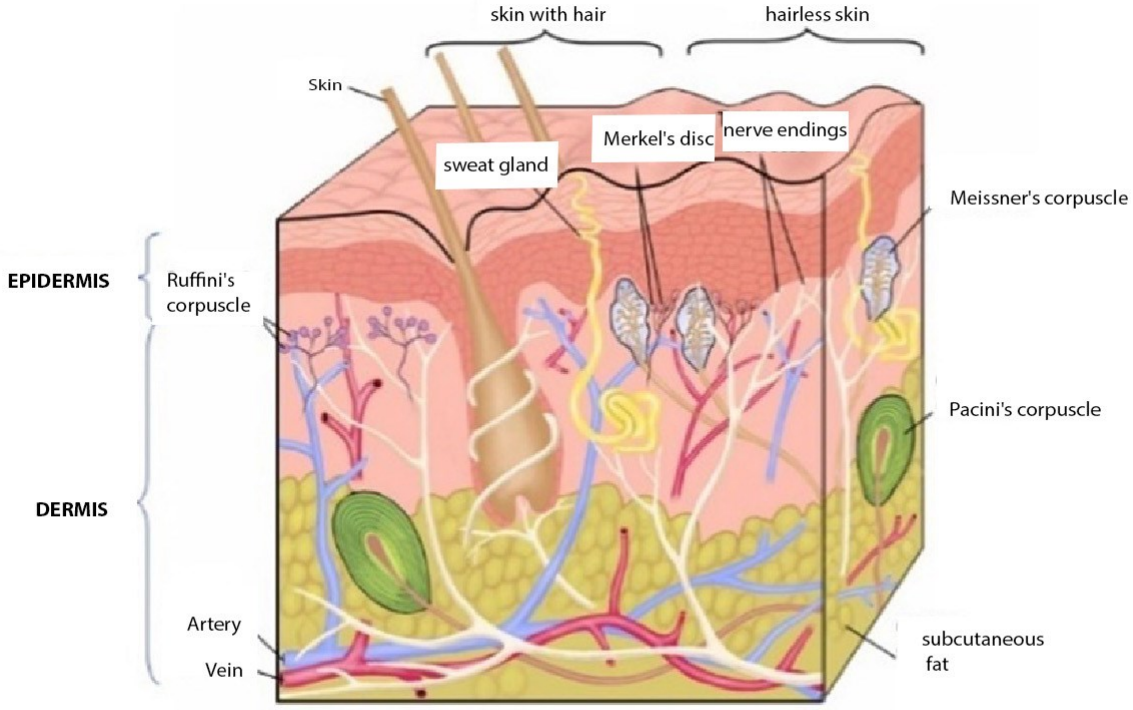
The element "*multimodule mesh*" is related to the geometry of the support surface (product, object, fabric, etc.). This indicates that it can deform for this adaptation. Our object of study, for example, has a geometric structure of a cylinder, but there are products in which the surface becomes more complex. Proctor (1990) defines eight mesh types on which patterns are built: square; brick; half-drop; diamond; triangle; ogee; hexagon; and scale (Figure 4).



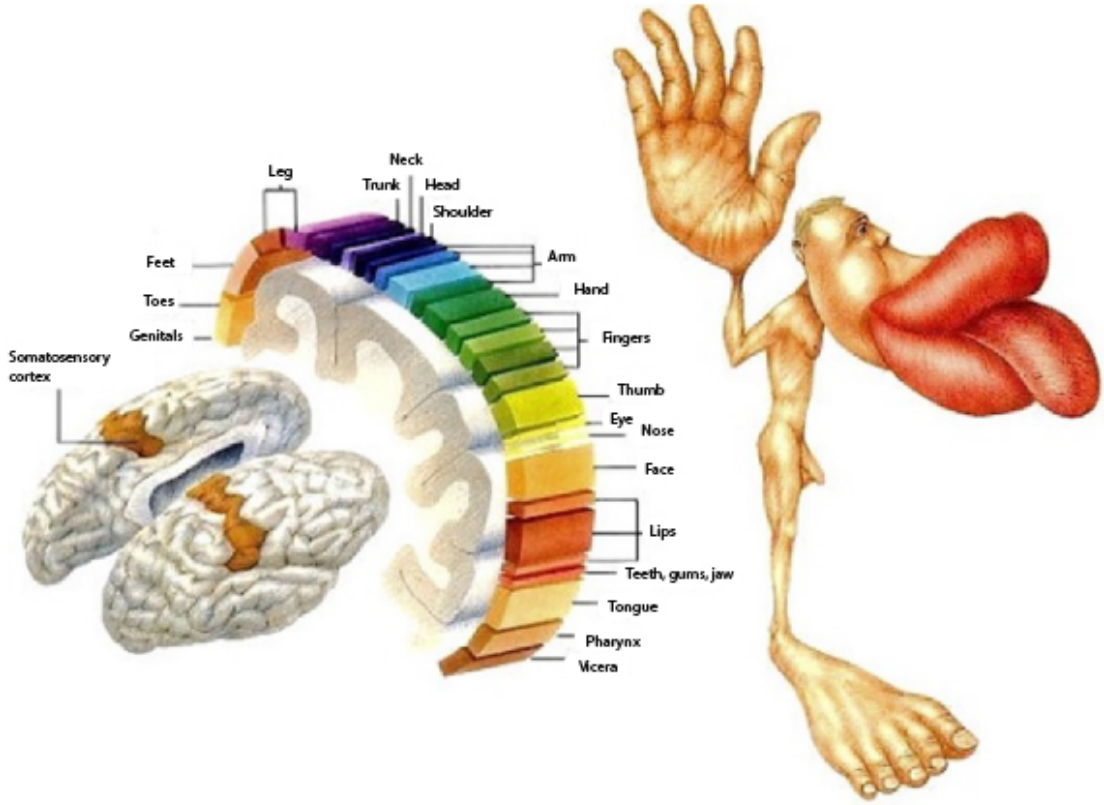
Source: prepared by the authors based on Proctor(1990,p.9)
Figure 4. Multimodule meshes.

As for tactile perception, according to Haines (2006), one is able to interpret and perceive textures through the sense of touch when provoked by more superficial cutaneous receptors — Meissner's corpuscle (vibration) and Krause and Merkel's corpuscle (pressure). In Figure 5, it is possible to visualize the location of the receptors within the skin.

Based on scientific knowledge about the sensory senses, the Penfield homunculus (Figure 6) was created, representing regions with greater density of receptors and greater discriminative capacity. Thus, hands, face, lips, and tongue are much more sensitive than trunk, buttocks, genitals, arms, legs, and feet. Reading the braille alphabet using the fingertips to grope the three-dimensional textures is an example of receptor capture. Furthermore, based on the studies by Haines (2006), it is possible to infer that, in terms of size, regions such as the palm of the hand,



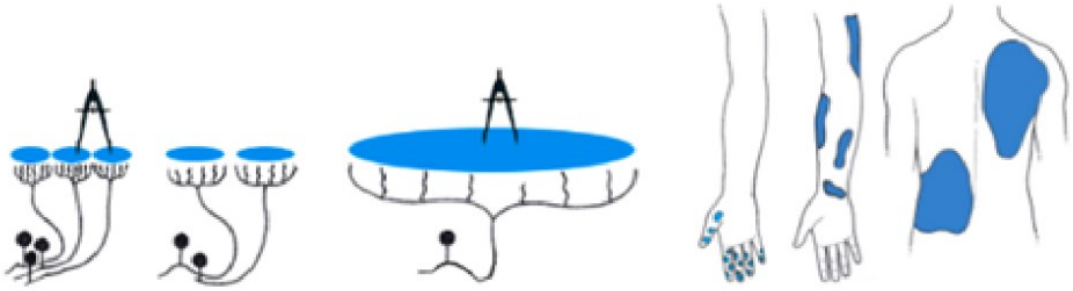
Source: IBB (s. d.).
Figure 5. Parts of the body with greater and lesser intensity of receptors.



Source: IBB (s. d.).
Figure 6. Penfield's Homunculus.

fingers, mouth, and feet recognize geometries of small sizes (3 mm) and, in areas such as the arm, back and forearm, recognition occurs with larger sizes (between 5 and 10 mm).

Figure 7 illustrates how the brain understands signals emitted by sensory receptors in different parts of the body. On the hands, there are several blue dots (sensitive points, receptors), while on the back there is a larger blue area (one receiver for a large area). According to Haines (2006), each sensory receptor presents a stimulus reception field that corresponds to its innervation area (blue ellipse corresponding to each neuron).



Source: Haines (2006).
Figure 7. Regions with receptors.

On sensory-cognitive relationships and interactions, Schifferstein (2011) infers that, from touch, people learn about materiality. He also argues that they can be affectively and emotionally suggested by the way they are touched by objects, being able to distinguish the human-object interaction in touching the object and being touched by it. For Schifferstein (2011), there are several sensory receptors scattered throughout our body that are more intense in certain parts and more spread out in others; in this way, skin sensitivity also changes. Thus, "being touched by something" means communicating with something, making the interaction relationship more intense than when "touching something". In the world of textures, one can make a parallel by imagining that, when there is direct physical contact with textures, we are touched (stronger sensory physical level) and, when using a second skin to touch something — like a textured thermal glove, for example —, the experience is that of a reduced physical-sensory level.

Despite three-dimensional textures appearing in the face of different materials, it is seen that their occurrence in this material is intense. This is because most industrial processes for obtaining plastic products (such as injected blow molding, extruded blow molding, reactive injection, casting molding, and vacuum thermoforming) can have their tools easily textured.

When investigating the possible actions of textures in the field of health, several articles were found that pointed to possible interactions with textures in various types of health problems, such as visual problems (ARAUJO; SANTOS, 2015; BONONI; DOMICIANO; MENEZES, 2016; CARDOSO ; SILVA; ZARDO, 2017;

SANCHES; BUENO; MACEDO, 2017; KASZUBA; SOBCZYNSK, 2019); Down syndrome with motor problems (GIANLORENÇO; IDE; BRACCIALLI, 2010); fascia problems and pain; in addition to being used in sports injuries and in the recovery of diseases that generate muscle atrophy and weakness due to prolonged rest (ANTONIO, 2021).

According to Niel-Asher (2005), current treatment approaches for pain and problems in the fascia include pharmacological interventions (anti-inflammatories, analgesics, narcotics, and topical creams) and non-pharmacological interventions, such as manual therapies, compression and the so-called myofascial release, which can be done with or without instruments (*e.g.* the myofascial roller).

The fascia or myofascial release method makes use of a certain pressure that must be applied to the soft tissues, with the purpose of promoting chemical reactions, stimulating mechanical, biochemical, and structural readjustments in the muscles that receive the technique. These readjustments make the muscles slide more easily over each other, promoting greater efficiency in movement patterns. Its purpose is to promote improvement in pain and relaxation of contracted muscles, increase range of motion, in addition to providing increased local circulation (CRUZ *et al*., 2017).

On the market, there are several myofascial rollers with different three-dimensional textures. Their application depends on the condition of the potential user. There are studies that prove the effectiveness of the instrument (CRUZ et al., 2017) and, according to a study by Cheatham and Stull (2019), those with a textured surface stand out for their greater efficiency, that is, those with a grid. However, even though studies have advanced, the literature on the subject is confusing, which also makes projective (designer) and consultative (users) understanding difficult. According to Shah et al. (2015), there is a certain lack of articulation in the scientific literature, despite the increase in clinical studies on muscle pain and trigger points.

METHOD

This article is multimethod. Thus, four different methodological procedures were used, followed sequentially: interviews with specialists; systematic literature review; netnography with market observation; and site and patent research.

Interviews with experts

Three professionals residing in the city of São Paulo and in the ABC region of expanded São Paulo were interviewed. The interviewees were chosen according to the criteria of experience in treatments related to the motor condition of patients and work in the areas of orthopedics or neurology. The ages are varied and the average experience with the activity is five years.

People received two documents via e-mail: the presentation text of the research topic and the informed consent. The script presents nine questions on the theme and semi-structured format. Participants did not have preliminary access to

the questions. Due to the impacts of the pandemic, the interviews were carried out remotely, through the Google Meet application. The interviews were recorded by cell phone, with the consent of the participants, and lasted an average of 30 to 40 minutes. Data analysis was based on the content analysis technique by Martin and Hanington (2012), which presents two main types of approaches: inductive and deductive. In this study, we used an inductive approach.

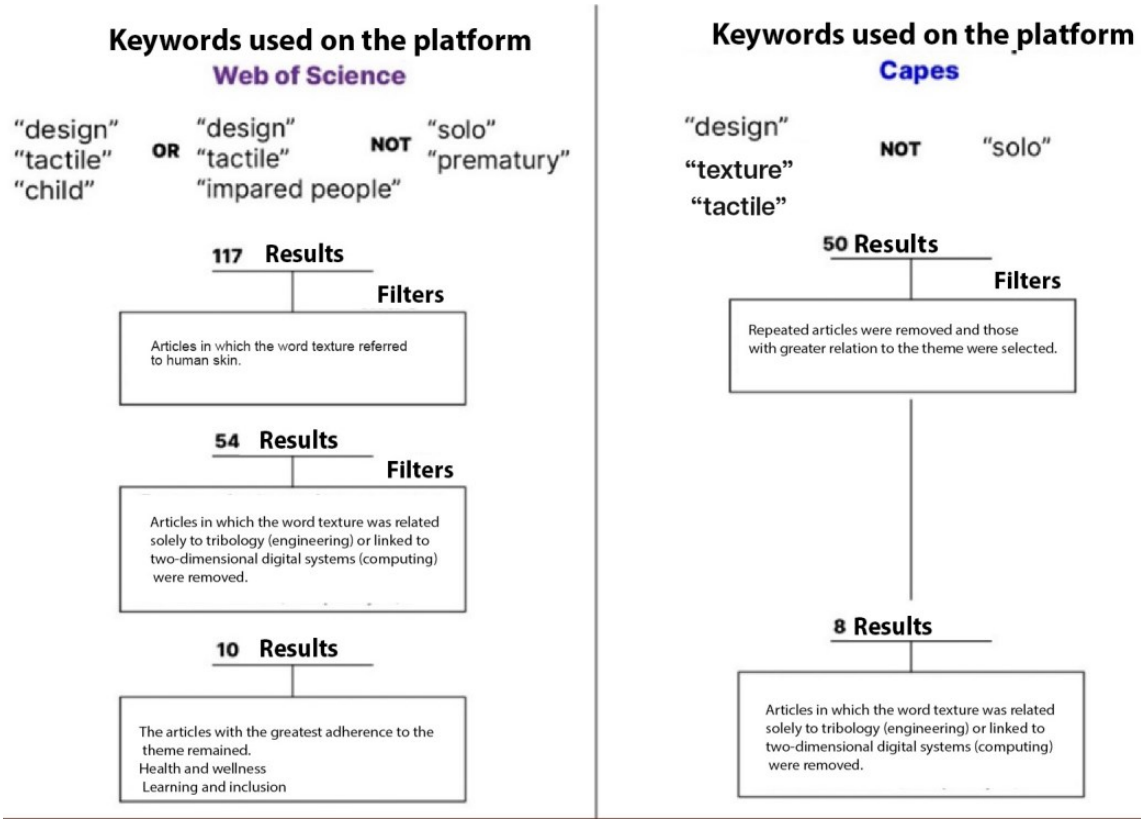
The audios of the interviews were fully transcribed. The interviewees' speeches were inserted into the Miro platform, which assists in the construction of mental maps, diagrams, and notes charts (ARAÚJO, 2019). Then, the text was divided and synthesized into a mental map that represented the chain of ideas with adherence to the general theme of the research and, from this content, categories of study emerged that guided the bibliographical research.

Literature review

After collecting data from the interviews, a systematic literature review (SLR) was carried out, identifying the main academic discussions on three-dimensional textures applied to health and an unsystematic review specifically on the field of surface design. We sought to identify the main authors, recognize relevant publications, track trends over time, and highlight gaps in the literature commented by specialists. Organized, transparent, and replicated processes were used for SLR, as recommended by the literature (LITTELL; CORCORAN; PILLAI, 2008), in three stages: review planning; conducting the review; and selection of results (TRANFIELD; DENYER; SMART, 2003).

In the first stage, based on conversations with specialists, a general exploratory literature review was carried out, focused on the two main research constructs (three-dimensional textures and health areas). This was necessary to build a knowledge base to plan the SLR about textures applied to the health field. The second stage pointed out by Tranfield, Denyer and Smart (2003) represents the review itself, initiated with data collection. For this stage, the sample of articles was obtained by consulting the databases of the Web of Science and the Coordination for the Improvement of Higher Education Personnel (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* – Capes) in August 2021. The databases were chosen due to the scope of content and ease of importing data.

The following search filters were used in the title, abstract, and keyword list on the Web of Science platform: "design", "tactile", "impaired people" AND "design", "tactile", "chield" NOT "solo", "premature". Document type: "Article". The Boolean "AND" was used to expand search results within the delimited theme. The " " symbol was essential to exclude any variation of the searched term, keeping the criteria strict enough to exclude related themes. At Capes, the same logic was used, with the keywords: "design", "textures", "tactile" NOT "solo". Figure 8 demonstrates the rest of the filters applied to the identified samples. At the end of the systematics, 18 articles were obtained in total. For data interpretation, content analysis of the selected articles was performed.



Source: prepared by the authors.
Figure 8. Sequence of filters for SLR.

Netnography

When performing the netnography technique for collection, the researcher defines which data will be verified from the object of study. According to Kozinets et al. (2010), data collection is carried out from three different types of data: archived, with a survey of existing conversations between community members; extracted, obtained from the interaction between researcher and community members; and field notes, generated from the notes taken by the researcher through observation of the community and interactions of its members. In this study, videos and comments from the YouTube community, an online platform that allows the creation and consumption of video content via streaming, were observed (LOPES, 2022). The words "myofascial rollers" and five platform filters were used to select the videos: upload date (1); type(2); sorted by (3); duration (4); and features (5). The filters were configured as: (1) "this year"; (2) "video"; (3) "relevance"; filters (4) and (5) were left open. 97 results were found. As an exclusion criterion, it was defined that the rollers evaluated for the study should have a grid and that the content should have been posted by Brazilians, resulting in 48 videos.

Kozinets et al. (2010) state that data analysis includes the process of transforming the products collected from netnographic observation into field notes. Thus, a field diary was used, an instrument adopted by professors to record their experiences, observations, thoughts, and argumentative perspectives (SOUZA, 2014).

The field diary is an instrument for recording data that allows for systematizing experiences and analyzing results. Thus, the content was annotated on the Miro platform and systematized in Excel. For interpretation, content analysis of the data observed and collected for the study was performed.

Site and patent search

With netnography, it was possible to better map the profile of the product's users and, thus, carry out market research on the product's sales sites and blogs. From the consultation of the websites, three essential pieces of information for patent research were observed: name of the product; manufacturer's name; and origin of the company. The sites selected for this research were Decathlon, Runners, and TriggerPoints.

As most of the products identified were American or European, two platforms for the search were selected: EspaceNetPatent Search (Europe) and Patent Public Search (United States). On both platforms, the expression "self-massage roller" was adopted as a filter. For the final selection, the following criteria were established: be the patent of a product; the product must have a grid; and the patent must have orthogonal views and dimensional information.

316 results were obtained on the European platform and 15 on the American one. After using the filters "GRID"AND "MASSAGE" AND "ROLLER", a total result of 10 patents was reached (adding the two platforms together). For the final analysis, three patents were selected based on the criterion of presenting more information about the products and greater expressiveness for the study. For the analysis, the technique of flattening a geometric solid was used, which is the presentation of all the shapes that constitute its surface in a plane, that is, in two dimensions (SILVA, s. d.).

According to Oliveira (n.d.), the flatness of the cylinder is the two-dimensional representation of the geometric shapes that form this solid. When flattening the cylinder, it is possible to notice that it is formed by two circles, representing its bases, and a rectangle, representing its lateral area. Height and diameter information were found in the patent documents. Following the mathematical expression for flattening the cylinder geometry, with π being a known value, it is enough to apply the values in the formula to find the desired value: $Ab = \pi r^2$.

Thus, it was possible to better understand the three-dimensional textures applied to myofascial rollers and to map the essential constitutive elements of the surface design project. From the collected data, the analysis was carried out, seeking to trace relationships between the information and create the content categories that emerged from the study.

RESULTS

The interviews helped define two macro-themes of study for the article, the first being the definition of the product and the second the health area to be explored.

The observation of products with three-dimensional textures used for light rehabilitation treatments was recommended, a situation in which the weaknesses of the users had not compromised their sensitivity and tactile perception. In some rehabilitations, such as brain injury, severe muscle injury such as paraplegia or quadriplegia, amputations, Parkinson disease, multiple sclerosis, etc., the user loses the ability to self-evaluate.

After defining the sample, the SLR data synthesis was conducted. This is the most important stage of the review, generating knowledge based on the collection and subsequent analysis of data (CROSSAN; APAYDIN, 2010). The literature was classified into four categories: learning and inclusion; communication and tactile perception; methods and health; and well-being. Figure 9 lists the author, name of the article, source, and year of publication of the selected studies on the Web of Science and Capes platforms.

As for netnography, the analysis of the material revealed that three categories of videos ("dissemination", "teaching the myofascial release technique", and "product use by users") converged to three user profiles: sports athletes (runners, soccer and volleyball players); people with habit of physical activities (bodybuilding, crossfit, pilates, and ballet); and exhibitors (stores, physiotherapists, personal trainers, etc.).

The most relevant comments posted by potential new users of the product were noted. The biggest questions from users related to the topic of this article were based on:

1. what is the difference between smooth and grid rollers; and
2. which type of texture is best applied to "my" personal limitation (of each subject).

It was observed that all questions were answered in a generic way. In most cases, they were directed to YouTube videos selling the product. The basic answer from the suppliers, in turn, is that the product has several applications and that it is recommended that smooth rollers be used by beginners and textured ones, by people who are used to it, as a kind of gradation of the myofascial release exercise.

Site and patent search

Among the patents found, the three with the most information about the object of study are presented below, respectively, from the companies MOBOT,[1] Moji,[2] and RumbleRoller[3] (Figure 10).

With the flattening technique of tactile textures of surfaces classified as cylindrical and flattenable by Cavalcanti (2017), the two-dimensional graphic representations shown in the images in Figure 11 were formed.

1 Rolo MOBOT: Available from: https://mobot.com/products/big-berthade. Cited on: Nov. 5, 2021.

2 Rolo Moji: Available from: https://www.amazon.de/-/en/Moji-Heated-Foam-Roller-Microwave/dp/B075K58QRZ. Cited on: Nov. 10, 2021.

3 Rolo RumbleRoller. Available from: https://www.amazon.com/RumbleRoller-Original-Textured-Therapist-Technology/dp/B006QMK1FK. Cited on: Nov. 2, 2021.

Web of Science					Themes
	Authors	Title of the article	Title of the source	Year of publication	
1	Schiatti, L.; Cappagli, G.; Martolini, C.; Maviglia, A.; Signorini, S.; Gori, M.; Crepaldi, M.	A Novel Wearable and Wireless Device to Investigate Perception in Interactive Scenarios	2020 42nd Annual International Conferences of the IEEE Engineering in Medicine and Biology Society	2020	Methods
2	Kaszuba, J.; Sobczynska, K.	The importance of colour and texture in the design of residential interiors, with a particular focus on kitchens for the visually impaired people	Architecture Civil Engineering Environment	2019	Learning and inclusion
3	Oishi, Y.; Imamura, T.; Shimomura, T.; Suzuki, K.	Visual texture agnosia in dementia with Lewy bodies and Alzheimer's disease	Cortex	2018	Health and wellness
4	Ballardini, G.; Carlini, G.; Giannoni, P.; Scheidt, R. A.; Nisky, I.; Casadio, M.	Tactile-STAR: A Novel Tactile Stimulator and Recorder System for Evaluating and Improving Tactile Perception	Frontiers in Neurorobotics	2018	Communication and tactile perception
5	Vaz, R.; Fernandes, P. O.; Veiga, A. C. R.	Designing an Interactive Exhibitor for Assisting Blind and Visually Impaired Visitors in Tactile Exploration of Original Museum Pieces	CENTERIS 2018 - International Conference on ENTERprise Information Systems / ProjMAN 2018 — International Conference on Project MANagement / HCist 2018 — Iinternational Conference on Health and Social Cara Information Systems and Technologies	2018	Learning and inclusion
6	Zeng, T.; Chen, W.; Li, N.; He, L. Huang, L.	Haptic Perception of Macro Texture	Haptic Interaction: Science, Engineering and Design	2018	Communication and tactile perception
7	Liu, J.; Lin, Z.; Lughofer, E.; Zeng, X.	Aesthetic perception of visual textures: a holistic exploration using texture analysis, psychological experiment, and perception modeling	Uncertainty Modelling in Knowledge Engineering and Decision Making	2016	Communication and tactile perception

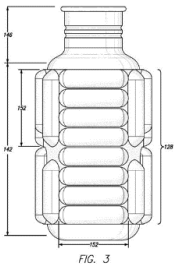
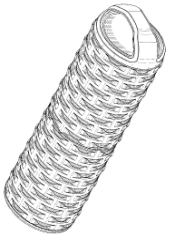
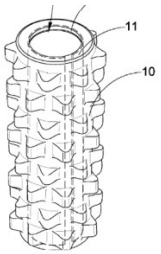
Figure 9. Continue...

Figure 9. Continuation.

Web of Science					Themes
	Authors	Title of the article	Title of the source	Year of publication	
8	M, Min-Yuan; L., Ya-Hsueh	Children with autism and composite tactile-visual toys during parent-child interaction	Interaction Studies	2014	Health and wellness
9	Okamoto, S.; Nagano, H.; Yamada, Y.	Psychophysical Dimensions of Tactile Perception of Textures	IEEE Transactions on Haptics	2013	Communication and tactile perception
10	Zuo, H.	The selection of materials to match human sensory adaptation and aesthetic expectation in industrial design	METU Journal of the Faculty of Architecture	2010	Communication and tactile perception
Capes					
11	Cunha, P. V.; Fonseca, L. P.	Signaling system accessible in Braille	InfoDesign : Brazilian journal of information design / Directory of Open Access Journals (DOAJ)	2011	Communication and tactile perception
12	Lima, V. B. R.; Maia, F. N.; Mitre, R. M. A.	The professional's perception of the toy in an intermediary unit of a medium and high complexity hospital	Cadernos de Terapia Ocupacional da UFSCar / Directory of Open Access Journals (DOAJ)	2015	Health and wellness
13	Araujo, M. D. X.; Santos, D. M.	Fotografia tátil: desenvolvimento de modelos táteis a partir de fotografias com a utilização de impressora	InfoDesign: Brazilian Journal of Information Design / Directory of Open Access Journals (DOAJ)	2015	Communication and tactile perception
14	Dischinger, M. C. T.; Kindlein Jr., W.	Metodologia de análise da percepção tátil em diferentes classes de materiais e texturas para aplicação no design de produtos	Design e Tecnologia / Directory of Open Access Journals (DOAJ)	2010	Methods
15	Bononi, J.; Domiciano, C. L. C.; Menezes, M. S.	A criança com deficiência visual: a contribuição do vestuário e do Design de Superfície na percepção tátil infantil	Alma/SFX Local Collection Directory of Open Access Journals (DOAJ)	2016	Communication and tactile perception
16	Gianlorenço, A. C. L.; Ide, D.; Braccialli, L. M. P.	Influência da textura na preensão de indivíduos com Síndrome de Down	Fisioterapia em movimento	2010	Health and wellness

Source: prepared by the authors.

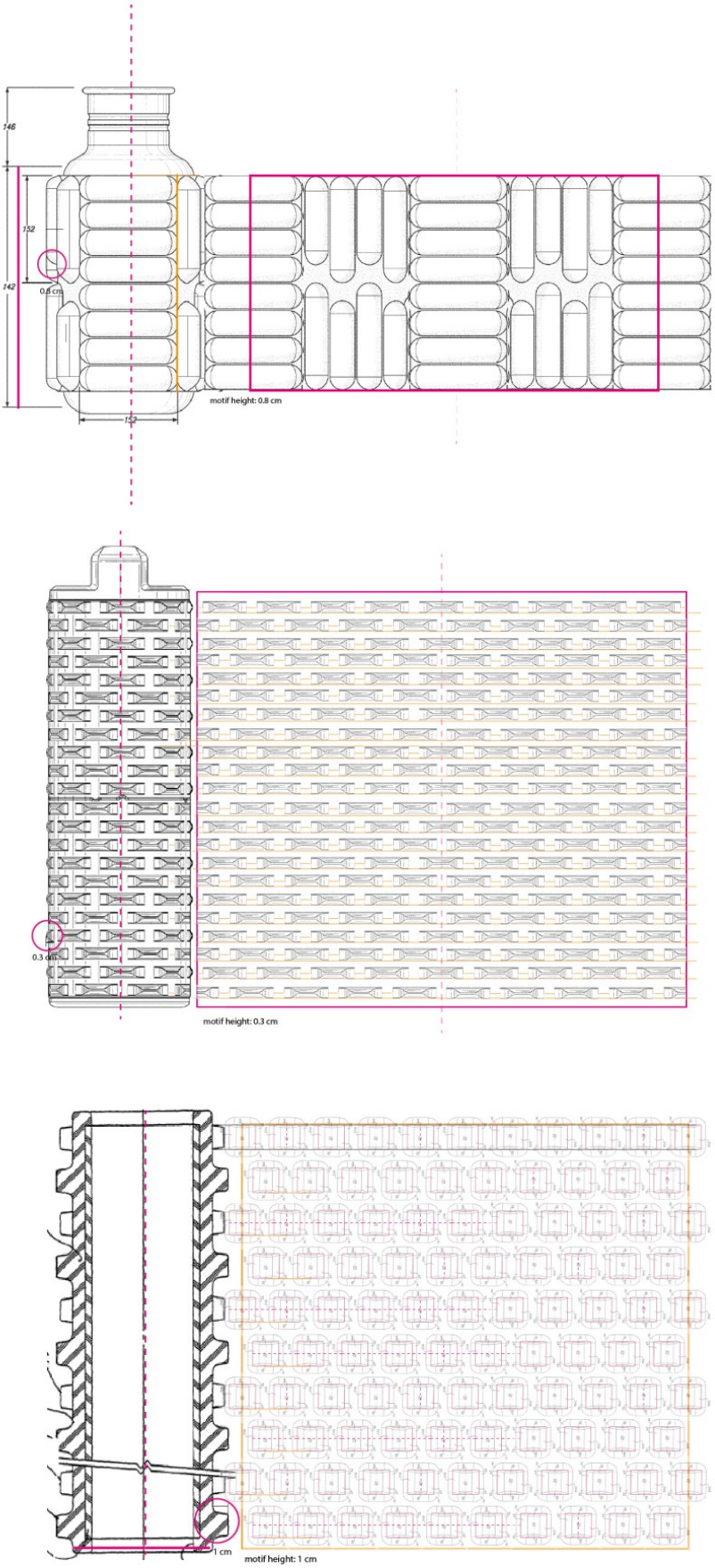
Figure 9. List of articles selected in the systematic review of the literature.

PRODUCTS	INFORMATION	PATENT
	Company: MOBOT Material: Non-toxic high-density EVA and recycled aluminum Dimensions: 23 x 7.5 cm in diameter Weight: 298 g Supported weight: 160 kg **Patent:** TAYLOR, L. Self- massage roller and bottle Applicant: TAYLOR, L. Application: Sep. 9, 2014. Allowance: Apr. 21, 2021. Available from: https://mobot.com/products/big-berthade. Cited on: Nov. 5, 2021.	
	Company: Moji Material: Foam Dimensions: 33 x 10 cm in diameter Supported weight: 138, kg **Patent:** VICTOR, V.; CAVADA, W.; CARHART, C.; SCHWARTZ, W. Massage roller Applicant: VICTOR, V.; CAVADA, W.; CARHART, C.; SCHWARTZ, W. 29/586, 888. Application: Dec. 7, 2016. Allowance: Nov. 6, 2018. Available from: https://www.amazon.de/-/en/Moji-Heated-Foam-Roller-Microwave/dp/B075K58QRZ. Cited on: Jan. 15, 2022	
	Company: RumbleRoller Material: high density EVA Dimensions: 33 x 12 cm in diameter Weight: 400 g **Patent:** CHINCHIN, L. Massage roller. Applicant: CHINCHIN, L. US 2017/0216133 A1. Application: Feb. 1, 2017. Allowance: Aug. 3, 2017. Available from: https://www.amazon.com/RumbleRoller-Original-Textured-Therapist-Technology/dp/B006QMK1FK. Cited on: Mar. 9, 2022.	

Source: prepared by the authors.
Figure 10. Selected myofascial roller models.

Figure 11 demonstrates the three-dimensional texture of the myofascial rollers in a flattened manner. Thus, it is possible to analyze the desired elements, correlating them with information from the literature used. The elements that we sought to identify were: aspects of form (graphic geometric motifs); repeating modular pattern (minimum repeatable units constituting the textured surface set); arrangement (scattering on the surface); and number of repetitions within the analyzed area (density).

Next, the analysis of the contents analyzed is presented and divided into categories for a better understanding of the information.



Source: prepared by the authors.
Figure 11. Flat pattern of selected roller textures.

RESULTS ANALYSIS AND DISCUSSION

Four categories of information emerged from the surveyed and systematized content:

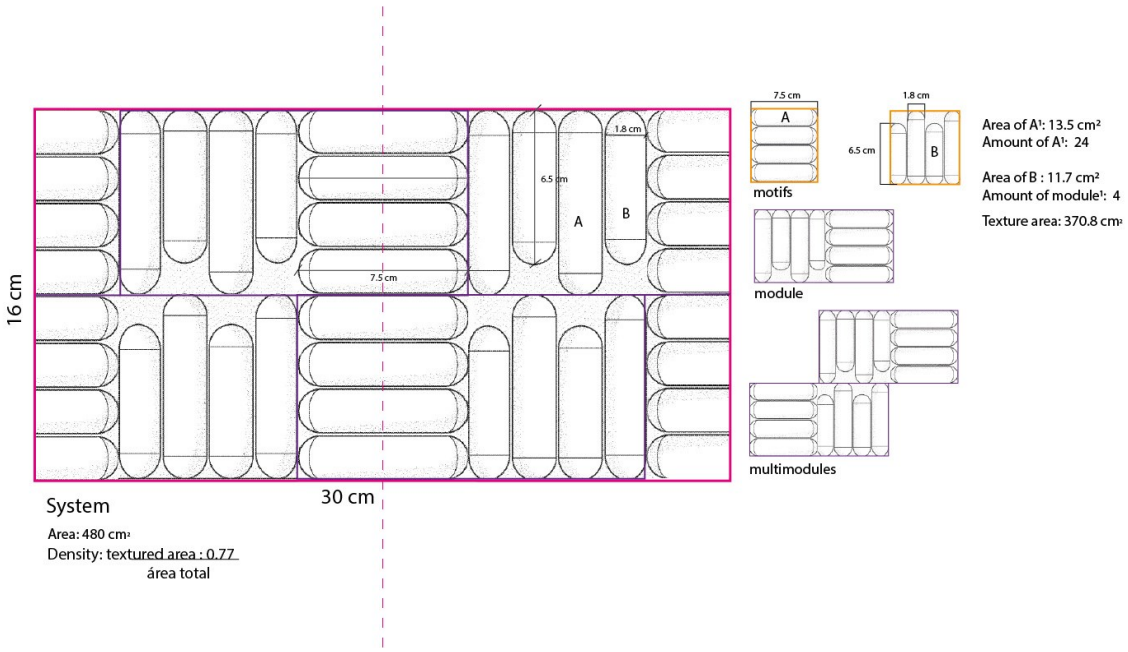
1. "Identification of surface design elements", describing how these elements behave in the selected products;
2. "Profile of product users", pointing out habits and doubts of people who use the object of study;
3. "Ergonomics design elements to benefit the surface design project", identifying objective aspects of the product design that emerged from the study; and
4. "Aspects of experience with the product", analyzing the subjective aspects that emerged from the analysis of user interaction (via netnography) with the product.

Identification of surface design elements

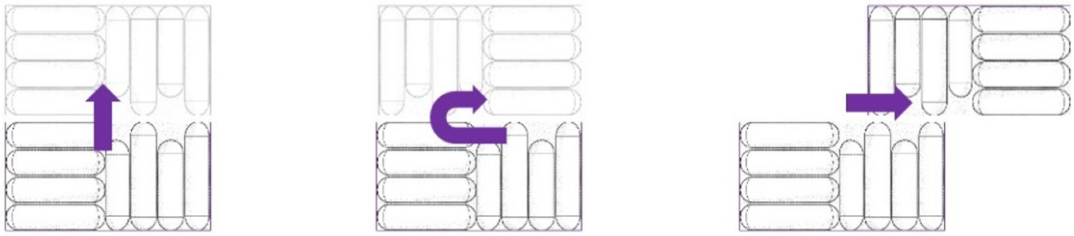
Based on the fundamental elements of the development of a surface design project (SCHWARTZ, 2008; PROCTOR, 1990), the plans made in the myofascial rollers were analyzed based on the survey of patents.

The MOBOT myofascial roller features two graphic motifs and, therefore, its module is made up of these two elements. It was verified the existence of two possibilities of fitting using the system of symmetries: reflection and rotation.

When looking at Figure 12, to build the texture, there is first a reflection upward and then to the side. In this way, one can consider the repetition pattern as not horizontally aligned, remembering that non-aligned systems are those in which the model is displaced in one direction. The mesh structure can be built in two ways and the format used is called brick or square (PROCTOR, 1990) (Figure 13).

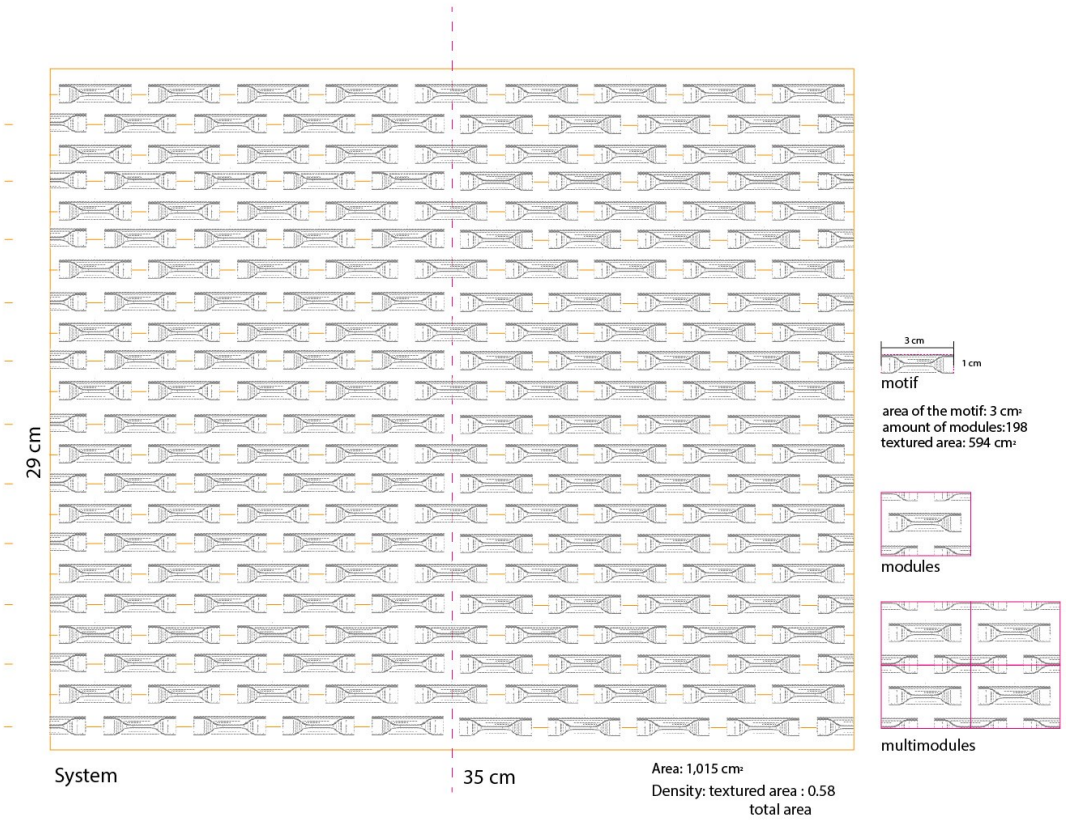


Source: prepared by the authors.
Figure 12. MOBOT Myofascial Roller.



Source: prepared by the authors.
Figure 13. Structure of modules and symmetries of product 1.

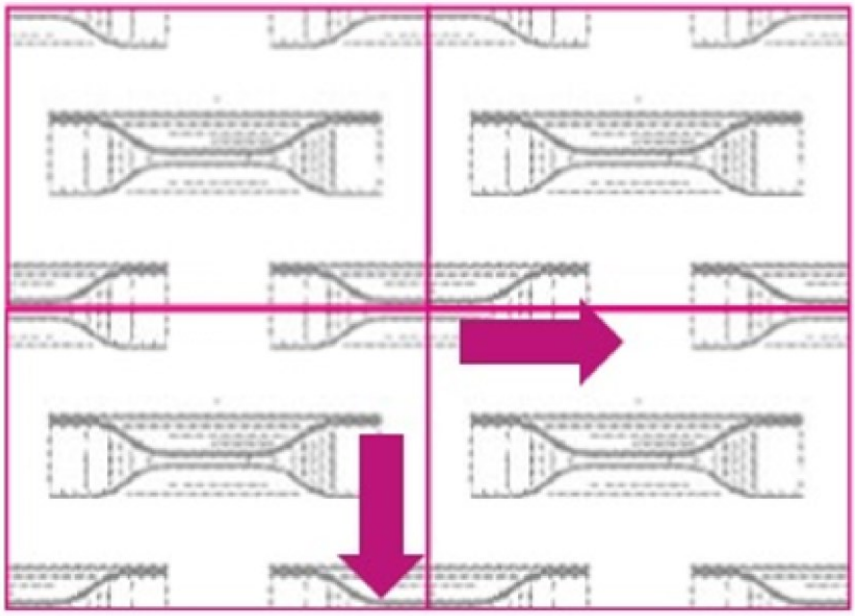
According to Schwartz (2008), it is possible to have one or more motifs in a single surface design project. The Moji Roller only contains one motif; as it is more elongated in the horizontal direction, the system, in general, conveys a perception of being the densest of volumes when compared to the other two products (Figure 14).



Source: prepared by the authors.
Figure 14. Structure of modules and symmetries of product 2.

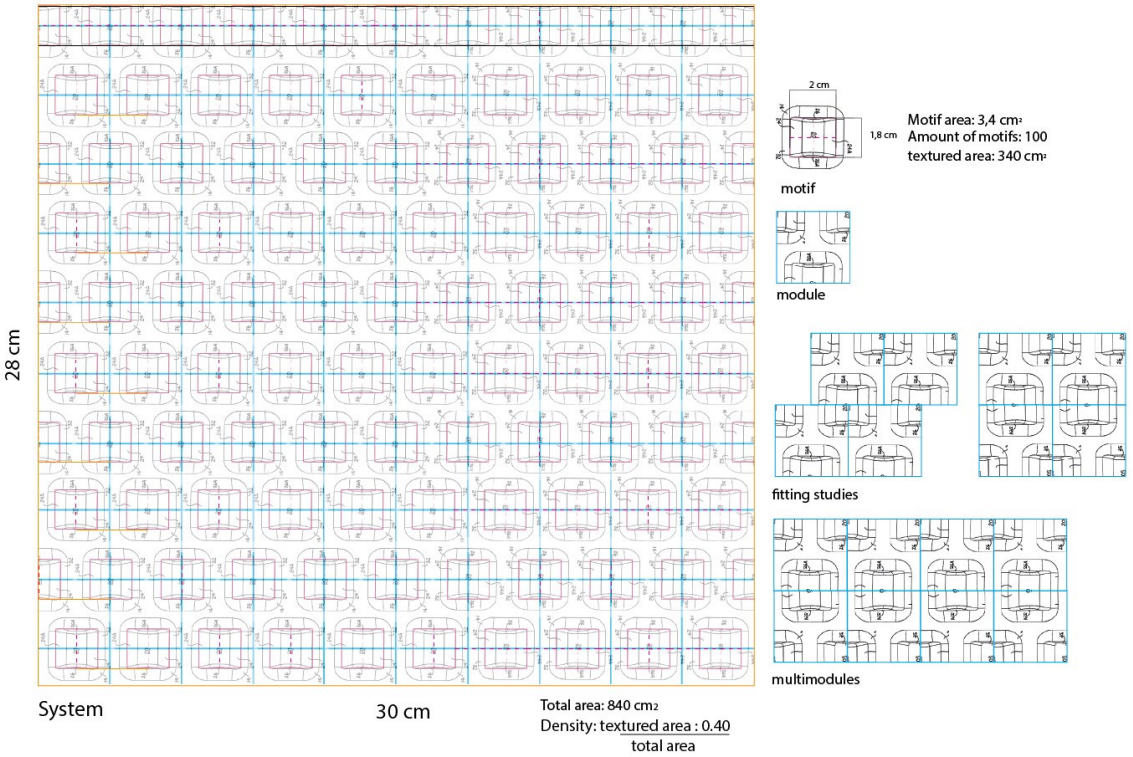
The module has the strategy of presenting a centralized motif and, at the ends, it brings four portions of ¼ of the module in each one, allowing the perfect formation of the system, as represented by the flattening of the surface of the myofascial roller.

The type of symmetry used can be seen as linear, as it is possible to add more modules both to the sides and up or down (Figure 15).



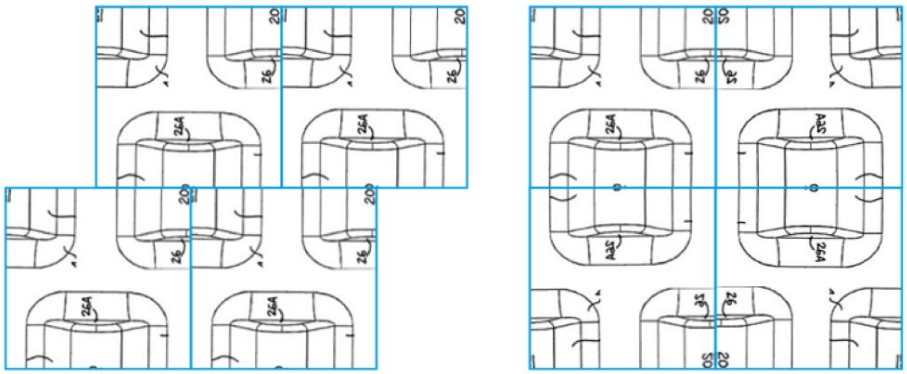
Source: prepared by the authors.
Figure 15. Structure of modules and symmetries of product 2.

The RumbleRoller also features a unique motif in the graphics system. The strategy used to create the module was to consider half of the central module (close to the base) and ¼ of the two other modules (upper right and upper left), as shown in Figure 16.



Source: prepared by the authors.
Figure 16. Structure of modules and symmetries of product 3.

For the creation of the mesh, two types of symmetry were identified: the first, of the brick type, with the repetition not horizontally aligned (displaced in the horizontal direction with the percentage of 50%); and the symmetry by reflection in the two axes. The complete system is represented by flattening the surface of the myofascial roller, as shown in Figure 17.



Source: prepared by the authors.
Figure 17. Structure of modules and symmetries of product 3.

It is important to note that the MOBOT roller has a higher textured area density, while the Moji and RumbleRoller rollers have lower densities.

Given the above, it is clear that the fundamental elements for the construction of a surface design project were applied to the rollers studied. It is also known that, from the definition of the multimodule, there is rapport. In this sense, the visual elements correctly fulfill the requirements. We still need to better explore the three-dimensional aspects of texture and how they relate to users and generate added value.

User profile, desires, and doubts

Based on interviews with physiotherapy professionals, the research was directed toward light rehabilitations, considered to be more adequate to the object of investigation. This hypothesis was reinforced by the data survey in netnography. The user profile includes people who practice physical activities, from the most resistive — such as bodybuilding — to relaxation practices and light rehabilitation — such as yoga and pilates. Another important point concerns the effectiveness of the product to prevent and treat muscle pain.

In this sense, it is possible to state that the use of the myofascial roller only for rehabilitation would be incomplete information, as the product strongly helps in maintaining a healthy life.

Most questions concern the different textures available and the best indications for each individual problem. The lack of this information on the products indicates that consulting a health professional is the only safe alternative for choosing the roller or even that the new products should contain more adequate guidance manuals for users.

Design elements of ergonomics

Ergonomics deals with the best adaptation of the product, system or machine to the human anatomy and the task/activity to be performed. Important requirements from the point of view of ergonomics in three-dimensional textures are: tactile interaction; usability; task facilitation; cleaning; and comfort (GOMES, 2003). Knowing the importance of these factors in product development, we tried to consider them in the three myofascial rollers.

Tactile interaction

From the tactile interaction with the product through the skin, it is possible to observe that the understanding of graphic elements (motifs) from touch (tactile readability) applies to the first and third products. According to Haines (2006), thanks to the receptors, although not with all the detailed information, elements with dimensions between 5 and 10 mm can be perceived by sensorial receptors. Thus, it is possible that the user can recognize the presence of two different forms of motifs in the textures.

Usability

The investigated products have different depths, with approximate measurements of: 8 mm (MOBOT roller), 3 mm (Moji roller), and 10 mm (RumbleRoller).

In this sense, it is understood that the MOBOT roller, due to its graphic motifs and intermediate depth, can provide comfort to more specific regions of the body, however, large areas should be avoided due to the small size of the product as a whole, according to the evaluation on the Runners page (HONDORP; NEITZ, 2022, n. p.), specialized in running, aimed at professionals and enthusiasts: "[...] it has a small length that makes it effective for targeted release of trigger points in specific areas. But it wouldn't replace our top domestic rollers, which are especially good for larger areas like the back [...]".

RumbleRoller is one of the most praised by runners and performance athletes. It hits spots others cannot and brings relief to users. In the Dicks Sporting Goods community, American website, comments were found such as the one by CURLIEGIRLIE74 (DICK'S SPORTING GOODS, 2015, n. p.): "FINALLY some relief! I have extremely tight gluteus maximus, gluteus minimus, and piriformis muscles and not even trigger point shots have been able to loosen them. So I went out and bought this roller yesterday and finally found relief [...]".

As for quality, the Moji product is highly praised for its ability to be heated, with no major notes on the effectiveness of the three-dimensional texture in relation to myofascial release. On the American website of Gomoji (2019, n. p.) there are several reports about its thermal quality, such as JEFF J: "This is amazing. Almost like a hot stone massage. Seems pretty good [...]. It gets easier with use. Be aware... this roller is very firm [...]".

Cleanliness, task facilitation, and comfort

In the first product (following the sequence of Figure 10), it was observed that the three-dimensional textures are well rounded (without corners) and with threads

(large radii of surface junction) that prevent the accumulation of dirt. RumbleRoller features a seamless surface with a larger three-dimensional texture, which helps keep the product hygienic.

The Moji roller has very shallow three-dimensional textures, which facilitates everyday cleaning. Moji and RumbleRoller are made up of just one material; the second does not feature parts division, unlike the MOBOT roller, which is made up of two different materials, in addition to being bicomponent. In this sense, it can be inferred that RumbleRoller is easier to clean compared to MOBOT.

Taking the online journal Padel World Press (2017) as a reference, because they are produced in EVA, the MOBOT and RumbleRoller rollers absorb less vibrations, with a feeling of greater difficulty due to the need to apply greater force to the activity. However, they are more durable. The "foam" material absorbs vibrations better and facilitates the task, as the control over the product, by reducing the force applied in the movement, is greater. However, the material has less durability when compared to EVA.

Aspects of experience with the product

According to Schifferstein and Hekkert (2011), touch is the basis for all knowledge of the material world. Interactions take place through the whole body, not just the hands. In addition, people need touch to understand the world, as identifying objects by touch is different from knowing them by deduction. Along the way, a path is opened for communication and tactile interaction with objects, creating two relationships, in which the object is touched by the user and in which the user is touched by the object. A communication and readability channel is established with the product.

We can think, then, sentimentally and subjectively about this idea presented by the author (SCHIFFERSTEIN; HEKKERT, 2011). However, there are also physical aspects of this relationship, as human skin allows tactile recognition of objects in different ways, by their substance (of which it is made), hardness, plasticity, temperature, weight, structure, moving or fixed parts and, of course, by its surface, where are the textures and constitutive units that we sought to observe.

Analyzing the appearance of the three-dimensional textures applied to the three objects and the interaction relationships with them, it can be inferred that, in product 2, the existing relationship is that the object is touched by the user. This is because, as mentioned, the larger regions of the body, such as the back, have less sensitivity and ability to recognize geometries. Thus, reduced texture thickness and size are not fully identified by users (SCHIFFERSTEIN, 2011). In products 1 and 3, the relationship is that the user is touched by the object, as the size of the textures and their depth allow interpretation by the user and, possibly, even the recognition of their graphic motifs (minimum constitutive unit of texture) by tact. The empirical experimentation of this statement would allow a productive future study within the theme.

CONCLUSION

This article sought to map constitutive characteristics of three-dimensional textures applied to the surfaces of myofascial rollers, used in light rehabilitation, through visual graphic composition and mainly regarding the impact of these configurations on functional and interactive qualities with their users.

It is concluded that, in many aspects, coherence relations emerged between what is presented in theory and what is proposed in the products. The theory about the fundamental elements for the construction of a surface design project was identified, as well as its expansion. The application of significant three-dimensional qualities to the textures had impacts on the functionality and quality of use of the product, which can be observed mainly by touch, not restricted to the touch by the hands, but by the whole body. The value of the product project developed depends on factors such as aesthetic, functional and relational quality (communication and interaction) in relation to its potential use.

It was noticed that, for the development of new products, more specifically myofascial rollers, it is necessary to survey several preliminary parameters that go beyond the intrinsic aspects for the graphic construction of the two-dimensional texture, contemplating ergonomic, dimensional aspects (depth of the graphic motifs and density), interaction, material and use, not to mention the influence of semantic aspects, which were not addressed here. In addition, it was noticed that the characteristics of the three-dimensional textures used directly interfere with the health and well-being of the identified target audience, collaborating for light rehabilitation and also for the prevention of disabilities.

Given the above, this experimental study, which is still exploratory, sought to identify some preliminary clues capable of guiding the practice of the surface designer, based on the recognition of the area of health and well-being as an interdisciplinary point of exploration. It was observed that it was possible, effectively, to align multiple interests, both in the field of product design and in the orientation of users and manufacturers and in the mapping of some preliminary parameters to be observed in the development of new products.

It is believed that the information raised and treated here can contribute as a reference for future research and for the performance of surface designers.

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Conflict of interests: nothing to declare – **Financial support:** none.
Authors' contributions: Araújo, C. C.: Conceptualization, Investigation, Data Curation, Methodology and Writing. Sousa, C. S. M.: Conceptualization, Data Curation, Formal analysis, Methodology, Supervision, Validation, Writing – Review & Editing.

Article

https://doi.org/10.22398/2525-2828.82336-55

Design management applied to the assistive technology service provided by occupational therapists: a case study

Gestão de design aplicada à prestação de serviço de tecnologia assistiva realizada por terapeutas ocupacionais: estudo de caso

Daniela Amaral[I], Giselle Merino[II], Ana Karina Cabral[I]

ABSTRACT

This article aimed to apply Design Management in occupational therapists' provision of Assistive Technology services. It is an applied, qualitative, and exploratory-descriptive study. The technical procedures were divided as follows: Moment 1 — Theoretical Framework, consisting of bibliographic research that addressed the central topics of Design Management, Assistive Technology Service, and Occupational Therapy; and Moment 2 — Case Study, carried out through applied research that discussed the provision of Assistive Technology service in the academic environment. The collection techniques employed were systematic observation, document analysis, and focus group. We concluded that the applied Design Management contributed to an accurate diagnosis, which pointed out weaknesses in the planning of joint actions, communication and systematization of processes; and potentialities in the performance of the interdisciplinary team, with the sharing of knowledge and technologies, strengthening the actions of the Assistive Technology service.

Keywords: Design management. Assistive technology service. Occupational therapy.

RESUMO

Este artigo teve como objetivo aplicar a gestão de design *na prestação de serviço em tecnologia assistiva realizada por terapeutas ocupacionais. Trata-se de um estudo aplicado, qualitativo e exploratório-descritivo. Os procedimentos técnicos dividiram-se em dois momentos: momento 1) referencial teórico, realizado por meio de uma pesquisa bibliográfica que abordou os temas centrais gestão de* design*, serviço de tecnologia assistiva e terapia ocupacional; e momento 2) estudo de caso, mediante uma pesquisa aplicada que discorreu sobre a prestação de serviço em tecnologia assistiva acontecendo em âmbito acadêmico. As técnicas de coleta utilizadas foram observações sistemáticas, análise documental e grupo focal. Concluiu-se que a gestão de* design *aplicada contribuiu para um diagnóstico preciso que apontou fragilidades no planejamento das ações conjuntas, na comunicação e sistematização dos processos e potencialidades na atuação da equipe interdisciplinar, com o compartilhamento de saberes e tecnologias, fortalecendo as ações do serviço de tecnologia assistiva .*

Palavras-chave: *Gestão de* design*. Tecnologia assistiva. Terapia ocupacional.*

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Received on: 01/26/2023. **Accepted on:** 03/30/2023.

INTRODUCTION

Design is a process of solving problems by intuitive and systematic thinking and from a person-centered perspective (BEST, 2012). The field of design is not limited to the product, presenting a broader perspective of the entire system, which includes the work processes and the relationships between the involved actors, characterizing a management process (MOZOTA; KLOPSCH; COSTA, 2011; BEST, 2012). In this context, there is the design management approach, which is concerned with the good relationship, interaction, and quality between people, project, processes, and procedures (BEST, 2012). The intention is to contribute to organizations and positively impact the results of projects (MOZOTA, 2011). Thus, the application of design management can happen in several areas of knowledge such as health.

Design allows a possibility to offer innovation and well-being to healthcare services, strengthen interdisciplinarity, and welcome the users (TEAL; FRENCH, 2016), thus playing an important role in the services (JONES, 2013). The health area, despite showing many scientific and technological advances, faces challenges regarding the quality of the service and the care provided to patients (ANDALEEB, 2001). These challenges are, likewise, a reality in the area of assistive technology (AT), which faces difficulties in the functioning and management of interdisciplinary teams (PICHLER *et al*., 2016), as well as in the organization, standardization, and systematization of service provision (ARTHANAT; ELSAESSER; BAUER, 2017; WITTE *et al*., 2018; MACLACHLAN; SCHERER, 2018).

AT is defined as

> field of knowledge, of interdisciplinary nature, which encompasses products, resources, methodologies, strategies, practices, and services aimed at promoting functionality related to the activity and participation of people with disabilities, impairments, or restricted mobility, aiming at autonomy, independence, quality of life, and social inclusion (BRASIL, 2019, p. 38, free translation).

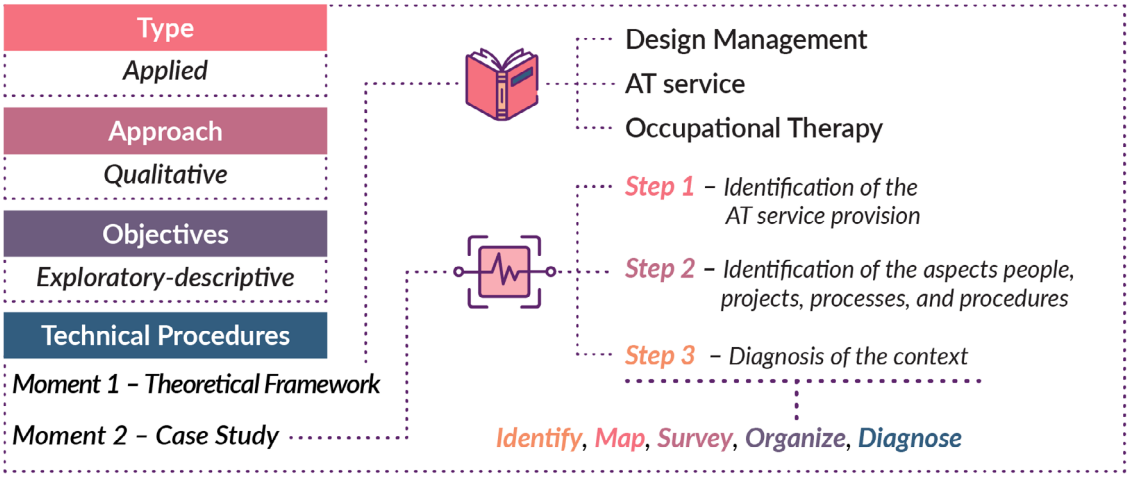
The provision of AT service involves the entire process of indication, prescription, and follow-up that occurs between the professional and the user (WITTE *et al*., 2018). The quality performance of this service is considered paramount to expand access to AT and minimize product abandonment, consisting in a global issue in the area of AT (WHO, 2018; WITTE *et al*., 2018; BRANDT; HANSEN; CHRISTENSEN, 2020). Occupational therapists are a reference for the performance in the AT service provision; however, they report challenges such as lack of professional training, organization, and systematization of processes and standardization (ALVES, 2013; IGBO, 2016; ALVAREZ *et al*., 2019).

Considering the aforementioned challenges, the design management approach is indicated for application in the context of AT services, as it provides a comprehensive perspective of all systems and processes and has skills to coordinate products, people, and services (MARTINS; MERINO, 2011); it is able to materialize processes with specific tools and methodologies (MOZOTA, 2011); it focuses on human beings, considering the satisfaction and well-being of users and all involved individuals (BEST, 2012); and it emphasizes the context (MOZOTA, 2011; BEST, 2012).

We consider as problems the demand for management, articulation, and organization of the AT service provision and the need for support to occupational therapists who work in this practice. Therefore, the purpose of this research was the application of design management in the provision of AT service performed by occupational therapists in the academic environment, seeking to diagnose the context. Its importance lies in the opportunity to expand the knowledge of experiences and practical strategies in the application of design management in health services and because it is a starting point for studies focused on supporting occupational therapists who work in the provision of AT services.

METHODOLOGICAL PROCEDURES

This is an applied research, with a qualitative approach, and with an exploratory-descriptive objective, whose proposals are the knowledge and description of a specific context (MARCONI; LAKATOS, 2021). The technical procedures (Figure 1) were carried out in two moments: theoretical framework and case study.



AT: assistive technology.
Figure 1. General characterization of the research.

Moment 1: theoretical framework

The theoretical framework was carried out by a bibliographic research on the central topics of the research: design management, AT service, and occupational therapy.

Moment 2: case study

The case study aims at the investigation of a phenomenon happening in a real context (GIL, 2007). In the present research, the considered case was the provision of AT services that took place in the project entitled *Atenção à saúde de pessoas com doenças reumatológicas: desenvolvimento de produtos assistivos e formação de recursos humanos em tecnologia assistiva* ("Health care of people with rheumatic diseases: development of assistive products and training in human resources in

assistive technology")[1]. Design management was the approach applied to guide the organization, analysis, and diagnosis of the context (MERINO; MERINO, 2016), by the identification of the people, projects, processes, and procedures involved and the understanding of their relationships (BEST, 2012). The successful management of these elements is relevant to achieve the expected results (BEST, 2012). Moment 2 took place in three steps:

1. Identification of the provision of AT service, as a starting point for understanding the flow and identification of the stages performed in the context of the project. The employed data collection techniques were systematic observation and field analysis; and documentary analysis, via project reports and records;
2. Identification of the aspects "people," "projects," "processes," and "procedures" as part of the flow of AT service provision, seeking to understand the profile and activities of each person and the flows and coordination of the processes intended by the project. To this end, documentary and field analysis were performed;
3. Diagnosis of the context by the identification of strengths and weaknesses in the process of providing AT service and in the performance of the occupational therapist. The authors were based on the overview of the design management process, considering the following script: identify, map, survey, organize, diagnose, and propose actions (MERINO; MERINO, 2016). The employed technique was a focus group conducted with the project team.

Regarding the ethical aspects, the research was approved by the Ethics Committee on Research with Human Beings of Universidade Federal de Santa Catarina, according to Opinion No. 4972636 and Certificate of Presentation of Ethical Appreciation No. 51462021800000121.

THEORETICAL FRAMEWORK: MOMENT 1

Design management

Design comprises a problem-solving process, with innovative strategies that encompass not only products, but also systems and services (BEST, 2012; WDO, 2021). The focus on the user is an inherent characteristic, and methods and techniques that allow involvement, interaction, and empathy among all those involved in the project are used (GIACOMIN, 2012).

Design arose from the demands of the Industrial Revolution in Europe, focusing on large-scale production and consumption. The historical global changes have transformed the premises of the profession, which has broadened the concern beyond the product, including the perspective of the processes and the relationship between people (BEST, 2010; 2012). In recent decades, movements — such as design and technology,

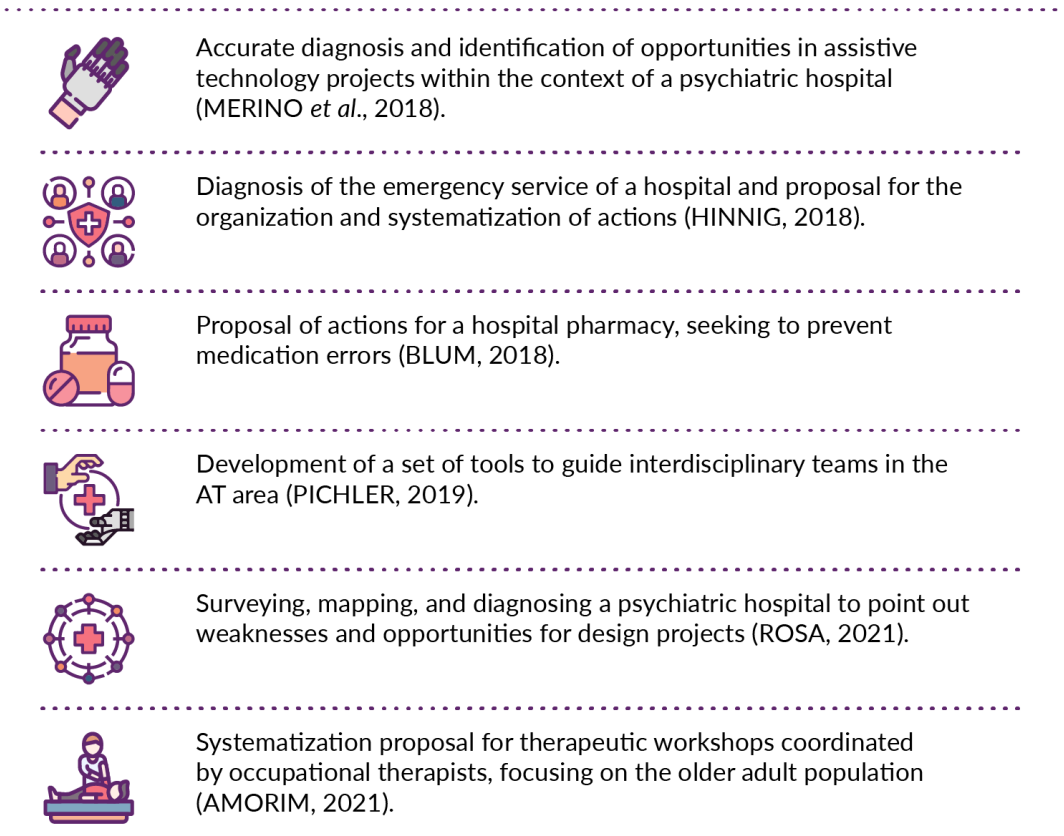
1 The project was approved by the Notice of Call for Submissions of the Pernambuco Research Foundation (FACEPE) No. 10/2017, linked to the Research Program for the Brazilian Unified Health System: Shared Management in Health PPSUS – Pernambuco (CNPq/MS/SES/FACEPE), in force from December 2018 to December 2021, under the coordination of Professor PhD. Danielle Carneiro Sanguinetti.

sustainable design, and human-centered design — have gained strength, demonstrating concern with the inclusion of new technologies, the need for protecting the planet, and the intensification of the look to and care for the user (GIACOMIN, 2012). In this scenario, there was the integration of new approaches and methods, as was the case of design management (MARTINS; MERINO, 2011; MOZOTA; WOLFF, 2019).

Design management aims to promote creation and innovation by organizational systematization, process management, decision making, and strategic plans (DMI, 2021). The processes and interactions that take place between the lines of the creation of a product or service need a successful management to enhance the achievement of the expected results (BEST, 2012). The designer's skills in aligning the tangible and intangible aspects contribute to good project management (MOZOTA; KLOPSCH; COSTA, 2011). Design management can be applied to all three levels of organizations:

- the strategic level, which is related to the policy and mission of the organization;
- the tactical level, which involves systems and processes;
- and the operational level, which considers the tangible aspects (BEST, 2010).

Considering the fundamentals of design management and the characteristic of transversality, the performance in several areas, such as health, is pertinent (JONES, 2013). Design management applied to the health area can generate better quality of service and well-being of staff and users (TEAL; FRENCH, 2016). Recent studies have applied design management in the health field (Figure 2).



AT: assistive technology.
Figure 2. Set of studies whose authors applied design management to the health area.

According to studies conducted by Blum (2018), Merino *et al*. (2018), and Rosa (2021), design management contributed to making an accurate diagnosis of the context. The diagnosis is considered a significant stage of a project, as it guides the planning of actions and identifies opportunities; and it allows knowing the authors, the potentialities and weaknesses, in addition to all the variables acting in the studied context, which will lead to the assertiveness of the next stages (DALBERTO; GONÇALVES, 2013). Design management contributes to the identification of opportunities and proposals for action (MERINO *et al*., 2018). In the present research, it was applied for diagnostic purposes.

Assistive technology service and occupational therapy

AT has two important aspects: the product and the service. The assistive product is described as any product with the aim of maintaining or improving the functioning or independence of the individual (WHO, 2018). In turn, the AT service is considered the entire system of users' access to the assistive product, which can take place privately or publicly and is influenced by legislation, public policies, and the local socioeconomic reality (WITTE *et al*., 2018; ANDRICH *et al*., 2019). As part of this broad service, the provision of AT service is the process of evaluation, indication, delivery, training, and follow-up, which happens between the professional and the user and should not suffer any interference from the environment. Good practices recommend that the provision of AT service should have qualified professionals and adopt the user-centered approach (WITTE *et al*., 2018; ANDRICH *et al*., 2019).

In the global context, the provision of quality AT service is considered one of the ways to expand users' access to AT and reduce product abandonment. Nowadays, these are considered, by the United Nations and the World Health Organization, priority problems to be combated (WHO, 2014, 2018). In Brazil, the legislation provides for that every person has the right to AT (BRASIL, 2015), and the AT concession service occurs by the free provision of orthoses, prostheses, and means of assistance to locomotion. This is guaranteed by Decree No. 3.298, of December 20, 1999 (BRASIL, 1999); nevertheless, access to this type of resource is still difficult and insufficient. There is a deficit in the provision of care services to people with disabilities, especially in specialty and rehabilitation outpatient clinics (CGEE, 2012; OMS, 2012).

Considering the importance of the provision of AT service, its performance should be sought based on the good practices recommended by the literature (WITTE *et al*., 2018). Theoretical and practical models support this practice, such as the human activities assistive technology model, which is based on the focus on the interaction between the person, the AT, the activity, and the context (COOK; POLGAR, 2015); and the matching person and technology model, whose premise is to promote a great combination between the user and the AT (SCHERER; CRADDOCK, 2002). The AT service provision framework for the European context was carried out by the Association for the Advancement of Assistive Technology in Europe and the Global Assistive Technology Information Network, in 2012, and recommended guidelines and quality indicators for taking the following steps of

the process: initiative, evaluation, AT solution, product selection, authorization, implementation, management, and follow-up (ANDRICH, 2012). A qualified and specialized interdisciplinary team is essential for the AT service (WITTE *et al*., 2018). The occupational therapist is referred to as a professional capable of acting in the AT service provision (CGEE, 2012; WITTE *et al*., 2018).

Occupational therapy is a profession in the health and social areas that uses human activity as the basis of its therapeutic projects (COFFITO, 2015). It has the expertise to analyze activities and uses several resources as an intervention strategy in treatments, including AT. By making use of this resource, the occupational therapist proposes to expand functionality, participation, and engagement with the user's occupations (AKYUREK *et al*., 2017; WFOT, 2019). Although these professionals are deemed capable of evaluating and indicating the use of assistive products (WFOT, 2010; COFFITO, 2015; AOTA, 2020), they face challenges in the care practice such as performing the stages in a fragmented way and the lack of support strategies that can enhance their performance (ALVES, 2013; MAIA; FREITAS, 2014; IGBO, 2016; ALVAREZ *et al*., 2019).

CASE STUDY: MOMENT 2

The case study discussed the AT service provision in an AT project, from the perspective of the occupational therapist, in which design management was applied in order to diagnose the context. The design management approach was characterized by the use of the theoretical bases of Best (2012), which involve good coordination between people, the project, processes, and procedures. People constitute all those involved and responsible for the project, including the client, the team, the stakeholders, and the relationship between them. The projects reflect the organization and management of the team and the articulation with the processes and procedures. Processes can be defined as the actions performed in the project, and the procedures, as the stages, tasks, or activities that must be fulfilled in the execution of the processes (BEST, 2010; 2012). In Figure 3 we present the description of each aspect.

Source: Best (2012).

Figure 3. Aspects of design management: people, projects, processes, and procedures.

Step 1

The identified flow of AT service provision was part of the project's data collection and took place in four stages (Figure 4).

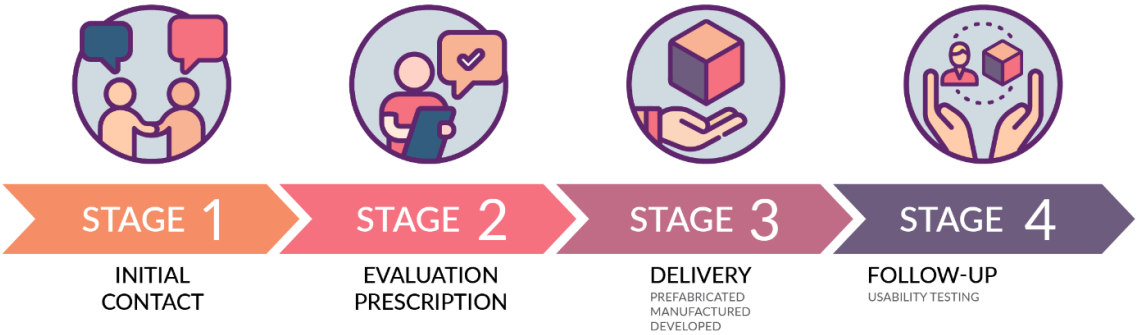
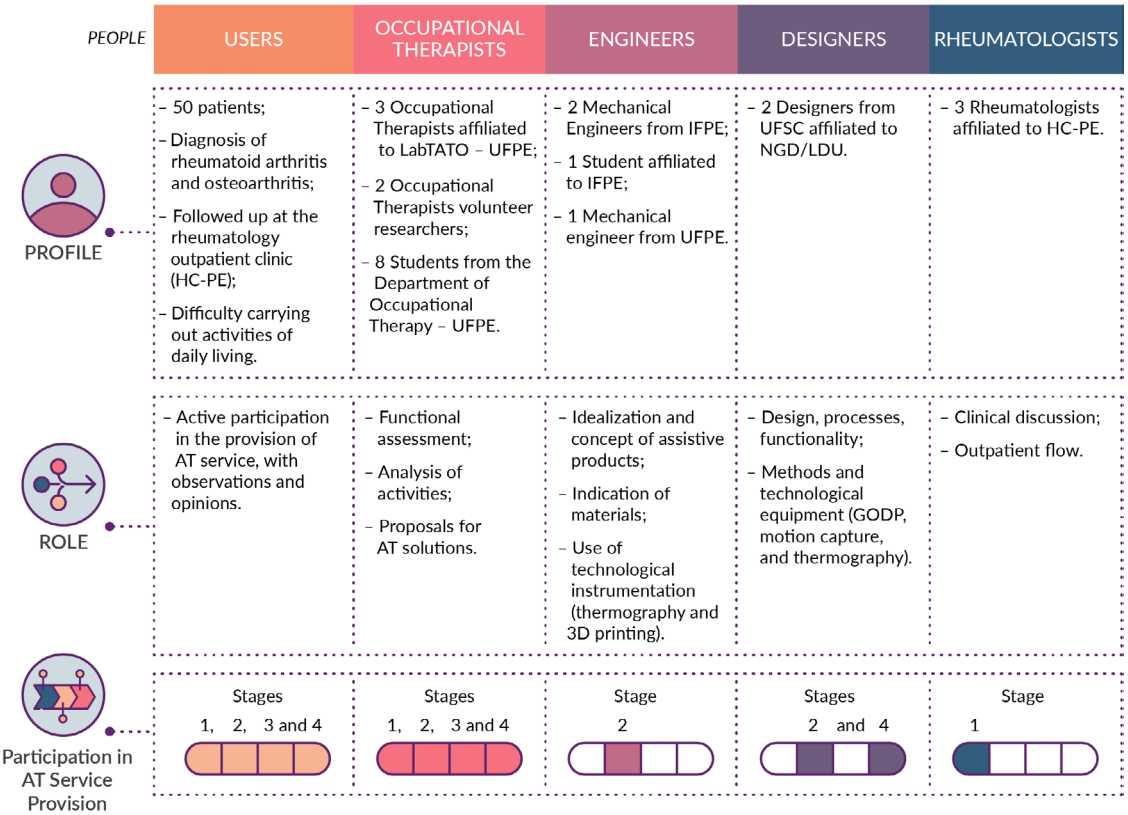


Figure 4. Stages of the flow of assistive technology service provision identified in the project.

Step 2

Subsequently, people, project, processes, and procedures involved in the provision of AT service were identified.

The people who were part of the provision of AT service were users, occupational therapists, engineers, designers, and rheumatologists. In Figure 5 we show the specification of the profile, the description of the performance, and the stages in which those involved were.



AT: assistive technology; 3D: three-dimensional; GODP: Guidance Handbook for Project Development.
Figure 5. Identification of the people involved in the provision of assistive technology service in the project.

The project in question was the interdisciplinary AT project, coordinated by the Laboratory of Assistive Technology and Occupational Therapy of Universidade Federal de Pernambuco (*Laboratório de Tecnologia Assistiva e Terapia Ocupacional*

– LabTATO/UFPE), in force until December 2021. Its general objectives were to develop assistive products and strengthen the Assistive Technology service for people with rheumatic diseases, linked to the FACEPE Call for Submissions No. 10/2017. To achieve the proposed objectives, data collection involved the provision of AT services, in which patients registered at the rheumatology outpatient clinic of Hospital das Clínicas de Pernambuco (Clinics Hospital of the state of Pernambuco – HC-PE) were referred to occupational therapy for evaluation, indication, and delivery of AT, along with training and guidance on use. The assistive products granted to this project were prefabricated, manufactured, or developed according to the needs of each patient.

The project involved the participation of researchers, students, and collaborators of the Occupational Therapy programs and researchers from LabTATO/UFPE; the program of Medicine and Mechanical Engineering of UFPE; researchers from the Research and Development Network in Assistive Technology of the Design Management Center, Design and Usability Laboratory (*Núcleo de Gestão de Design, Laboratório de Design e Usabilidade* – NGD/LDU), of Universidade Federal de Santa Catarina; the Mechanics program of Instituto Federal de Pernambuco; and professionals from Hospital das Clínicas de Pernambuco. Thus, the project was characterized as interdisciplinary, interinstitutional, and interstate, which enabled the sharing of knowledge, technologies and methodologies, strengthening the proposal and the scope of the results.

The results were: provision of care for 50 people with rheumatoid arthritis or osteoarthritis, 30 of whom had complete follow-up; contribution to the updating and adjustments of a guidance booklet (illustration, content, and layout), with registration (International Standard Book Number — ISBN) of the material, and the proposal for use by professionals of the Brazilian Unified Health System (SUS), focusing on health education, together with AT and the implementation of orientation groups; the development of four products (additive manufacturing), which are in the patent process; the provision of a training workshop for ten occupational therapists (SUS network), focusing on the application of AT and health education for patients of the rheumatology outpatient clinic; and scientific productions (articles and presentations at congresses).

The technological instrumentation was highlighted in the project, with the use of thermographic camera, motion capture, electromyography, and additive manufacturing. As methodology, the design management approach was used, in order to carry out more organized processes and obtain better communication between the team. All the peculiar characteristics of this project allowed a global and efficient perspective of the processes, with the ultimate purpose of favoring the quality of life of people with rheumatic diseases.

The processes and procedures of the AT service provision were carried out as part of each stage of the service.

Stage 1 (initial contact) was considered the moment of welcoming. The patients attended their routine consultation with the rheumatologist at the osteoarthritis

and rheumatoid arthritis outpatient clinics of Hospital das Clínicas de Pernambuco and, during the consultation, the physician referred patients who were having difficulties performing their activities of daily living, due to impairment in the hands, to occupational therapy.

In occupational therapy, patients were informed about the project proposal and the AT topic, by using handouts with explanatory photos and, finally, were invited to participate in it. Upon accepting to participate, the patients signed an informed consent form and the image authorization and were referred to the orientation group.

The orientation group consisted of an average of six patients. A researcher from the team presented, by a slideshow, explanations on: the diagnosis of osteoarthritis and rheumatoid arthritis, including symptoms and treatments; the objectives of occupational therapy with this public; principles of joint protection and conservation of energy and how to apply them in everyday activities; and how to use AT as a form of joint protection. After the presentation, the patients were provided with a space for discussion, having the opportunity to exchange experiences and to socialize, and the researcher reinforced the importance of changing the lifestyle and adapting the performance of compromised activities. At the end, the printed guidance booklets were handed out, containing information on everything that was presented in the group, and the patients were scheduled for the next meeting (Stage 2).

It is noteworthy that the used guidance booklet underwent graphic and content adjustments, by the use of motion capture equipment (AMARAL et al., 2020).

At stage 2 (evaluation and prescription), patients were evaluated according to the following evaluation protocols: Canadian occupational performance measure, which evaluates changes in the individual's perception of their performance over time, as well as changes in their level of satisfaction with this performance (LAW *et al*., 2009); the score for assessment and quantification of chronic rheumatic affections of the hand, a useful tool to measure the degree of hand impairment in rheumatic diseases in relation to pain, stiffness, and function (FERREIRA; MARQUES, 2008); the visual analog scale (VAS) of pain and the hand discomfort map. The VAS assists in the investigation of pain intensity. Its score results from marking a scale whose extremities correspond to the absence of pain (0) and maximum pain (10). It is noteworthy that it was applied specifically to the upper limbs and linked to the application of the hand discomfort map, an instrument of easy application that allows visualizing a drawing of all areas of the hands and, based on this, the indication of the specific place of discomfort (KUIJT-EVERS, 2006).

Subsequently, the patients were referred to islands of AT experimentations. These experimentations consisted of testing assistive products that were being made available in the project, according to the performance areas (self-care, productive and leisure activities). There was also a specific island for upper limb orthoses, with an individualized evaluation. Patients were encouraged to simulate the performance of these activities, as if they were in real-life contexts. Henceforth,

prescriptions were given by using a form developed for the project, considering the patients' opinion about the assistive products that would be properly integrated into the routine.

The available assistive products were prefabricated, manufactured, or developed by the team. The prefabricated ones were bought in the common market or specialized stores in rehabilitation, while the manufactured ones were the orthoses made with low-temperature thermoplastic material and assistive devices, produced with low-cost materials, such as rubber materials and epoxy.

The development of assistive products followed the following process: demand survey, characterized by the evaluation of patients, associated with the discussion of the team; assessment of ideas and proposals; trials; and, finally, three-dimensional (3D) printing. Four products were developed via 3D printing, which are in the patent process. After completing the prescription, the patients were scheduled for stage 3.

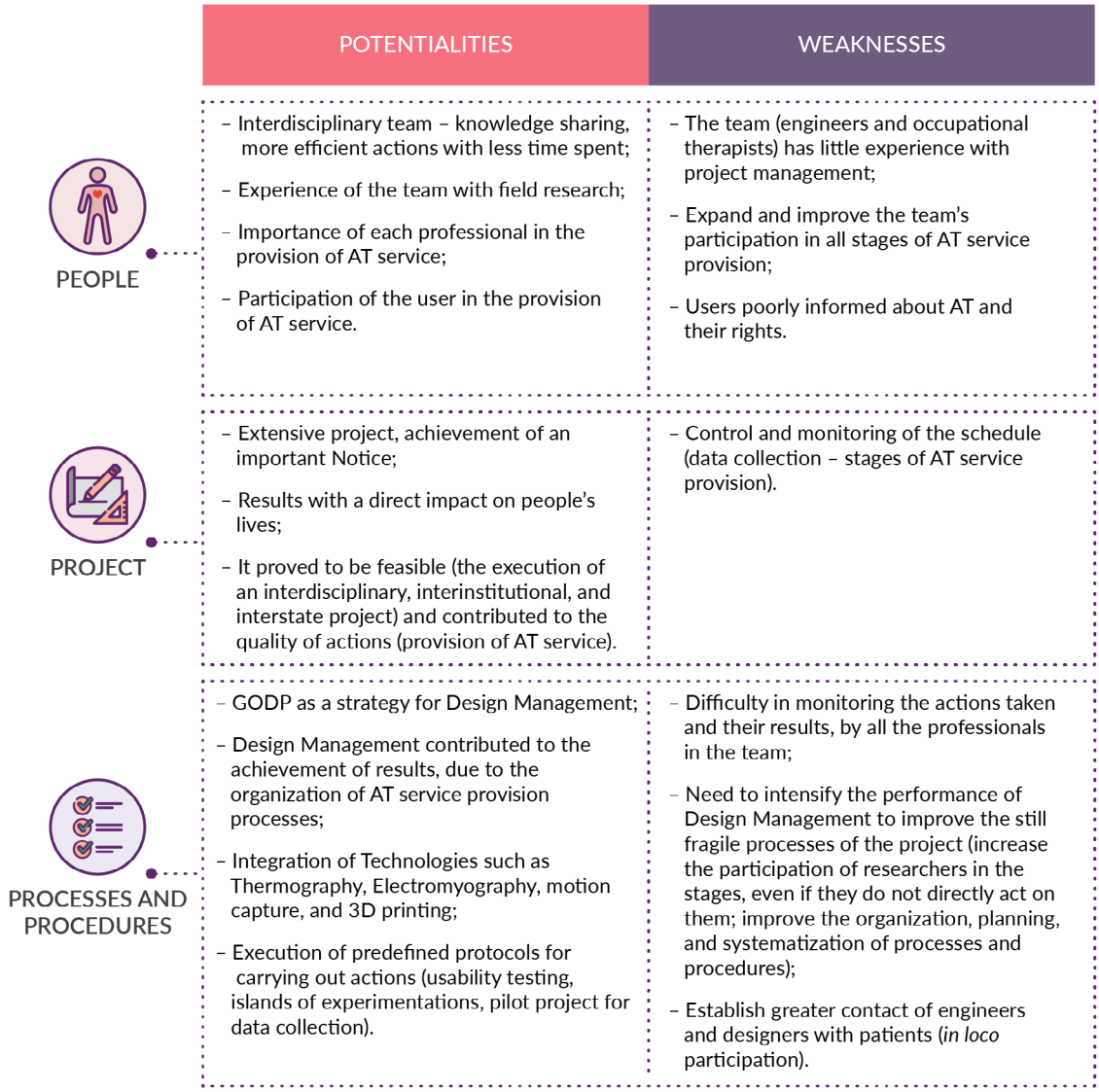
At stage 3 (delivery), patients received the assistive products and tested their use. The occupational therapist observed the size, whether there were pressure points, and whether the products were in a condition for safe use. During the delivery, the patients received and signed an acknowledgment receipt, with the objectives and guidelines for the use of AT. The occupational therapist also signed the document, and a copy was guaranteed for both the patient and the project. In addition, a demonstration of the use was performed and, when necessary, the guidelines were filmed by the patient or companion. In some cases, it was requested to film the use at home, for observation by the therapists. Upon concluding this stage, the patients were scheduled for stage 4, to take place 90 days after.

At stage 4 (follow-up), there was a reassessment of the user and the product, in which the evaluation protocols considered in stage 2 were repeated and the Quebec instrument for assessing users' satisfaction with the AT was applied, namely the B-QUEST (2.0) (CARVALHO; GOIS JUNIOR; SÁ, 2014). A usability protocol was developed for the evaluation of the products developed by the team and printed in 3D. It consisted of the analysis of the products by the specialists, based on the reference blocks of the product, user, and context (Guidance Handbook for Project Development, *Guia de Orientação para Desenvolvimento de Projetos* – GODP) (MERINO, 2016) and the principles of Jordan (1998). In the evaluation of users, the applied techniques were the semantic differential and the user's experience (MARTIN; HANINGTON, 2012), in addition to the thermographic camera, which allowed to visually evaluate and measure the temperature of regions, when there was a complaint of pain; and electromyography, to analyze the user's muscle recruitment with and without the product.

Step 3

A focus group was conducted with the main project team, in which the data collected in steps 1 and 2 were validated. The perceptions of each professional in the flow of service provision were discussed, and the service process taking place

in the project was evaluated, with the identification of the main potentialities and weaknesses. The performance of occupational therapists was detailed, pointing out the faced challenges. In Figure 6 we show the weaknesses and potentialities of AT service provision, based on people, project, processes, and procedures.



AT: assistive technology; 3D: three-dimensional; GODP: Guidance Handbook for Project Development.
Figure 6. Weaknesses and potentialities of the provision of assistive technology service of the project.

When individually analyzing the performance of the occupational therapist in the provision of AT service in the Research Program for the SUS, we identified the following issues:

- Occupational therapists presented affinities and specific competencies with the AT area and actively participated in all stages of the flow of AT service provision;
- At stage 1, the main activity of the occupational therapist is providing guidance on the participation in daily activities, based on the principles of joint protection and conservation of energy;

- At stage 2, the emphasis was on competence in performing the functional assessment of the patients, the analysis of activities, and the indication of proposals for solutions in AT;
- At stage 3, the occupational therapist made orthoses for the upper limbs with thermoplastic material; acted on the training and guidance on the use of assistive products, stimulating the engagement with the user's occupations, at the time of delivery; and participated with the product development team;
- At stage 4, there was greater involvement in the functional reassessment and the professionals contributed, together with the team, to the usability testing.

In relation to the challenges of the occupational therapist in the provision of AT service within the specific context, we point out the need for organization and systematization, due to the large number of processes and procedures; improving communication and integration with other professionals and students; and difficulties in project management.

Taking this into consideration, we assume as a diagnosis of the studied context that the interdisciplinary, interinstitutional, and interstate team potentiated the actions of service provision, with the integration of technologies and approaches. The joint action of the team was more active in the activities of product development, usability testing, and project management. The design management approach resulted in the use of protocols, for example, for the usability testing and the development of the islands of experimentation, which had an impact on the performance of the tasks. However, we noticed, by the weaknesses pointed out, that the organization of processes and procedures and the integration among professionals were the main challenges of the team in the provision of AT service. This points to the need to invest even more in issues related to management.

By individualizing the aspects people, processes, and procedures, in Figure 7 we present the diagnosis.

Thus, we recommend, both from the perspective of the team and from the occupational therapists', the important expansion or deepening of design management as a feasible way to think about a more organized, systematized service provision process with greater participation of all those involved as well as strategies for supporting occupational therapists who work in the provision of AT service in research projects within the academic context.

DISCUSSION

The design management applied to the provision of AT services contributed to reach an accurate diagnosis, by a clearer and more organized view of those involved, their roles, interactions, and challenges. Getting an accurate diagnosis is important to promote true understanding of the context and for identifying opportunities (MERINO *et al*., 2018).

In the present research, the potential of the interdisciplinary team for sharing knowledge and technologies was pointed out, contributing to assertive actions for

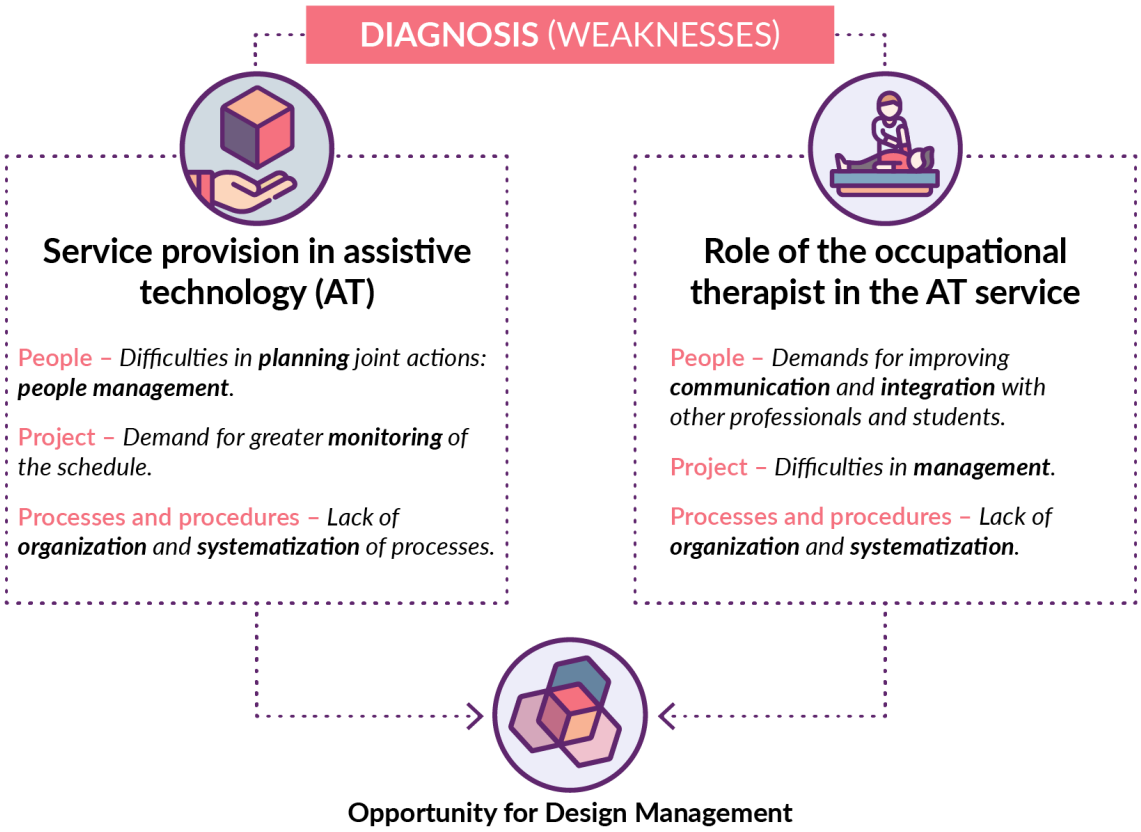


Figure 7. Diagnosis of the context.

the AT service in the academic environment. As weaknesses, we highlight the need for more organized, integrated, and systematic processes in the provision of AT services and in the performance of occupational therapists. Thus, as an opportunity, we suggest to carry out studies that involve the development of models, strategies, or tools that enable to systematize the provision of AT service and support the performance of occupational therapists.

In the present research, the application of design management, based on the theory of Best (2012), allowed the complete visualization of people and their interactions with the project, processes, and procedures (BEST, 2012). The approach allowed us to have a prior definition of an organized data collection protocol with established roles, considered a potential by the team. Likewise, the GODP was positively evaluated by the team, as it favored the communication and organization of the project (MERINO, 2014). The absence of team interaction and communication in interdisciplinary projects in AT can negatively impact the achievement of the expected results (PICHLER, 2019). The presence of the designer in the team was considered a differential in the process since the indication of specific methodologies of design management.

The provision of AT services is understood as complex, because it consists of several stages and processes that must take place in a continuous flow and because it involves many people and different actions (FEDERICI; MELONI; BORSCI, 2016; MACLACHLAN; SCHERER, 2018). Recurrent weaknesses are referred to in this practice such as the fragmentation of the stages, lack of professional qualification,

and the little participation of users in the process (MACLACHLAN; SCHERER, 2018; TRICCAS *et al*., 2019). In this sense, design management can be considered a solution to the problem, by providing proposals for specific tools and methodologies (MOZOTA, 2011). According to Best (2012), thinking about more organized and systematized processes and procedures can broaden the scope of the expected results.

In this research, the provision of AT service took place in four stages and had the participation of the entire team, emphasizing that the occupational therapist was responsible for coordinating this process. According to Andrich (2012), it is not necessary for all stages of AT service provision to happen; however, quality should be prioritized, using evidence-based practice (ANDRICH, 2012; WITTE *et al*., 2018).

The provision of AT services is an important topic, as it implies greater access and less abandonment of assistive products (WHO, 2014, 2018). In the present case study, the provision of AT services took place in the academic context, as a data collection strategy for an AT project, considering that the objective of the project was to develop assistive products for patients with rheumatic diseases. By making the diagnosis of the context, we noticed that the interdisciplinary and interinstitutional team potentiated the actions, by sharing knowledge and integrating technologies and methodologies, which culminated in more organized actions such as the execution of predefined protocols for the AT service, the development of low-cost assistive products, and the use of thermography and electromyography in the evaluation of the developed products. These facts suggest that providing AT services in the academic environment may be another possibility of AT access to users, considering the reality of difficulties of this type of service and access in Brazil.

Systems thinking in AT encompasses the connection between those involved and the relationship between processes (MACLACHLAN; SCHERER, 2018). Thus, the absence of this systematization can weaken the execution of the process. In this line of thought, studies were carried out to remedy such weaknesses. Pichler (2019), faced with the difficulty in communication between all authors involved in AT projects, developed a set of tools to guide the team in the collection, organization, and analysis of data. Merino *et al*. (2016) used GODP as a design management methodology to systematize product development processes in AT projects. Specifically, to support the performance of occupational therapists, Igbo (2016) developed a tool to assist these professionals in providing AT service focusing on patients with spinal cord injury, systematizing the processes. Conversely, Sierra (2017) proposed a systematization model for wheelchair prescription, seeking to guide the practice in a more organized way.

Finally, this research was the first coordinated by LabTATO/UFPE in which design management was applied. It was necessary to sensitize and train the team for this perspective. Although it is an initial moment, it has already been possible to observe good results. It also generated the opportunity to point to design management as a solution to the weaknesses found by the team in the focus group, suggesting the importance of deepening and continuing to adopt this approach in future research.

CONCLUSION

Considering the need for more organized, articulated, and systematized processes in the provision of AT services and for supporting occupational therapists to enhance their performance, this case study aimed to apply design management to obtain a diagnosis of the provision of AT service, in an academic environment.

The use of design management for diagnostic purposes contributed to the understanding of the context. The identification of the aspects of the service and the performance of occupational therapists, based on people, project, processes, procedures, and their relationships and the script "identify, map, survey, and diagnose," facilitated the performed observations and analyses.

Considering the result of the diagnosis, the main weaknesses of the process culminated in a management problem, highlighting the need for planning and monitoring of actions by all professionals and the lack of more organized and systematized processes. Therefore, we understand that design management can be applied not only for diagnostic purposes, but also as an approach capable of contributing to the resolution of the problems identified in the provision of AT service and in the performance of occupational therapists, evidencing a demand for future studies with this focus.

Regarding the academic environment, it consists in a powerful space for the provision of AT services, as the performance of the interdisciplinary and interinstitutional team could contribute to the integration of technologies, approaches, and knowledge that qualified the performed actions, such as predefined protocols for the stages of the AT service, in addition to enabling users to access AT.

All in all, it is noteworthy that the present study resulted from the diagnostic phase of an ongoing PhD research focused on the development of a systematized guidance booklet for the provision of AT services, based on design management and aimed at occupational therapists.

ACKNOWLEDGEMENTS

The authors would like to thank Universidade Federal de Santa Catarina (UFSC), the Graduate Program in Design of UFSC, and the Design Management Center/ Design and Usability Laboratory of UFSC for conducting this research.

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Conflict of interests: nothing to declare – **Financial support:** Research Program for the Brazilian Unified Health System: Shared Management in Health (Decit/SCTIE/MS, CNPq, SES/PE, and FACEPE).
Authors' contributions: Amaral, D.: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Writing – original draft. Cabral, A.: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Supervision, Validation. Merino, G.: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Supervision, Validation.

Article

https://doi.org/10.22398/2525-2828.82356-74

A Project Guide as a tool to improve the design process in a metal-mechanic industry in the city of Caruaru-PE

O guia de projeto como ferramenta de aperfeiçoamento do processo de design em uma indústria metalmecânica na cidade de Caruaru (PE)

Aniele Marques[1], Germannya DGarcia Silva[1]

ABSTRACT

This article introduces the result of a theoretical-practical action to improve the design process of a metallurgical industry in the city of Caruaru-PE. The recurrence of misunderstandings among the company's sectors, the delay in deliveries, and order returns were the arguments for the first impressions about the lack of information in the initial phase of the design process. To optimize the execution of product projects, we proposed a briefing based on a collaborative method comprised of three macro steps: 1. Mapping the productive capacity of the company's industrial park; 2. Individual interviews and group work sessions to investigate the difficulties of each sector; 3. Understanding the profile and demands of the company's main customers. In a co-creation process, it was possible to synthesize the results into a Design Project Guide that is currently being tested to evaluate its effectiveness.

Keywords: Metallurgy. Briefing. Product design.

RESUMO

Este artigo apresenta o resultado de uma ação teórico-prática para o aperfeiçoamento do processo de design de produto de uma indústria metalúrgica da cidade de Caruaru (PE). A frequência de retrabalhos, os atrasos nas entregas dos pedidos e a recorrência de mal-entendidos entre os setores da empresa foram as primeiras impressões sobre carência de dados na prática projetual da empresa. Para otimizar a execução dos projetos de produtos, um instrumento de briefing foi proposto mediante um método colaborativo composto de três macroetapas: mapeamento da capacidade produtiva do parque industrial da empresa; entrevistas individuais e sessões de trabalho para levantamento das dificuldades dos setores envolvidos no processo de design; e compreensão do perfil e das demandas dos principais clientes. Como resultado, foi possível sintetizar as informações em um guia de projeto que atualmente vem sendo testado para avaliação de sua eficácia.

Palavras-chave: *Metalurgia. Briefing. Design de produto.*

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Received on: 01/24/2023. **Accepted on:** 03/31/2023

RECOGNIZING CONTEXT: INTRODUCTION

From the economical point of view, the data from *Portal da Indústria* (2020) show that the industry sector is responsible for 19.7% of the gross domestic product (GDP) in the state of Pernambuco, which corresponds to R$ 33.4 billion. According to data from *Portal da Indústria* (2020) in 2020, there were 12,497 industries that employed 273,972 workers in the state. These data not only show the potential of the industry in the state, but also reveal opportunities for jobs and development of innovative projects for young designers in Pernambuco.

However, the main obstacle for design to be an agent of transformation in the state's industry is that employers are usually unaware of the benefits that can be generated by design concerning product development, the company's communication, and production management (SILVA; ANDRADE; CAVALCANTI, 2018).

According to Phillips (2008), employers will stop taking design for granted when they understand how it can help them reach their businesses' goals. Therefore, it is up to the designers to broadcast the range of design, since it is not limited to creativity or to aesthetic aspects; it can also solve problems for businesses.

In 2017, the staff of O Imaginário[1] laboratory, from Universidade Federal de Pernambuco (UFPE), provoked company A[2] to formalize a partnership aiming at developing a pilot teaching and extension project that could relate the fields of product design and project management in transformation industries of the *Agreste* region of the state of Pernambuco. In the industrial scope, the laboratory's actions aimed at strengthening the articulation between the university with the production sector, in order to exchange information between the Academy and the companies, thus increasing the job possibilities for designers in the state (ANDRADE; CAVALCANTI, 2020).

For 12 months, design concepts and tools that led to significant improvements in the layout of machines and equipment, systematization of the technical design of existing products, analysis of production costs, as well as the proposition of a maintenance plan for the machinery were discussed with collaborators. The partnership with the university has brought about a new vision towards the process of product development in the company.

In the past, the process of creating and managing production was exclusively a responsibility of the production manager, who was the main person in charge of consolidating the company in the commercial segment, thus dominating the know-how regarding the fabrication of furniture for stores, drugstores, and warehouses;

1 It is a laboratory of research and multidisciplinary extension related to the Design and Culture Department at UFPE, developed by professionals, professors and students from several fields of knowledge who work with design as an instrument that serves environmental, economic and social sustainability.

2 In this study, company A is a mechanical processing industry of carbon steel into consumer goods located in the city of Caruaru, in the *Agreste* region of Pernambuco. It has been working for over two decades in the field of commercial exhibitors, with more than 190 clients distributed in the North and Northeast regions of Brazil.

however, there was a latent desire from the board to develop and produce furniture for the residential segment.

Thus, stimulated by the positive results perceived by the design actions, the company hired three new collaborators to meet the demands of product project, both for the commercial area and the new line of residential products. They hired a trainee and two interns: one for design and another one for production engineering.

But it was only possible to observe that the practice was filled with misunderstandings in a real product project demand for the residential segment. The following was observed: rework in production processes, delayed scheduled of order deliveries, generating financial losses, besides negative impacts on the company's reputation. This problem was discussed in many work meetings involving the sectors connected to the development process, including a discussion about the need to create a documental briefing to support the process. Thus, this study presents the methodological pathway performed to design the project guide in co-participation; an internal communication tool for the improvement of the design project process of company A's product.

THEORETICAL REFERENCE

The reality about design management in the industries of Caruaru

According to Wolff (2010), design management is the application of design principles as a tool for business management, affecting the planning, the production and the commercialization of products and services to reach the strategic goals of the company. Therefore, design management can improve the performance of a process, a product, of the market or the experience of the user/consumer.

There are many ways to analyze the level of design performance in the corporate environment. According to Joziasse (2000 *apud* GARCIA, 2019) and Martins (2004 *apud* CABRAL, 2008), design management can be divided in three levels: operational, tactic and strategic.

The operational level is the execution of the design project, which results in a physical or digital product. According to Mozota (2010 *apud* GARCIA, 2019), at this level it is possible to create value in the development of a product through perceived market differentiation. The tactic level is the one that ensures design activities are being developed efficiently, making sure that the procedures, rules, and design processes are known by the entire design staff. Also called functional design, it is the level that creates value in the coordination and management activities, thus improving design processes and tools. And design management at the strategic level is the one that makes decisions about the company's direction, in charge of evaluating the need to create a specific product or service. That is, the design is responsible for a continuous vanguard process, anticipating trends and making decisions about internal and external matters of the business.

The creation of the residential line of products began without a well-established briefing. There was little information about the market and its target-audience, the

deadline was extremely close, and the urgency from the board was high. Baxter (2000) clarifies about the risk of that practice:

> The products that start with good specification, discussed and agreed upon among all people who make decisions in the company, and whose early stages of development are followed-up, have three times more chances of success than those with vague specifications or poorly made initial follow-up (BAXTER, 2000, p. 23).

Therefore, it was observed that such an approach for project development was inadequate. So, in order for that isolated episode not to become a routine activity, based on Phillips (2008), the newly hired design sector presented the important concepts and aspects about the composition of a briefing and how it should be implanted in the project development processes of companies. All leaders in the sectors responsible for the manufacturing process were involved in the process of creation to stimulate a collaborative culture. It was the first attempt to take design management beyond the operational level, improving the project tools and practices in company A.

According to Libânio (2011), the incorporation of design management in the corporate environment happens gradually and requires the co-participation of multidisciplinary collaborators. The stimulus to the communication of different teams should also be provoked, since it encourages internal entrepreneurship, in order to propose changes and essential improvements for the company's success.

Why do we still need to talk about *briefing*?

The starting point of the design process is to identify the problem, which should be described in the project's scope. The origin of the word "brief" is English, and it means "written summary" (PAZMINO, 2015). In a successful design project there is usually a briefing, that is, a concrete and concise scope (LUPTON, 2013, p. 56).

Bruce, Cooper and Vazques (1999 *apud* VIARO; BERNARDES; SILVA, 2014) also state that for the designers to produce an efficient solution to work with the client, they need to collect a series of explicit information about marketing, details about the mode of production, planning, and schedule.

The *briefing* is a document that contains the project's needs and restrictions, approaching information about the product, the market and the project's differentials and strategies. It can be used as an agreement or formal contract between the requester and the designer. It can also work as a script, schedule or follow-up and evaluation instrument (PHILLIPS, 2008). The oral *briefings* may lead to misunderstandings, confusion, discussion, and confrontation. Therefore, the recommendation is that the project scope be written and available in printed and digital means (PAZMINO, 2015; PHILLIPS, 2008).

There is no formula for the construction of a briefing, but aspects that should be essential for its elaboration (Chart 1). "The most important thing is that the

Chart 1. Essential aspects of a *briefing*.

Basic topics	Content
Nature of the project and content	Justification; project's objective; expected results; responsibilities of the project
Sectoral analysis	List of products; competitors; prices and promotions; brand; trends; company's strategy
Target-audience	Characteristics of the target-audience; cultural and regional differences and consumption habits
Company's portfolio	Brand; corporate image; market segmentation
Business goals and design strategies	Results considering the project described in the business language
Objective, deadline and project budget	Description and specification; foreseen duration; budget; necessary human resources and responsibilities
Approval, implementation and evaluation	Responsible for the approval; steps for implementation; criteria to evaluate success
Research information	Business trends; technological advances; product launch
Appendix	Supplementary materials

Source: adapted from Phillips (2008).

briefing contains all relevant information for the project's stakeholders" (PHILLIPS, 2008, p. 2, emphasis in the original).

Many businessmen in small and mid-sized companies of the Brazilian Northeast wish to use design to increase their commercial advantage by reaching new markets. However, most of them are not aware that it is necessary to go through a planning process to launch a new product. It is hard to explain to the local businessmen that it is necessary to invest a great amount of time in the pre-project phase, and that the non-fulfilling of this stage may jeopardize the entire project. This was the reality of company A before the pilot project experience with the university. The confidence relationship established between the O Imaginário laboratory and company A created a favorable environment for the implementation of design actions.

METHODOLOGICAL STRATEGY

To reach the goal of improving the project process of company A's product, a methodological strategy was designed in three macrophases (Figure 1).

Stage 1 consisted of mapping of the company's industrial park by listing and describing the elements that compose the manufacturing system: raw material, machinery and the company's main products. Photographs were taken, and the company's industrial park was systematically observed; then, there were unstructured interviews and meetings with the parties in the manufacture sector: sheet; wiring; mesh, painting and packaging. This analysis was relevant for recognizing the potential and the technological limitations of the company, so as to minimize the errors in projects and to search for solutions that could optimize the production process.

Stage 1 aimed at understanding the needs and promoting more engagement among the eight employees (leaders) distributed in the commercial, design,

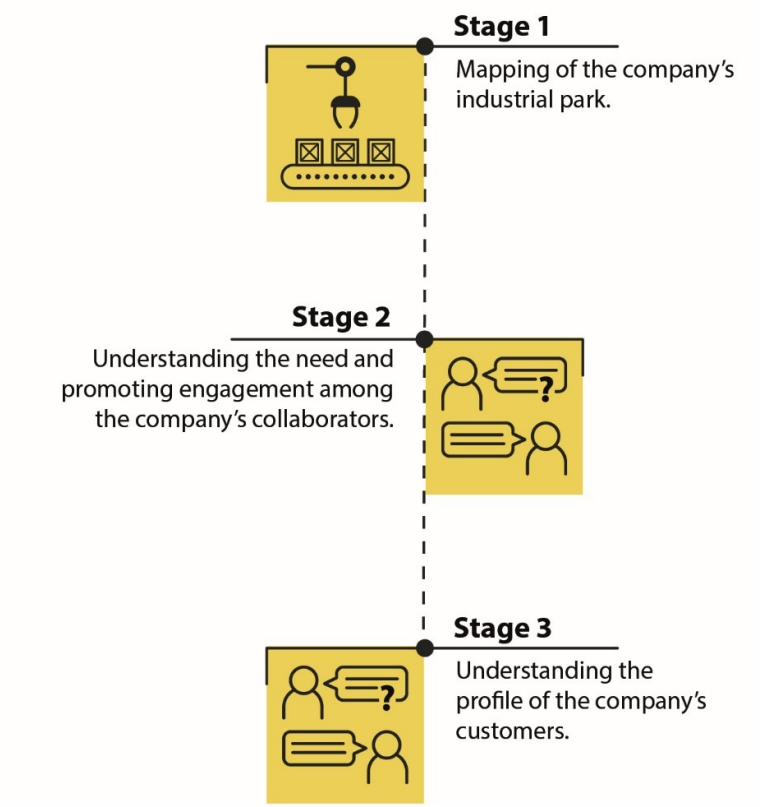


Figure 1. Design of the methodological strategy.

purchase and manufacture sectors of the company. The individual semi-structured interviews were carried out, followed by work sessions to establish the demands.

Stage 3 aimed at understanding the customer profile of the market with structured interviews guided by a form. According to the sales reports, from January to September, 2019 the company established commercial relations with 191 clients.

Because of the large number of clients, in partnership with the commercial sector, a sample plan was elaborated with the main clients of each segment: wholesale (4); shelves (5); residential (1); services (1); and displays/booths (4) (Chart 2). Of the 15 main clients that were contacted, only nine were available to collaborate with the action: wholesale (2); shelves (2); services (1); and displays/booths (4). Unfortunately, the residential clients were not activated because the company did not have their contact (only through the mediation of sales representatives).

Chart 2. Sample plans of interviews per segment.

Market segment	Amount	Sample	Interviews
Wholesale	75	4	2
Shelves	77	5	2
Residential	6	1	-
Services	15	1	1
Displays/booths	18	4	4
TOTAL	191	15	9

Before the form was applied, a pilot test was carried out with one client from each group in order to verify opportunities for improvements in the interview protocol. The concluded forms enabled going to the field for the interviews. At first, the internal sectors of the company were interviewed, and then the interviews were addressed to the clients.

The interviews were previously scheduled with each collaborator, and carried out on site, individually. During their execution, neutrality was the focus in order not to induce the responses of the interviewees. The first contact with clients took place by WhatsApp, with an explanatory message about the purpose of the action, the approximate duration of the interview and the best day and time for the interview to take place on the phone.

DATA COLLECTION AND ANALYSIS

Mapping of the technological park in company A

The company's layout is divided in six sheds (Figure 2): (1) company's management, which is composed of the subsectors of corporate management, purchase, sales, financing and human resources; 2) dispatch; (3) painting, which also includes the washing of pieces; (4) electroplating, which also includes an attached area for polishing; (5) and production, separated in the sectors of the mesh, tubes, sheet, weld, tooling, warehouse, design and production engineering.

Figure 2. Factory layout.

The company's production process will be presented to contextualize its activities, based on its production system: raw materials' arrival, manufacturing processes and product dispatch.

Raw material's arrival

Company A uses two main types of raw material to manufacture its items: carbon steel and wood. Steel can be found in hot or cold metal sheet profiles, industrial tubes or low carbon content (LCC) wire. Each sector works with a different steel profile, and that is why each of them has its specific raw material storage.

The tube sector uses steel in profiles of mechanic industrial tubes, and it can present cross-sectional, rectangular or square cuts. The tubes are obtained in tons,

and each unitary section measures 6 thousand mm in length; its unitary weight depends on the diameter and thickness of its gauge.

The main raw material in the mesh sector is BTC wire, which is provided in a 200 kg roll, with internal diameter of 500 mm and external diameter of 800 mm. The most commonly used wire diameter in the sector may range: 2.11, 2.75, 4, 5 and 6 mm.

For the production in the sheet sector, the raw material is the hot rolled sheet or the cold rolled sheet. The difference between them concerns their manufacturing process, specifically the temperature in which they are shaped. The cold rolled sheet is produced at a temperature below 100°C. The hot rolled sheet is manufactured at temperatures higher than 900°C.

The materials used in the carpentry sector consist of: medium density fiberboard (MDF) sheets; plywood sheets; expanding foam; and glass. The most commonly used measures of thickness (in mm) of MDF sheets in the sector are: 3, 6, 9, 15, 18 and 20.

Manufacturing processes

One product usually has several components that integrate its structure, and the manufacturing of each component involves different processes, machinery and manpower. Most of the factory's equipment is not automatized, thus depending on great human effort for operation, which limits the productive efficiency and increases the risk of work-related diseases due to repeated effort and inadequate posture during the workday.

The main mechanical transformation production processes are: cutting, stamping, emery, folding and, finally, welding, which is the main process applied by the company to connect the products' components. The pieces that are finalized in the mesh, sheet and tube and that require welding are placed in intermediate storages so that they can be connected through the metal inert gas (MIG) welding process (Figure 3).

Figure 3. Welding process.

As soon as the whole manufacturing process in the production sectors are concluded, the pieces are sent to one of the surface treatment sectors: painting or electroplating, according to the project specifications.

Before the painting process *per se*, it is necessary to wash the pieces chemically to remove residue and specks from manufacturing. The washing is carried out in nine tanks that conduct the processes of degrease, phosphatization, passivation, refinement and water washing.

After being washed, the pieces are sent to electrostatic painting. The process is cyclic, so there are two cycles conducted by a conveyor belt; the first lap leads to the drying oven, and the second one, to painting.

The electroplating process also requires a cleaning step before being carried out. This process takes place in a connecting room and uses a sanding machine to remove the specks and to make the surface plain, so there are no areas susceptible to oxidation after the application of chrome.

Electroplating is an electrolytic process of recovering metallic pieces with another metal or alloy. In company A, this process takes place by immersing the steel pieces in successive baths. The first one is called degreasing. Then there comes acid chloride, caustic soda, sulfuric acid, nickel, chrome and, finally, water (Figure 4). The whole surface treatment process takes 2 hours, in average, and aims at reducing the natural oxidation of steel, increasing the life cycle of the final product.

Figure 4. Bath tanks for the electroplating process.

After surface treatment, the components of the product are sent to the dispatch sector for packaging. Some items are packed manually, and others with a semiautomatic vacuum machine.

Product dispatch

The company is in the *Agreste* region of Pernambuco, which has one of the largest clothing poles in Brazil. It meets the demand of commercial furniture, such as clothes racks, RTs and rack scales (Figura 5A), to compose the clothing stores of the region and the fair clients by producing baskets, folding screens and displays.

Source: company's files.
Figure 5. Example of products from the comercial line.

Besides, the business line includes projects for special, tailor-made displays and booths (Figure 5B). The company has the following clients for these projects: Vitamassa, Luzarte Estrela, Kivita Alimentos, Tramontina, among others. Finally, it works with the segment of shelves, creating projects to furnish markets and drug-stores, working with the client's layout to expose the products the best possible way (Figure 5C).

After having become a reference in quality of business products, the company has improved the production capacity of its industrial park and taken initiative to become a reference in the production of residential products (Figure 6).

Source: company's files.
Figure 6. Example of residential products developed by the design team.

The design sector created a series of products for this new market; however, two factors prevented the implantation of this new stage for the company: the high demand for business line products and the restrictions imposed by the COVID-19 pandemic.

Conversation with Company A's leading collaborators and clients

To understand the project demands of the sectors involved in the process of product projects, and to understand the clients' needs, four forms were elaborated — one for each group involved in the design process —, with a script of semi-structured questions.

It took about one week to elaborate all protocols. Then, it was determined that before using them on the entire sample, it would be important to test them with one representative from each group. The test and the changes in protocol took another week. Each interview lasted, in average, 15 minutes. Now, the results of this process will be presented.

Commercial sector

The first part of the interview with the employees in the commercial sector aimed at knowing the employees' jobs, time of work and skills related to the job. The sector has three employees: two salespeople and one business manager. They have all had these positions for two years, and described their activities as follows:

- To attract and maintain a good relationship with customers;
- To make internal and external sales;
- To analyze the weekly sales;
- To search for new possible customers;
- To follow-up on the orders;
- To elaborate budgets and negotiate;
- To develop a product launch research;

Regarding the sales process, the clients can be approached by telesales or visits to their businesses.

For product projects, there are two possible ways: if the client already has the project, including technical details of the product to be manufactured, this project is directly sent to the costs sector; if the client does not have the project, the need for it is investigated by collecting information about:

- Business, structure, dimensions, information about when the client intends to start the business;
- Measurements and color;
- Need for the project and cost-benefit for the client.

When asked about how the collected information is passed on to the other sectors, the response was that the information verified with clients are sent in a

draft with images of similar products and predefined measures for the client via e-mail, WhatsApp or paper.

One of the main difficulties reported in the sales process regarded the time available to present the prototype to the client. According to the interviewees, delays in this process halt the negotiation. One possible solution would be the existence of a manufacturing sector focused on the confection of prototypes.

Finally, all interviewees reported not knowing about the briefing process, and even after a brief explanation and questioning about whether they knew it by another name, the answer was that they did not know it with any other name. However, they understood the process as a conversation to understand the client's need.

Design sector

The interview with the design sector was conducted with the design intern, who had been in the company for two months, and the production manager, with 15 years of experience on the job. According to the intern, her job includes: product project, elaboration of renders, technical detailing and production follow-up of new products.

The activities described by the production manager are: follow-up the production performance, study improvements for the processes, analyze productivity and motivation of collaborators, follow-up the orders, accompany the maintenance of the company's machinery and manufacture machines to improve production.

According to the interviewees, the demand for new projects is delivered by the commercial sector and the mean weekly frequency is of one to three projects.

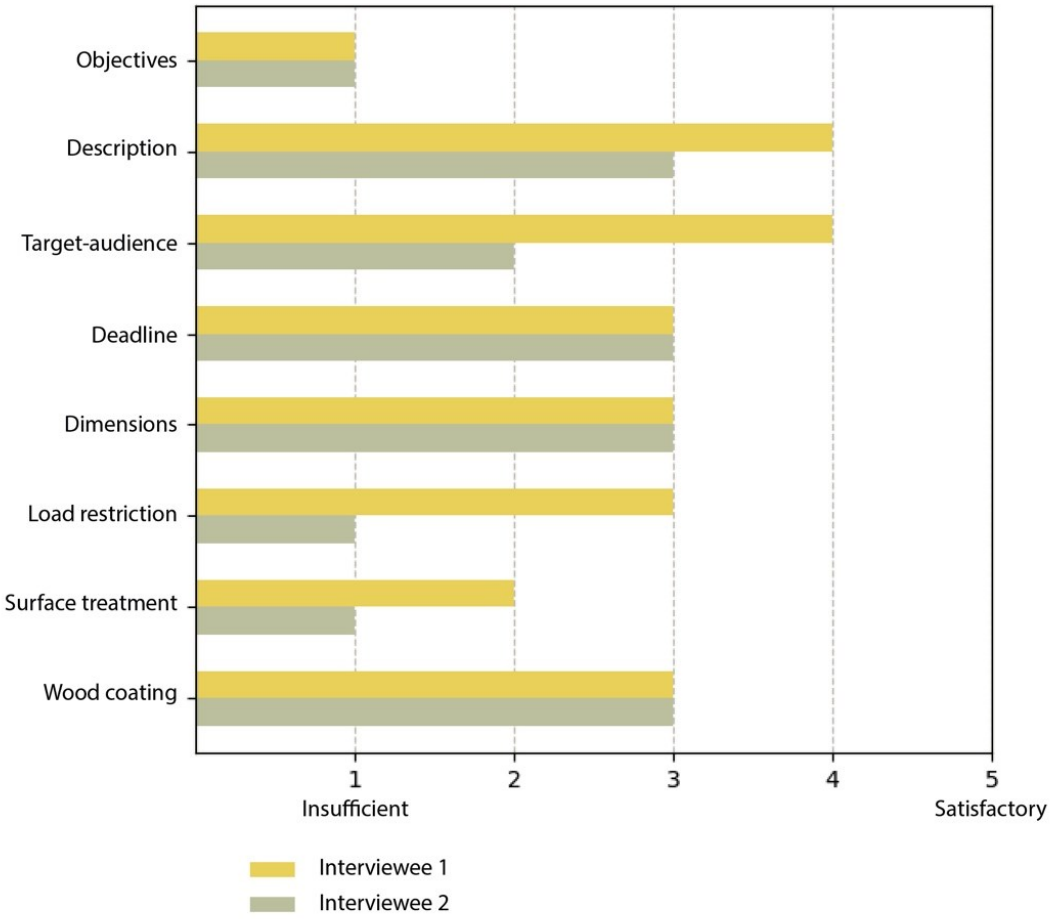
In the second moment of the interview, every interviewee was asked to evaluate, in a scale of 1 to 5 (being 1 insufficient; and 5, satisfactory), the information received from the internal customer regarding a series of important information for product development (Graph 1).

The difficulties presented by the interviewees of the design sector were:

- Little room for creativity;
- Strong reference about the products;
- Culture of copying;
- Short deadline;
- The material specified in the project is not found in the local market.

For the interviewees, the possible solutions for these difficulties would be market research about the local offer of materials and supplies, awareness about the design process, a more structured briefing, planning of product launches and, finally, understanding and separating the segments of product lines, with different approaches for each segment.

Only the intern knew what briefing was. She defined it as a path with questions to identify the demands, wishes that one wants to accomplish with the project. The production manager was not familiar with the term, however, he knew about the process.



Graph 1. Evaluation of project information.

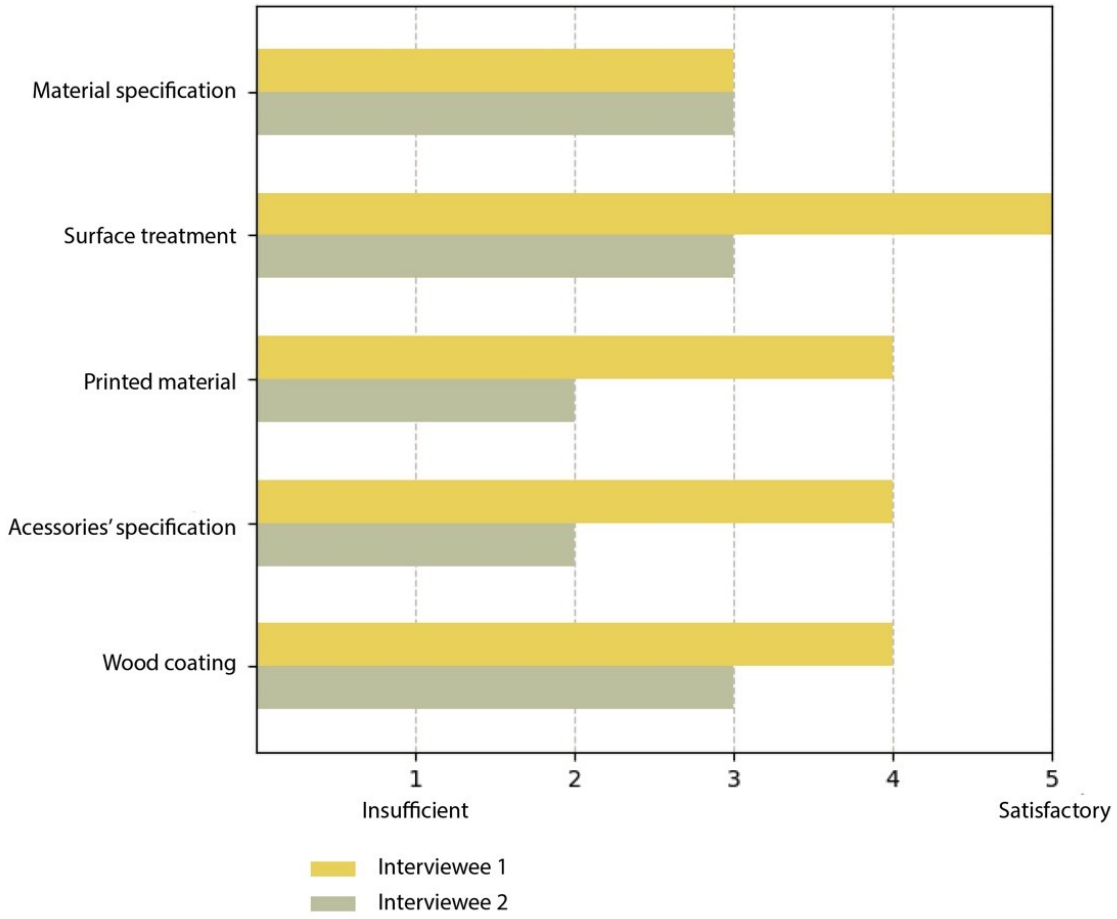
Costs sector

The interview of the costs sector was performed with the production planning and control technician, who had been in company A for 11 years, and is in charge of estimating price, planning, production control and cost reduction in the production sector. The interview was also conducted with a service supplier that has worked in the company for seven years, and has acted in many different sectors, including costs.

According to the interviewees, the demand for new projects can be delivered with weekly mean frequency of one to five projects. Then, interviewees were asked to assess the information they received from their internal client in a scale from 1 to 5, being 1 insufficient, and 5, satisfactory (Graph 2).

When asked about which other information the interviewees considered necessary to calculate the project budgets, the importance of the technical design of the product was emphasized, as well as a minimum deadline stipulated according to the demand of activities.

Besides the difficulties and possible solutions observed in the new products' project, the interviewees complained about the lack of information passed on to the sectors. Also, they mentioned that these difficulties could be solved with more specific project detailing and more efficient data collection.



Graph 2. Data of the evaluation about the information in the project scope.

None of the interviewees knew what briefing was, and after a brief explanation, they claimed to have understood the process; however, they did not know it with this specific name.

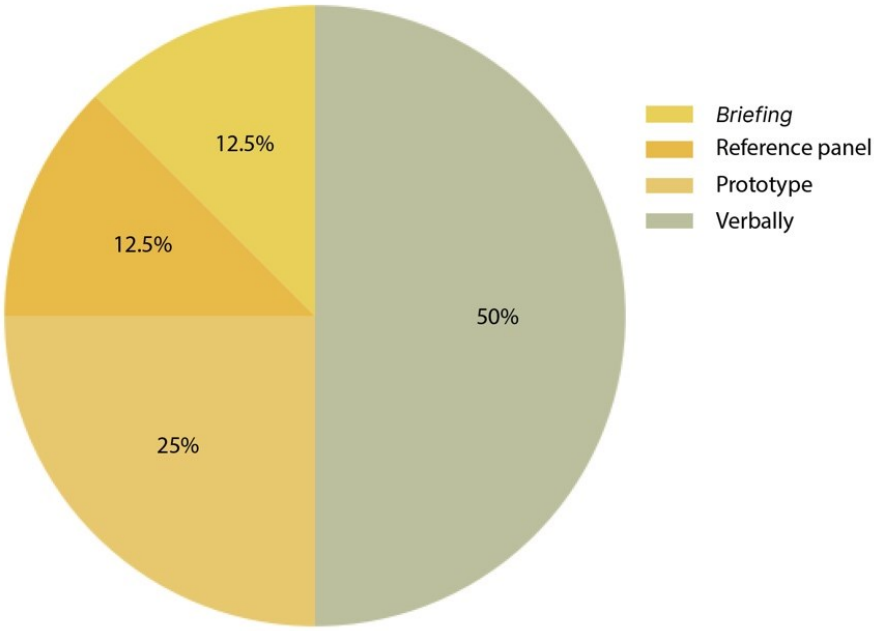
Customers

The first part of the interview with customers aimed at identifying information about their profile, with questions concerning their businesses and how they knew the company. Of the nine interviewed customers, two were in the wholesale business; two, shelves; one, service; and four, displays/booths.

The second section of the questionnaire aimed at knowing whether the client had purchased a new product for the company. Of the nine interviewees, only one had never requested the new project. Since the company works with different segments, the request for new products described by these clients included different sizes of clothes racks, booths, layout of business establishments and table bases.

The interviews aimed at identifying if there was a pattern about how the information on these customized products were passed on to the commercial sector. According to the reports, four of the eight clients who requested new orders

gave the project information only verbally; two of them delivered a prototype for budgeting and confection of a sample; one delivered images of similar products for the salesperson; and another one visited the company with samples of the products he wanted to expose, and discussed his need directly with the company's creative sector (Graph 3).



Graph 3. Transmission of information about new projects.

Regarding the information made available during the project request, the clients answered that they shared the general dimensions of the product, image panel, type of intended service (in case of booths), indication of colors to be applied on the surface.

According to five clients, the project information was not registered in any physical and/or digital document. For these customers, the only record of information sharing was verbal. Of the three other clients, two mentioned having received images for the approval of the project by e-mail, and another one, by WhatsApp.

Then, the client could indicate his satisfaction in a scale from 1 to 5, being 1: dissatisfied; and 5, exceeded my expectations – regarding the quality of the product. Of the nine interviewed customers, eight assessed the quality of products with the maximum score (5), and only one assessed it with 4.

Finally, the customers could expose difficulties and suggestions for improvements. Of the nine interviewed customers, seven claimed not having had any type of difficulty; one client reported lack of raw material to produce the order; and another one informed delay for the company to assemble the store. As suggestions, we obtained:

- More efficient communication with the customer, transparency about delays;
- Employee training/courses to assemble the shelves;
- Improve the quality of printing (graphics);

- The second level beam of the parade clothing rack could be packed with the rack, not as a separate product;
- To improve the quality of the weld.

RESULT: THE *DESIGN* PROJECT GUIDE

Company A has physical structure, with a variety of machines and staff that allow it to produce products for five commercial segments: wholesale, shelves, services, residential, displays/booths.

Regarding the process of product development, of the eight collaborators involved in the process, only one knew what briefing was; however, this was not a critical point, since the process can be known with a different name; the most important thing is that it be conducted efficiently.

The company does not have a standard approach for the project scope, nor a formal record in an electronic and/or physical document. Besides the superficial data collection, there were complaints about the lack of data passed on to the design and costs sectors.

Concerning the deadline, it was observed that salespeople reported the stipulation of a deadline according to the complexity of the project; however, besides doing it even before presenting the project to the team of design and production, this demand was usually transmitted urgently, which can cause stress on the collaborators due to the pressure of receiving a request and not having the time to at least think about the project.

Finally, even though the clients were satisfied, they made some suggestions regarding communication and transparency.

After the crossing of data in the field research, it was possible to establish the requirements for the *briefing* protocol:

- The protocol should be written down, and a copy should be available for the parties involved in the creation process;
- Collecting customer information according to what is necessary to include a new customer in the industrial management system;
- Collecting information about the company/client and its products and services;
- Gathering information about the project's objectives and the expected results;
- Highlighting the main competitors and their weaknesses and strengths;
- Presenting the product's target-audience;
- Defining the technical restrictions of the project;
- Stipulating a minimum deadline for partial deliveries to the client, made available according to the person in charge of developing each activity;
- Creating a schedule with the activities and parties in charge of the task and approval, generating a feeling of co-responsibility between the client and the company;
- Attaching extra information, if necessary.

Once the word "briefing" is not known by most of the company's collaborators, the protocol for data collection from clients was called project guide to facilitate the recognition of the process between clients and workers.

Therefore, the project guide was created considering three sessions: the customer's business; the project problem; and the schedule. Then, it is possible to verify the list of tools used for the guide's data collection (Chart 3).

Chart 3. Sections of the project guide.

Section	Tools
Customer's business	General information, portfolio and client's market analysis
Project problem	Identification of the client's target-audience, description of project objectives, description of the project's technical demand
Schedule	Identification of delivery dates and parties in charge of conducting the project in the company

The objective of the first protocol session was to map the information about the business strategy of clients, so that it would be possible to make a design proposal for competitive products aligned with the market segment. For that, it was necessary to collect the registry information of a new client in the company's management system.

The importance of understanding the client's business strategy was observed, so it was necessary to investigate some information about the company's size, its portfolio of products and services. Therefore, we used an adaptation of the SWOT analysis[3]. These are relevant aspects to consider the current moment, as well as the company's projections and expectations.

In the second session, the goal was to understand the project problem, that is, the product's journey in terms of manufacturing. Once the client was unaware of the productive capacity of company A's industrial park, it was necessary to identify the project's technological needs, such as the project objective, the indication of site of use and intended service. For that stage, it was necessary to investigate the size restrictions, load capacity, type of surface coating, and to identify which were the expected deliveries in terms of physical and graphic products, so that it would be possible to work with the design and engineering team regarding the inputs and necessary processes to produce the project.

Finally, the third session consisted of making a schedule and identifying who were the internal and external clients in charge of executing the project. Then, there was a last page available to attach any extra information, and a panel of images for reference.

The application of the protocol in the company was first carried out in a meeting with the employees involved in the design process, to show a draft of the project guide, to explain the importance of each one of these sessions, and to explain the

3 SWOT means *strengths*, *weaknesses*, *opportunities* and *threat. It is a planning tool that can be used in moments of decision making, in order to reduce the occurrence of risks and seize the opportunities.*

protocol regarding the needs of the sectors and indicating the recommendations of use. Then, the project guide (Figure 7) was elaborated in a graphic software, and some printed copies of the file were available in a folder for the collaborators in the commercial sector; the goal was for them to have easy access to the document during commercial meetings with new possible clients. It was also sent digitally, by e-mail, to the parties in charge of product development.

Figure 7. QR *code* to consult the project guide.

FINAL CONSIDERATIONS

The project guide was approved by the leaders of the sectors and by the production management of company A, and has been used as a support instrument for the process of product projects in their early stages. It favors the communication and transparency with the company's clients.

The main advantage of the project guide was the gain of trust. The document became the record of a commitment, both concerning the company/customer relationship and the internal communication of the company. The tool is a record that the client's problem has been understood. It promotes discussion, collaboration among the company's sectors and strategic planning for the execution of a more accurate project process, ensuring customer satisfaction.

The project guide demystified the briefing process, which began to be understood as a project tool whose function is to reduce the occurrence of misunderstandings and promote engagement among the interested sectors, preventing rework, besides establishing transparency towards the clients.

Throughout the years when we have been directly connected to company A (from 2017 until the beginning of the COVID-19 pandemic, in April, 2020), it was possible to witness the remarkable change in the culture of design among collaborators. The communication between design and manufacture made not only the board, but also the collaborators, realize the immediate improvements in manufacturing. They all became allies in the purpose of improving the design process when they realized how important the stage of planning and data collection is for the demand.

Finally, the importance of extension actions and partnerships between university and company is reinforced, as a way to show the need for professionalization

in the design sector, especially in small and medium companies, so that the design solutions can be incorporated to the company's projects and processes. This happens considering the company's needs, surpassing the configurations of form and including solutions to improve processes, management and communication.

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Conflict of interests: nothing to declare – **Funding:** none.
Authors' contributions: Silva, A. M.: Concept, Investigation, Methodology, Project Administration, Resources, Software, Writing - First Draft, Writing – Review and Editing. Silva, G. D.: Data Curation, Formal Analysis, Supervision, Validation, Visualization.

Article

https://doi.org/10.22398/2525-2828.82375-89

Analysis of the Brazilian academic production on typography: a survey in the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel

Análise da produção acadêmica brasileira sobre tipografia: um levantamento no Banco de Teses e Dissertações da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior

Maíra Woloszyn[I], Berenice Santos Gonçalves[I]

ABSTRACT

The projectual design practice is supported by different fields of knowledge, such as typography, which can be defined as the creation and use of orthographic and para-orthographic symbols. Studies related to this area can adopt different approaches such as the use of typography, type design, vernacular typography, history of the area and retrieve of graphic memory, and teaching of typography. Thus, we aimed to map and analyze the academic production on typography in Brazilian research. To this end, a bibliometric analysis was carried out based on the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel in order to visualize patterns and the development of research in typography. As a result, it was possible to demarcate consolidated approaches, such as the use of typography and the retrieve of graphic memory, and to indicate incipient topics that can point to potential axes of new and relevant research such as vernacular typography, type design, and teaching of typography.

Keywords: Typography Academic production. Bibliometric analysis.

RESUMO

A prática projetual do design *é embasada por diferentes áreas do conhecimento, como a tipografia, que pode ser definida como a criação e utilização de símbolos ortográficos e paraortográficos. Os estudos relacionados à área podem assumir diferentes abordagens, tais como* design *com tipos,* design *de tipos, tipos vernaculares, histórico da área e resgate da memória gráfica e ensino da tipografia. Assim, o presente artigo objetivou mapear e analisar a produção acadêmica acerca da tipografia nas pesquisas brasileiras. Para tanto, realizou-se uma análise bibliométrica a partir do Banco de Teses e Dissertações da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior a fim de visualizar padrões e o desenvolvimento da pesquisa em tipografia. Como resultado foi possível demarcar abordagens consolidadas, como o* design *com tipos e o resgate da memória gráfica, e indicar temas incipientes que podem apontar potenciais eixos de pesquisas inéditas e relevantes, como tipos vernaculares,* design *de tipos e ensino da tipografia.*

Palavras-chave: *Tipografia. Produção acadêmica. Análise bibliométrica.*

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Received on: 12/21/2022. **Accepted on:** 03/25/2023.

INTRODUCTION

Design is a field of knowledge that investigates the relationships of human beings with artifacts and languages. It was recognized during the Industrial Revolution with the purpose of increasing the quality of products in the process of industrialization. Thus, with design, it is possible to conceive technologies and meanings that influence the daily life of society (KOCHHANN; DAPPER, 2018). For Coelho (2011), design is a practice that aims at shaping artifacts considering theories and projects elaborated with a specific objective.

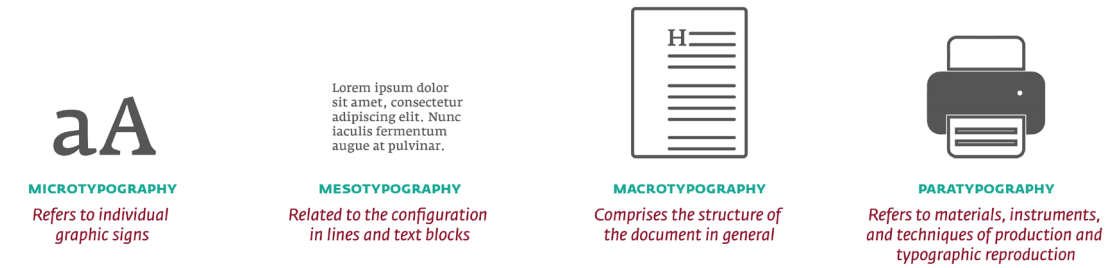
One of the areas that underpins the projectual design practice is typography, which, for many years, has assumed an important role in the composition and presentation of information of different kinds. Typography can be defined as the practice of creating and using orthographic and para-orthographic symbols regardless of the form of creation or reproduction (FARIAS, 2013).

According to Scaglione (2014, p. 19, free translation), "[...] typography plays a central role in graphic design. Most elements of graphic communication require, to a greater or lesser extent, the use of the written word to fulfill its function, and of typography to systematize writing." In addition, typography is present at all times of the day, in the items of the bills we pay, in food labels, posters, mobile devices, and big screens (SAMARA, 2011).

In this sense, Heller and Ilic (2012) point out that typography is essential for design, as it conveys most messages and is considered by Heller (2004) the most important element of graphic design. The author (HELLER, 2004) also suggests that typography is one of the bases for learning design, making the teaching of typographic approaches paramount for the training of professionals in this field of knowledge. Lupton (2018) stresses this point by stating that the most basic challenge of a designer is, precisely, to organize letters in a blank space.

Currently, there are different ways to create letters such as calligraphy, lettering, and typography. Calligraphy is characterized by the use of specific tools to draw the letters and, sometimes, it is based on the old form of writing and shows the characteristics of the instruments used for the practice. Lettering deals with a specific composition of one or more words, and it may present ornaments not always found in fonts or calligraphy. It can also be defined as the creation of an image for a message (UNGER, 2018). Popular lettering stands out, which concerns handmade letters drawn by sign writers and ordinary people, also known as vernacular typography (FINIZOLA, 2010). In turn, the term "typography" is also used to refer to typographic designs and to the production of digital fonts, a practice commonly referred to as "design of types" (type design) (MESEGUER, 2014).

Typography is concerned with the creation of letters as well as being responsible for their use. Hence, the application of typographic systems in different materials and media is also entitled "design with types" (use of typography). In this sense, Stöckl (2005) proposes four domains for typography, namely microtypography, mesotypography, macrotypography, and paratypography, as shown in Figure 1.



Source: prepared by the authors.
Figure 1. Typography domains.

Therefore, according to the author (STÖCKL, 2005), microtypography is related to individual graphic signs, such as the used type, size, style, and color. Mesotypography deals with the configuration in lines and text blocks — word spacing, amount of print on page, and alignment of type. Macrotypography encompasses the structure of the document in general, that is, the size of the text blocks, the existence of caps and initials, emphases, and typographic hierarchies, and the relationship between text and image. In turn, paratypography refers to materials, instruments, and production techniques.

In addition to practical issues, typography also studies the history and development of types. With the emergence of writing and the evolution of calligraphy, the need to organize graphic representations emerged, providing the mechanization of writing and the emergence of typography from Gutenberg's movable types, which many consider as the beginning of typography (VIRGÍNIO; ALMEIDA, 2014). Thus, printing systems evolved seeking to facilitate and popularize the composition with types until the emergence of digital media, when "[...] the types ceased to be objects with physical properties and became sequences digitized in binary code [...]" (ROCHA, 2012, p. 28, free translation), providing for the appropriation of this code by those who use it. Studies that highlight the peculiarities of the visual aspects of graphic artifacts and that bear relations with the fields of visual, printed, and material culture can also be named as "graphic memory" (FARIAS, 2017).

Taking this into consideration, this article aims to map and analyze the academic production on topics related to typography in Brazilian research. To this end, we propose a systematic survey and a quantitative bibliometric analysis. It is noteworthy that this type of search allows surveying the state of the art on the subject in question, identifying trajectories and pointing out trends and possibilities for future research.

METHODOLOGICAL PROCEDURES

In order to identify the academic production on typography, this study performed an exploratory bibliometric analysis. This technique allows visualizing patterns of publications and can be used to analyze the impact of the scientific production of a field of knowledge, point out the development of a field of research, and analyze trends in investigations (FREIRE, 2013). To do so, Freire (2013) suggests defining the databases to be consulted and the filters applied for selecting the

documents to be analyzed. Therefore, the present research was developed in three steps for carrying out the bibliometric analysis: search definition, selection of references, and presentation of results.

Step 1: search definition, in which the databases that would be consulted, as well as the search strategy, were identified. Thus, it was defined that the survey of research related to the topic would take place in the Theses and Dissertations Database (BTD – Sucupira platform) of the Coordination for the Improvement of Higher Education Personnel (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* – CAPES).[1] This platform aims to provide information about theses and dissertations defended in Brazilian graduate programs (GP). It is noteworthy that the information found in the CAPES BTD is provided by the GP themselves. In addition, as it is a referential database, the BTD enables the consultation of titles and abstracts; however, some authors indicate the address for access to the full text. Regarding the search term, the word "typography" was used in the database without limiting the results by date, type of document, or area. Considering this strategy, the search took place during the first half of March 2022, when 312 documents were found.

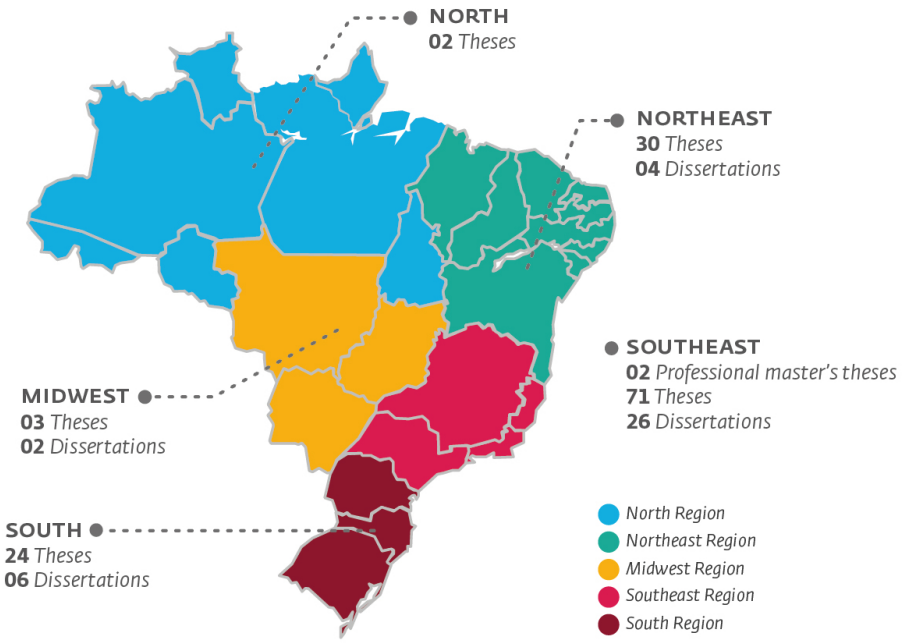
Step 2: in this second stage of the research, selection of references, inclusion and exclusion filters were applied for selecting the reference portfolio. In order to choose the theses and dissertations that dealt with topics related to typography, the titles and abstracts of the documents presented by the CAPES BTD were fully read, excluding those that did not have a direct relation to the study of typography as well as duplicate studies. It was sought to select studies that had typography as their subject and main focus. Research that touch on the topic, whose main focus is not on the understanding of typographic aspects, was not selected for this study. The selected studies were organized in a spreadsheet with data on the author, title of the document, year of publication, GP, and higher education institution. In addition, the studies were categorized according to the investigated topic, namely type design, use of typography, teaching of typography, graphic memory, and vernacular typography.

Step 3: this stage of the study concerns the presentation of results, when the analysis of the reference portfolio, discussion of the collected data, and presentation of the conclusions are carried out. This information can be found next.

RESULTS AND DISCUSSION

From the aforementioned strategies, after reading the titles and abstracts, we selected 170 studies whose main topic was the understanding of typographic approaches. Among them, two are professional master's theses, 129 are academic master's theses, and 39 are PhD dissertations. For this analysis, the academic and professional master's theses were added. The analysis allowed us to verify the distribution of the number of publications by regions of the country, as shown in Figure 2.

1 Available from: http://bancodeteses.capes.gov.br/. Accessed on: Mar. 10, 2022.



Source: prepared by the authors.
Figure 2. Distribution of academic research on typography found in the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel by Brazilian regions.

We observed that, mostly, typography research is concentrated in the Southeast region of Brazil, where, of the 170 analyzed studies, 26 PhD dissertations and 73 master's theses (academic and professional) were published, which corresponds to 58% of studies on the topic published in the country.[2] Subsequently, we noticed that the second largest concentration of academic research related to typography is in the Northeast, responsible for 20% of the published studies, followed by the South, which accounts for 17% of the aforementioned research. It is also noteworthy that, in the Midwest region, there are 3% of the publications and, in the North, 2%.

There are different GP that develop research related to typography. Nevertheless, most of the research is developed in programs in the areas of Design or related fields such as Architecture and Urbanism, Arts, Communication, and Education. It is noteworthy that, in relation to the graduate degree in Design, the programs comprise the area of Architecture, Urbanism and Design in the CAPES system, the same that integrates the large area of Applied Social Sciences. Currently, the Design subarea has 24 GP, of which eight are in the Southeast region of the country (CAPES, 2017).

In view of the data on the greater number of studies related to typography being concentrated in the Southeast region, this may be driven by the expressive concentration of master's and PhD courses as well as a greater concentration of the

2 It is worth highlighting that the numbers listed in the present article refer to the universe of this study (studies included in the CAPES BTD platform). We stress that there may be changes as the institutions communicate their results to the platform, as GP are responsible for providing this information.

Brazilian population in this region. Moreover, the Southeast was also the pioneer in the emergence of GP in Design. The first course was implemented in 1994 at the Pontifical Catholic University of Rio de Janeiro (PUC-Rio), which was also the first to offer the PhD program in Design in 2002 (CAPES, 2017).

Considering the data on the universities and higher education institutions that have published the most academic research related to typography, we can demarcate the top five. The University of São Paulo (USP) is the institution that most published research in CAPES BTD, totaling 18 documents. Next, the University of the State of Rio de Janeiro (UERJ) accounts for 14 of the aforementioned studies. In addition, we mention the Pontifical Catholic University of São Paulo (PUC-SP), which accounts for ten of the analyzed documents; the Federal University of Minas Gerais (UFMG), which has eight published studies on the topic; and the Federal University of Pernambuco (UFPE), which also published eight of the studies related to typography in BTD. We observed that, even in relation to universities, there is a predominance of research conducted in the Southeast region of the country.

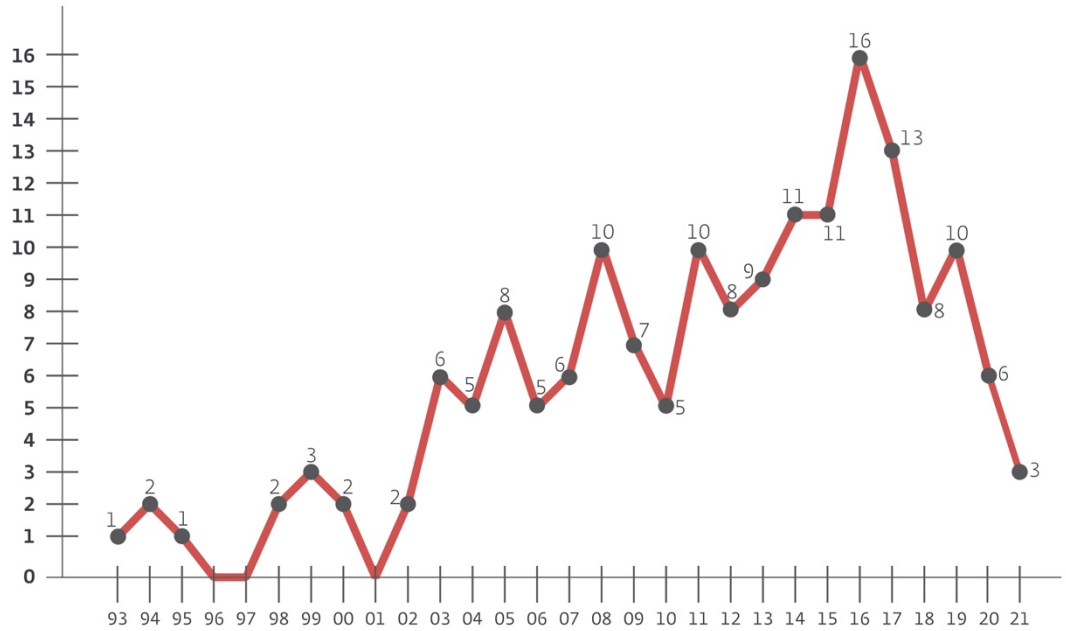
When analyzing the main GP of these institutions, we highlight that, at USP, most of the publications in the area of typography are concentrated in the GP in Architecture and Urbanism. This may be related to the date of creation of the GP in Design of the institution, only implemented in 2017, while the GP in Architecture and Urbanism has been in force since 1972. At UERJ, most of the research is linked to the GP in Design of the School of Industrial Design (*Programa de Pós-Graduação em Design da Escola Superior de Desenho Industrial* – PPDESDI). This program has been in force since 2005 at the School of Industrial Design (*Escola Superior de Desenho Industrial* – ESDI), one of the first Design schools in Brazil.

Studies on typography at PUC-SP are mainly concentrated in the GP in Communication and Semiotics, which promotes investigations on communication phenomena and processes. At UFMG, the analyzed studies were developed mainly in the GP in Education, which aims to contribute to the investigation and reflection about educational phenomena. The latter institutions do not have a GP in Design, which may justify the adoption of the topic of typography in programs of other related areas. In turn, at UFPE, most of the studies are linked to the GP in Design, which began to offer graduate courses in 2004.

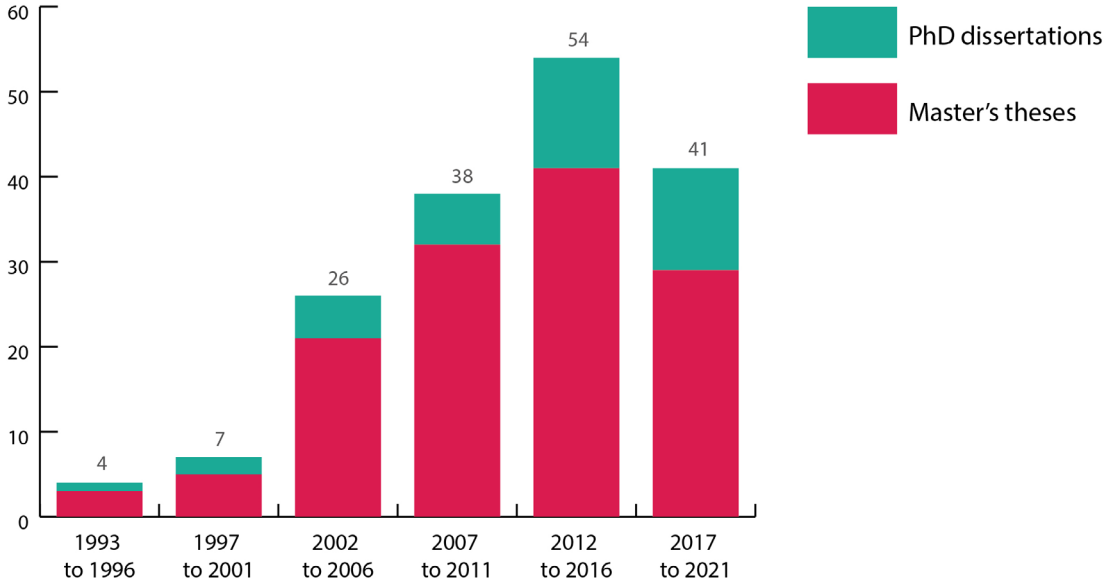
The survey enabled us to analyze the distribution of research over time. Regarding the year of publication, we observed that the academic production on the subject does not maintain an annual average, as shown in Figure 3.

Based on Figure 3, we can see a significant growth in the number of academic research on typography published in 2016 on BTD. Conversely, when analyzing the last years, more precisely 2020 and 2021, we noticed a decrease in the number of publications. No documents published in 2022 were identified from the search strategies previously mentioned. It should be noted that the pandemic caused by the new coronavirus (COVID-19) between the years 2020 and 2022 may have influenced the decrease in the completion of graduate courses as well as the publication of documents by the GP on the CAPES platform.

In view of these data, we sought to understand the distribution of research, by quinquennia, in relation to the identified studies in total, as shown in Figure 4.



Source: prepared by the authors.
Figure 3. Graph of publications on typography, per year, found in the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel.

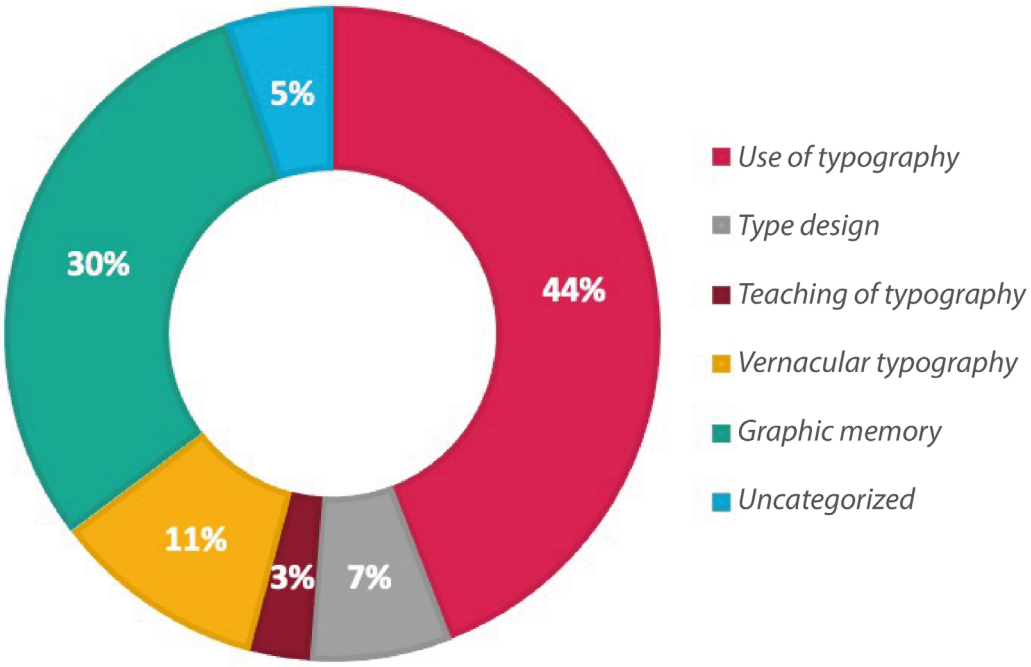


Source: prepared by the authors.
Figure 4. Distribution of publications on typography found in the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel per quinquennia.

The first publication we found on typography, considering the strategies mentioned in the BTD, dates from 1993. As of this date, in quinquennia, we can perceive, in relation to the number of produced theses, an ascending curve in the number of publications until the year 2016. However, in the last quinquennium, there is a decrease in production. The increase is also verified in the publication of dissertations

in the first three quinquennia analyzed, namely between 1993 and 1996, 1997 and 2001, and 2002 and 2006. From the third to the fourth quinquennia (between 2007 and 2011), there is a stability in the number of publications, which increases again in the following quinquennium (between 2012 and 2016) and remains stable in the last analyzed quinquennium (between 2017 and 2021), diverging from the master's theses, which show a slight decrease in the number of publications.

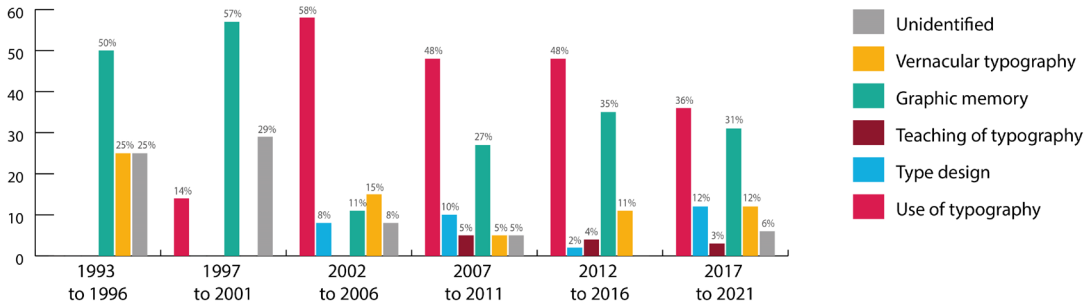
Subsequently, we sought to understand which scopes are being addressed in Brazilian research on typography, as shown in Figure 5.



Source: prepared by the authors.
Figure 5. Graph of topics addressed in the publications on typography found in the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel.

Regarding the subjects addressed within the analyzed scope, we identified that most of the research deals with the use of typography, that is, they address the use and application of typography in different contexts, such as packaging, editorial design, and digital media, accounting for 75 publications. Next, studies that refer to the history of typography and retrieve of graphic memory are in greater number, accounting for 51 studies. Subsequently, research on vernacular typography, letters that represent the characteristic of a region, total 18 publications. Furthermore, there are 12 studies on type design and five on teaching of typography. As for the nine remaining studies, we point out that, only considering the title, we could not categorize them — and they did not have a complete record in the BTD that could assist in this process.

In order to identify the research trends over the years, we made an analysis considering the aforementioned quinquennia and the percentage that each topic represented in this time period, as illustrated in Figure 6.



Source: prepared by the authors.
Figure 6. Frequency of topics addressed in the scientific production on typography retrieved from the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel.

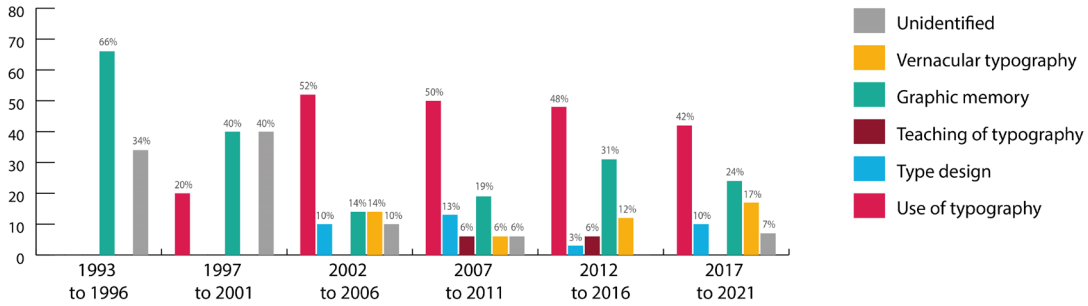
When analyzing the addressed topics in the different time periods of the Brazilian scientific production on typography, we noticed that the only topic addressed in all quinquennia is the one related to the history of typography and retrieve of graphic memory, the second most researched subject in the total of publications. Despite being the topic most addressed in the investigations in the first two quinquennia, there was a significant decrease between the second and third quinquennia. However, from the period between 2002 and 2006 to the most current date, there has been an increase in research on the subject as well as the trend of stability. This may be due to the presence of GP research lines in Theory and History of Design in the main higher education institutions in Brazil, as well as the indirect influence of the fact that the topic is the thematic axis of the main Brazilian scientific congresses in the area of Design, especially the Brazilian Congress of Research and Development in Design (*Congresso Brasileiro de Pesquisa e Desenvolvimento em Design* – P&D) and the Information Design International Conference (*Congresso Internacional de Design de Informação* – CIDI).

Concerning use of typography, the most addressed subject in Brazilian research on typography retrieved from the BTD, its presence is verified since the second analyzed quinquennium, still with little expressiveness in relation to the total of publications of the period. However, as of the third quinquennium, the topic appears as the most adopted approach in all the other analyzed periods. Nevertheless, we observed a decrease in the representativeness of this topic from its greatest rise, between the years 2002 and 2006, to the most recent date, which may indicate the trend of stability and even decrease of Brazilian research on the use of typography.

Studies on vernacular typography are verified in five of the six analyzed quinquennia, not being identified only between the years 1997 and 2001. Although this topic presents a decrease in the fourth quinquennium, we verified a trend of stability in the number of publications on the subject due to its constant presence in relation to the other analyzed subjects. We also noticed stability in relation to research on type design. Despite low numbers in all publications and a decrease in research on the subject between 2012 and 2016, there has been an increase in the investigation of this topic in the last five years.

When analyzing studies that address the teaching of typography, these are identified only in the last three analyzed quinquennia (from 2007 to 2021). It should be noted that the first publication on this topic present in the BTD repository dates from 2008. Despite the little expressiveness of the topic in the analyzed documents, we can indicate a stability, considering the proximity of the number of publications between the quinquennia in which they are verified.

When considering these same data in relation to master's and doctoral studies separately, we noticed some differences. In Figure 7 we show data on the master's theses regarding the presence of each topic over quinquennia.



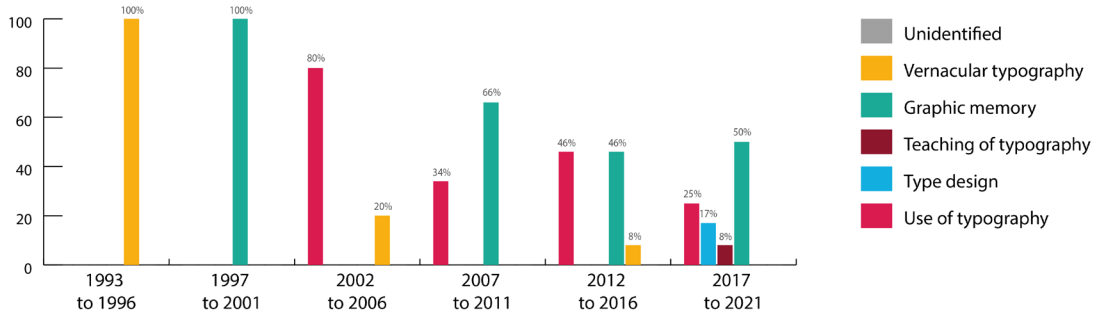
Source: prepared by the authors.
Figure 7. Frequency of topics addressed in master's theses retrieved from the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel.

Overall, there is a similarity in the distribution of typographic approaches in master's research in relation to the total of Brazilian research. We observed a predominance of studies on use of typography and a stability with slight decreases over time of the topics type design and vernacular typography.

Nonetheless, based on Figure 7, the presence of studies on history and retrieve of graphic memory was only verified in the first analyzed quinquennium. It is noteworthy that, in this period, only three theses were published, of which two addressed the subject. In addition, in relation to this topic, there has been a decrease in the presence of theses on the subject in the last five years in relation to the previous five. Moreover, master's research on the teaching of typography is identified only between the years 2007 and 2016 (relative to the fourth and fifth analyzed quinquennia), making it impossible to infer the trend in master's research on this topic, considering that none addressed the subject in the last five years.

The same analysis is carried out considering PhD research retrieved from BTD and that has typography as its central topic. In Figure 8 we demonstrate the distribution of topics of the dissertations analyzed over the aforementioned quinquennia.

In this analysis, some differences in relation to the total of analyzed documents stand out. Initially, it should be noted that, in the first two quinquennia, we identified dissertations on only one subject in each period. In the period between 1993 and 1996, only one dissertation was published on BTD, whose approach focused



Source: prepared by the authors.
Figure 8. Frequency of topics addressed in PhD dissertations retrieved from the Theses and Dissertations Database of the Coordination for the Improvement of Higher Education Personnel.

on vernacular typography. Conversely, in the period between 1997 and 2001, two investigations were identified, both on the history of typography and the retrieve of graphic memory.

Unlike the master's research, as well as the totality of the publications, in the analyzed dissertations, the approach regarding the history of typography and the retrieve of graphic memory predominates. Of the 39 analyzed documents, 18 deal with the subject and, in turn, 15 deal with the use of typography.

We can also highlight the PhD research related to type design and the teaching of typography. These topics are only verified in the last five years within the observed universe, being, of the 12 dissertations retrieved from this period, two related to the use of typography and one to the teaching of typography. The presence of these subjects only in recent years, and considering their presence in the previous quinquennia in master's theses, may indicate that researchers whose investigations began in master's degrees continued developing the topic in the subsequent graduate degree.

As for the research on vernacular typography in the consulted dissertations, there is constancy between their presence and absence throughout the analyzed quinquennia, making the indication of trends for the approach inaccurate. In addition, it should be noted that, among the dissertations consulted in this research, all had records that allowed us identifying the typographic approaches adopted.

The aforementioned survey also allowed us to investigate the most researched subjects in each educational institution, as shown in Chart 1.

Chart 1. Survey of the main researched approaches by higher education institution.

State	Higher education institution	Main research approaches
Midwest Region		
Mato Grosso do Sul	Federal University of Mato Grosso do Sul (UFMS)	Use of typography
Federal District	University of Brasilia (UnB)	Use of typography

Continue...

Chart 1. Continuation.

State	Higher education institution	Main research approaches
Northeast Region		
Alagoas	Federal University of Alagoas (UFAL)	Use of typography
Ceará	Federal University of Ceará (UFCE)	Graphic memory
Maranhão	Federal University of Maranhão (UFMA)	Use of typography
Paraíba	Federal University of Paraíba (UFPB)	Graphic memory
Pernambuco	Federal University of Pernambuco (UFPE)	Use of typography Teaching of typography
Bahia	Federal University of Bahia (UFBA)	Graphic memory
	State University of Feira de Santana (UEFS)	Use of typography
	State University of Southwest Bahia (UESB)	Graphic memory
Piauí	Federal University of Piauí (UFPI)	Use of typography
Sergipe	Federal University of Sergipe (UFS)	Graphic memory
Rio Grande do Norte	Federal University of Rio Grande do Norte (UFRN)	Use of typography
North Region		
Pará	Federal University of Pará (UFPA)	Use of typography Vernacular typography
Southeast Region		
Minas Gerais	Federal Center for Technological Education of Minas Gerais (CEFET-MG)	Use of typography
	Federal Institute of Education, Science, and Technology of Minas Gerais (IFMG)	Use of typography
	University of the State of Minas Gerais (UEMG)	Graphic memory Use of typography
	Federal University of Minas Gerais (UFMG)	Use of typography
Rio de Janeiro	Pontifical Catholic University of Rio de Janeiro (PUC-Rio)	Use of typography Graphic memory
	University of the State of Rio de Janeiro (UERJ)	Graphic memory
	Fluminense Federal University (UFF)	Graphic memory
	Federal University of Rio de Janeiro (UFRJ)	Use of typography
	Rural Federal University of Rio de Janeiro (UFRRJ)	Graphic memory
São Paulo	Anhembi Morumbi University	Use of typography
	Estácio de Sá University	Use of typography
	Mackenzie Presbyterian University	Vernacular typography
	Pontifical Catholic University of São Paulo (PUC-SP)	Use of typography
	State University of São Paulo – Bauru Campus (UNESP – Bauru)	Use of typography
	University of Campinas (Unicamp)	Use of typography Graphic memory
	University of São Paulo (USP)	Graphic memory
South Region		
Paraná	Pontifical Catholic University of Paraná (PUC-PR)	Teaching of typography
	State University of Londrina (UEL)	Teaching of typography
	State University of Maringá (UEM)	Graphic memory
	Federal University of Paraná (UFPR)	Use of typography
Rio Grande do Sul	Federal University of Rio Grande (FURG)	Graphic memory
	Pontifical Catholic University of Rio Grande do Sul (PUC-RS)	Use of typography
	Federal University of Pelotas (UFPel)	Vernacular typography
	Federal University of Rio Grande do Sul (UFRGS)	Use of typography
	UniRitter University	Type design
	Brazilian Jesuit University (Unisinos)	Use of typography
Santa Catarina	Federal University of Santa Catarina (UFSC)	Use of typography
	University of the State of Santa Catarina (UDESC)	Use of typography

Source: prepared by the authors.

Based on the presented analyses, we observe that Brazilian research on typography remains stable, which tends to perpetuate in the percentage of investigations on subject over time. In this sense, we also highlight the predominance of approaches related to the use of typography, that is, research that aims at understanding the application of typographic systems in different materials and media, as well as those related to the study of the history of typography and retrieve of graphic memory. Thus, we understand that both approaches are topics deemed consolidated within graduate studies.

Conversely, we identified topics on typography that are still incipient in academic studies developed in Brazil. We highlight the approaches related to vernacular typography, which refer to popular lettering, type design, and aspects related to the production of digital fonts and, mainly, to the teaching of typography. These observations may indicate possibilities of investigation, especially in the academic context, in which research is carried out aiming to fill the gaps in the studies of an area or field.

FINAL CONSIDERATIONS

The teaching and practice of design are underpinned by different areas. One of the most relevant is typography, whose studies involve different issues related to types such as historical studies, application of typography, creation of types, teaching, among others. In order to analyze the development of this area in Brazilian academic research, we carried out a bibliometric analysis in the CAPES BTD, a platform in which studies developed in the GP recognized in the country are registered.

The present research allowed us to visualize the profile of research on typography carried out in Brazil, as well as to reinforce the topics consolidated in the aforementioned academic research. Furthermore, we identified incipient topics that were little investigated in the studies on typography developed in the country, which represent potential subjects for new research addressing typography. In this sense, it is worth emphasizing that the largest number of retrieved studies concern the use of typography, which may indicate an increase in the number of dissertations and theses on this topic, as the vast production of existing documents tends to contribute and support new related studies. Nevertheless, we noticed gaps in research on the teaching of typography. Few of the consulted references address the subject, thus indicating a potential axis of unpublished and relevant research for advancing the field.

As for the technique chosen for conducting this study, namely the bibliometric analysis, we believed that it provided reflections on the evolution of scientific research in the field of typography in Brazil and the visualization of the intended data. Thus, we could understand and compare the characteristics of the surveyed investigations as well as to demarcate waves of interest and emerging areas for research focused on this topic. However, it should be noted that the present research is conditioned to the results found in the CAPES BTD considering the selected search strategies. Therefore, we stress that there may be deviations in the data, as GP are responsible for publishing theses and dissertations in the consulted platform.

Our results may guide future research in the area of typography. Initially, the evidenced gaps reinforce potential approaches to be investigated. Moreover, based on the identified approaches, the present study can indicate possible ways to search for references on topics involving typography. In addition, we believe that visualizing the main research approaches developed in each higher education institution can indicate possibilities for future researchers in the area, according to their interests when presenting these data.

Finally, we recommend, for future studies, the continuity in the collection and analysis of data to deepen the survey and identify new research approaches in the field of typography. Moreover, we propose a survey of research on the subject in scientific journals and annals of the main congresses and conferences in the country, enabling the analysis of the main authors and researchers in the field.

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Conflict of interests: nothing to declare – **Financial support:** Coordination for the Improvement of Higher Education Personnel (CAPES) – Financing Code 001.
Authors' contributions: Woloszyn, M.: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. Gonçalves, B. S.: Conceptualization, Investigation, Methodology, Supervision, Validation, Visualization, Writing – review & editing.

Article

https://doi.org/10.22398/2525-2828.82390-106

Design teaching in the pandemic of COVID-19: perspective of teachers and students in the city of Rio de Janeiro

Ensino do design *na pandemia de COVID-19: perspectiva de docentes e discentes da cidade do Rio de Janeiro (RJ)*

Paola de Lima Vicky[I], Ligia Maria Sampaio de Medeiros[I]

ABSTRACT

Some of the changes in ways of living brought about by the Covid-19 pandemic, despite being announced and emerging since the 20th century, have expanded and consolidated in an unprecedented breadth and pace. This situation increases the demands of facing complex problems, that is, with demands and restrictions in constant change. Since Design is a professional activity that proposes to equate design factors to meet human needs, debates about the challenges for its teaching and practice have intensified. The present work is part of a doctoral research initiated in 2020, which aims to prospect future scenarios for teaching Design, from the perspective of the Covid-19 pandemic. Data collections were carried out, with territorial cuts of the city of Rio de Janeiro (in the period of 2020 and 2021), with controlled follow-ups directed to teachers and students. Positive and negative points and a vision of the future were identified, which lead to a discussion for the continuation of the research.

Keywords: Design. Teaching. Rio de Janeiro. Pandemic. Futurology.

RESUMO

Algumas das mudanças nos modos de viver provocadas pela pandemia de Covid-19, mesmo anunciadas e emergentes desde o século 20, se expandiram e se consolidaram em abrangência e ritmo inéditos. Tal situação amplifica as exigências no enfrentamento de problemas complexos, isto é, com requisitos e restrições em constante mudança. Sendo o design a atividade profissional que se propõe ao equacionamento de fatores projetuais para o atendimento das necessidades humanas, intensificaram-se os debates sobre os desafios para o seu ensino e a sua prática. O presente trabalho faz parte de uma pesquisa de doutorado iniciada em 2020 que tem como objetivo prospectar cenários futuros para o ensino do design, na perspectiva da pandemia de Covid-19. Foram realizadas coletas de dados, mediante questionários estruturados, enviados por meio de formulários online, com um recorte territorial da cidade do Rio de Janeiro (RJ), no período de 2020 e 2021, a docentes e discentes. Foram identificados pontos positivos, negativos e uma visão de futuro que levam a uma discussão para a continuidade da pesquisa.

Palavras-chave: *Design. Ensino. Rio de Janeiro. Pandemia. Futurologia.*

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Received on: 6/3/2023. **Accepted on:** 6/16/2023

INTRODUCTION

On January 30th, 2020, the World Health Organization declared a public health emergency of international concern, and on March 11th, 2020, COVID-19 was characterized as a pandemic (WHO, 2020). A week later, the plenary of the Brazilian Chamber of Deputies approved the request for recognition of a public calamity sent by the federal government in the face of the coronavirus pandemic, thus beginning major changes in all social spheres.

As scientific knowledge about the means of contamination was still limited at the beginning, social distancing was adopted, a term that refers to the physical distance between individuals, as a way to reduce the spread of the virus. This measure included the cancellation of mass events, the temporary closure of schools and workplaces, the blocking of borders and the recommendation for the population to stay at home (WHO, 2020). As a result, the routine and personal ties changed, and, as a result, several social, cultural and economic impacts and resilience strategies in the face of uncertainties came to light (GRISOTTI, 2020). Yuval Harari (2020), in his book *Notes on the pandemic: brief lessons for the post-coronavirus world*, already mentioned the consequences of the pandemic in today's society when he stated that emergencies accelerate historical processes, since decisions that would take years to be deliberated in normal times are approved in a matter of hours, as was the case with the COVID-19 pandemic.

In this scenario, the education segment was also greatly affected; there was an unconditional stoppage of public and private schools, affecting school communities (teachers, employees, parents, and students), at all levels of education. The United Nations Educational, Scientific and Cultural Organization (Unesco), on March 18th, 2020, stated that at least 85 countries have partially or completely closed face-to-face activities in schools to try to contain the spread of the new coronavirus, impacting more than 776.7 million children and young students, which is why the entity chose to support distance and inclusive teaching and learning, which was discussed in a virtual event that took place at the beginning of the pandemic (*apud* AGÊNCIA BRASIL, 2020).

It was possible to observe a true search for solutions so that education could be offered in a different way through new means of teaching, most often by the use of digital communication and information technologies. Such a situation has no precedent with such similar characteristics, especially in Brazil, where large-scale events are rare. Although the country has already gone through the closure of schools with the meningitis epidemic in 1971 and 1974, there was no technological support at the time as there currently is to replace classes (NAKANO; ROZA; OLIVEIRA, 2021).

In view of these events, the functioning of higher education in Brazil came to be temporarily regulated by ordinances and opinions from the Ministry of Education and the National Council of Education, in addition to provisional measures from the federal executive power. Several regulations were established with provisional rules for the functioning of higher education institutions, from replacing face-to-face

classes with classes in digital media, while the pandemic situation lasted, to carrying out research and extension activities online.

The pandemic, in this sense, marks the search for rapid adaptations and new solutions and points to transformations that were already taking place in society. It is based on this disruptive scenario, manifested by the coronavirus, that this work was developed as part of a doctoral research on the construction of scenarios for teaching design, based on the events of the Covid-19 pandemic.

THEORETICAL REFERENCE

According to the definition of the World Design Organization (WDO), which since 2017 has become the name of the International Council of Societies of Industrial Design, one of the main bodies representing international design, design is "a transdisciplinary profession that uses creativity to solve problems and co-create solutions" (WDO, 2018).

According to Cross (2011), the knowledge, skills, and values of designers are found mainly in contributing to the creation and maintenance of the artificial world, through involvement in their activities and their reflection. Thus, knowledge about the nature of design reasoning turns to the skills to design or to shape the human condition, but the difficulties cannot be ignored, since such skills are quite limited. It is necessary to look at factors such as economy, environment, international relations and institutions themselves, in order to help figure out what and how to design.

In the 1960s, the Design Research Society was created by a movement that sought to define design, theorizing the professionalization of the field and the systematic distinction between the practice of design and art and craft. Several discussions were raised and are still present in the field today, such as the rigid framing of design in science in contrast to the dynamic characteristic of the problems that designers have to face (RITTEL, 1987). In this sense, Bonsiepe (2012), in his book *Design as a project practice*, describes what had already been discussed before, when he says that designers have the role of integrating science and technology, highlighting the development of projects for the daily life of a society.

Every discussion about defining the field leads to reflections on design teaching, which has been debated more frequently in recent years. In the 1970s, Victor Papanek announced what would become a criticism that continues today, when he points out, in reference to design schools, that "the skills we teach are often related to processes and methods of an era that ended" (PAPANEK, 1971). The author points out that the methods taught in schools were still focused only on the tangible aspects of the project, without worrying about the real context of its surroundings.

More recently, in 2020, She Ji journal presented a special edition on design teaching, with two editions that addressed different aspects of the subject. In published articles, some reported examples of teaching practices around the world adapted to changes in the current world, and others discussed the necessary changes, in general, in design teaching for the 21st Century, as presented by Meyer and

Norman (2020), who state: "Traditional design education has served us well and should not be discarded, but it does not meet all of today's needs". In this critique, they refer to the different and new specialties in design that require a differentiated education, as they seek to meet the demands of technological, analytical, and cognitive skills not yet covered by the traditional curriculum.

Lawson and Dorst (2009), in the book Design expertise, shed light on specific characteristics of design teaching, starting their reflections with the statement: "A common misconception about design education is that, in fact, it is a form of training for the practice" (LAWSON; DORST, 2009, p. 214). The authors point out the mistake of expecting total preparation for practice during the training period, but they assert that this is impossible because of the size of the field to be attended, which demands from small-scale projects, manufacturing engineering to interfaces of electronic devices, for example. In addition, they address the issue of layers of specialization to form a designer with great expertise, saying that this takes time and cannot be developed only at the university in an undergraduate course, since the time of academia is different from that of the market, and the aim of the university must not be training for practice; individuals must learn this through their own practice.

Another issue is the origin of formal design education. The revolutionary Bauhaus school of art, design and architecture set the stage for many of today's design curricula. Its ideology was to connect art and industry, a context in which design assumes an intellectual role, unlike its origin, based on making things. In the pedagogical sense, Bauhaus brings one of the main characteristics that remain to this day in most design schools, the studio concept. The Ulm School, functionalist in character, also influences contemporary design schools through the nationalization of markets, so characteristic of the end of the 20th Century, with a focus on mass production.

Lawson and Dorst (2009) reflect on current teaching still being based on the Bauhaus and Ulm molds, although current society is totally different, with a new cultural cycle, more plural between human beings and digital interfaces through cyberspace, a space that goes beyond communication, but also involves socialization and learning. This view was also addressed by Bonsiepe (2011), in his book Design, culture and society, in which he mentions the cultural issue as a factor to be considered when it comes to design projects. Santaella (2002, p. 45-46) states: "The advent of each new means of communication brings with it its own cultural cycle".

Therefore, the connection of the designer with contemporary problems is essential. In this sense, as Archer (2005) points out, design teaching should be concerned with "training people who are critical and sensitive" to current problems. By defending the need to approach design from a new perspective, called new learning, Buchanan (2001) reinforces the need to perpetuate a new type of university through a balanced dynamic between theory, practice, and production and draws attention to the permanence of the separation of trades propagated

in universities. While theory was highly valued in these institutions and practice was only tolerated, production and doing remained outside learning matters (BUCHANAN, 2001).

Back to Lawson and Dorst (2009), the authors also characterize the learning style in design teaching by the idea of learning by doing, in which teachers have the role of tutor and pass on to students a series of design projects that must become more and more difficult. However, under these conditions, according to this conception, practical skills necessary for the design project are not taught at the university, in the traditional curriculum, but in extra courses or even in the market, which becomes a paradox. Therefore, the teacher's role is essential in guiding students through the layers of learning, but it is not a determining factor for learning design skills.

Another particular pedagogical characteristic of design teaching considered in this research to analyze the collected data is studio-based learning (LAWSON; DORST, 2009), in which the concepts of contextualized problem-solving practice (SCHON, 1983; BUCHANAN, 1992) and the creation of artifacts (SIMON, 1996) and practical activities, such as workshops and modeling, are particular characteristics of this teaching-learning practice. In addition, the studio concept in design teaching is often understood as a series of steps emphasized by processes and methods, such as information gathering, idea sketching — representations with presentation drawings or physical models —, technical drawings and prototypes leading to the solution of a problem. The social components of the studio are considered worrying factors when it comes to online teaching, especially by teachers who had to migrate to face-to-face classes during the pandemic. This subject will be discussed in more detail next.

As a way of delimiting the present study, only the characteristics of design teaching were highlighted according to the demands of the current moment, especially after the pandemic:

- designing as a skill inherent to the field;
- considering the project's contextual factors, such as social, environmental, and economic issues;
- balance between theory, practice, and production;
- teacher as a tutor rather than a coach;
- teaching-learning process according to the cultural cycle.

METHODOLOGY

Of an exploratory nature, this work is a collection of data from teachers and students of undergraduate courses in Design. Two questionnaires were created for all higher education institutions that have an undergraduate course in Design in the city of Rio de Janeiro (RJ), according to the e-MEC website. The questionnaires were prepared in an online form and directed to known people who had a bond or contact with someone from the institutions, but the survey did not reach all previously selected entities. The questionnaires were sent at two different times: first, in the

period between August and September 2020, and then in March 2021, as the measures taken to maintain activities at the beginning of the pandemic were different in the institutions, some with immediate adoption of the remote model of teaching, as in private ones, and others with the adoption of extracurricular activities before the start of remote classes, as in public ones.

As part of this data collection, higher education institutions that offer undergraduate courses in Design located in the city of Rio de Janeiro were chosen, including Universidade Federal Fluminense (UFF), which is located in a neighboring municipality, in the metropolitan region, because of the ease of access to those surveyed and the diverse nature of the institutions located in the region.

To facilitate the analysis of the collected data, the research was divided into three parts: profile, with a brief presentation of the higher education institution and the professors and students who answered the questionnaires; analysis of responses about remote classes; and, finally, points about the future vision of the respondents.

PROFILE OF HIGHER EDUCATION INSTITUTIONS THAT OFFER DESIGN COURSES

The profile of higher education institutions differs in different categories, such as the type of academic organization, the administrative category, and the degree of training. Such variables are important for a more detailed analysis, since they influence both structural and cultural issues of each type of institution.

According to the Ministry of Education (BRASIL, 2022), based on the e-MEC search platform, which contains higher education institutions and courses registered with the Ministry of Education, 37 design courses are currently offered in 15 educational institutions in the city of Rio de Janeiro, as can be seen in Figure 1. Of the 16 entities, one is federal public, another state public, nine are non-profit private, and four are for-profit private institutions. There are five colleges, four university centers and seven universities, considering the administrative category. Of the 37 courses offered, 12 are bachelor's degrees and 25 are technological ones. Ten different nomenclatures of courses in the area were found: Design, Graphic Design, Interior Design, Animation Design, Fashion Design, Games Design, Visual Communication Design, Industrial Design, Game Design, and Service Design.

The questionnaires were sent to teachers and students of the institutions and reached 13 of them, three of which were public: Universidade do Estado do Rio de Janeiro, Universidade Federal do Rio de Janeiro and UFF; four for-profit: Universidade Estácio de Sá, IBMR, Universidade Veiga de Almeida and Instituto INFNET; and five non-profit ones: Pontifícia Universidade Católica do Rio de Janeiro, Technology Center for the Chemical and Textile Industry, Unigranrio, Centro Universitário Carioca and the National Service for Commercial Learning. As mentioned in the methodology section, the forms were sent to a personal contact network (teachers and students) that had a bond or connection with the institutions, but it was not possible to reach all previously selected institutions.

HEI acronym	HEI name	Management	Academic organization	Course name	Degree	No. of campus
UNISUAM	CENTRO UNIVERSITÁRIO AUGUSTO MOTTA	Private non-profit	university center	Graphic design	Technological	1
				Interior design	Technological	2
	CENTRO UNIVERSITÁRIO IBMR	Private for-profit	university center	Design	Bachelor degree	1
				Graphic design	Technological	1
				Interior design	Technological	1
UNINASSAU	CENTRO UNIVERSITÁRIO MAURÍCIO DE NASSAU DO RIO DE JANEIRO	Private for-profit	university center	Game design	Technological	1
				Service design	Technological	1
UNICARIOCA	CENTRO UNIVERSITÁRIO UNICARIOCA	Private non-profit	university center	Design	Bachelor degree	1
ESPM	ESCOLA SUPERIOR DE PROPAGANDA E MARKETING DO RIO DE JANEIRO	Private non-profit	College	Design	Bachelor degree	1
FATEC	FACULDADE DE TECNOLOGIA SENAC RIO	Private non-profit	College	Graphic design	Technological	1
SENAI-CETIQT	FACULDADE SENAI-CETIQT	Private non-profit	College	Design	Bachelor degree	1
FACHA	FACULDADES INTEGRADAS HÉLIO ALONSO	Private non-profit	College	Graphic design	Technological	1
INFNET	INSTITUTO INFNET RIO DE JANEIRO	Private for-profit	College	Animation design	Bachelor degree	1
				Game design	Bachelor degree	1
				Interior design	Technological	1
				Graphic design	Technological	1
PUC-RIO	PONTIFÍCIA UNIVERSIDADE CATÓLICA DO RIO DE JANEIRO	Private non-profit	University	Design	Bachelor degree	1
UCAM	UNIVERSIDADE CÂNDIDO MENDES	Private non-profit	University	Interior design	Technological	1
UCB	UNIVERSIDADE CASTELO BRANCO	Private non-profit	University	Graphic design	Technological	1
UERJ	UNIVERSIDADE DO ESTADO DO RIO DE JANEIRO	State public	University	Design	Bachelor degree	1
UNESA	UNIVERSIDADE ESTÁCIO DE SÁ	Private for-profit	University	Graphic design	Technological	3
				Fashion design	Bachelor degree	1
				Fashion design	Technological	1
				Interior design	Technological	2
				Design	Bachelor degree	1
UFRJ	UNIVERSIDADE FEDERAL DO RIO DE JANEIRO	Federal public	University	Visual communication design	Bachelor degree	1
				Industrial design	Bachelor degree	1
UVA	UNIVERSIDADE VEIGA DE ALMEIDA	Private for-profit	University	Graphic design	Technological	2
				Animation design	Technological	2
				Interior design	Technological	2
					Total courses	**37**

Figure 1 – Higher education institutions: Design courses, Rio de Janeiro (RJ), 2023.

Regarding remote performance, in the first half of 2020, only private institutions immediately migrated to the online class model. Public institutions, at first, developed some extracurricular activities online, and only in September 2020 did classes for the first half of 2020 return, in remote mode.

The first questionnaire was answered by 189 students and 41 professors, and they were requested to share their contact info for further research. Therefore, the second questionnaire had a smaller reach, as it was sent only to those who left the contact, being answered by 36 students and 15 teachers.

The variables to compose the students' profile were: age group, gender, and course. As it was an initial research, after the analysis, it was noticed that other variables would be important for a more detailed analysis and data triangulation, being included in other collections later on, such as family structure; whether one works or just studies; place of residence; electronic devices available and internet access. Regarding the age range of the participants, 28% were between 17 and 20 years old, 43% between 21 and 24 years old, 18% between 25 and 28 years old, and only 10% over 29 years old. Crossing the information with educational institutions, it was found that the profile above 29 years old belongs to private institutions. Regarding gender, most identified themselves as female (65%), followed by male (33%), and non-binary (2%). Among the mentioned courses, 30% belonged to Fashion Design, 30% Product Design (Industrial), 25% Graphic Design, 10% Design, and 1% Digital Games, with 51% belonging to bachelor courses and 49% to technological ones.

The variables to compose the professors' profile were: age range, gender, graduation, title, teaching institution where they teach, courses they teach, and teaching time. Regarding age range, 27% were between 31 and 39 years old, 20% between 40 and 49 years old, 33% between 50 and 59 years old, and 20% over 60 years old. Of those who responded, 51% identified themselves as female and 49% as male. Academic training was mostly in Design (80%), although other areas of knowledge also appeared, such as Communication, Engineering, History, and Arts. The majority (61%) had a doctor's degree, 33% a master's degree, and 6% a specialist, mostly in the area of design (62%), followed by engineering (23%), arts (10%), and education (5%). Regarding teaching time, the majority (50%) had been teaching for more than 10 years, 37% between 6 and 10 years, and 13% had up to five years of experience. Professors from private institutions taught at more than one institution, and most worked in several courses in the area, Design, Graphic Design, Industrial Design, Fashion Design, Interior Design, Animation Design, as well as Visual Arts, Advertising, and Journalism. This profile shows the interdisciplinarity of the area; even though the teachers' basic training is in Design, it is clear that the degree and performance occur in other areas.

QUESTIONNAIRE ANALYSIS

Research on remote classes addressed similar issues for teachers and students, but in a slightly different way. The main objectives were to find out how the adaptation to remote classes was and to raise the main advantages and challenges.

Of the institutions surveyed, 80% adopted this remote teaching system for the first time, and the platforms most used initially for online classes were Google Meet, Google Classroom, and Microsoft Teams.

In the questionnaire sent to the students, they were asked if the classes were already in the online model, the positive and negative points of these classes, as well as the impressions of the main challenges faced. In the first questionnaire, sent in June 2020, 58% of students had fully remote classes, 10% partially remote, and 32% did not have remote classes. In the second questionnaire, in March 2021, everyone had already started classes remotely. This information is consistent with the administrative profile of the institutions, since the public ones took a little longer than the private ones to migrate to the online model, which already shows that the administrative structure has a direct impact on the analysis of the courses.

For the analysis of the responses, the information was transferred to a spreadsheet, and the affinity diagram was used, which consists of a tool to group related information and identify patterns, trends or areas of common interest, organize and synthesize large amounts of data in a structured and visually intuitive way (PEINADO; GRAEMI, 2007).

First, the keywords of each response were highlighted in the spreadsheet and then transferred to post-its, to facilitate grouping by affinities. In the positive points, 14 main keywords stood out, which were separated into four large groups: daily life, study, teacher, and personal.

Day-to-day aspects were the most cited in the responses, with the terms "time saving", "convenience" and "money saving". With this, two factors can be highlighted, the way of life of the society of the 21st Century, with the development of the fourth industrial revolution, whose main object is data, information and the internet, bringing an overload of information and the need to belonging through the performance of different activities (HARARI, 2018); and urban mobility, since commuting to schools can be a factor of great expenditure of time and even money, due to Rio de Janeiro's poor quality urban mobility, characterized by an excess of vehicles, due to the growing urbanization and the policy of prioritizing individual transport over public transport in the second half of the last century, in addition to the lack of safety and infrastructure on roads and public transport (BORBA; DUTT-ROSS; DANTAS, 2022).

Study aspects refer to class activities. An interesting point mentioned by some students was the issue of continuity of classes, also mentioned a lot in the literature survey, which reinforces that the decision to continue classes remotely was a good alternative for the isolation of the pandemic. Recorded classes also appeared as a positive point, since students could watch them again for a better understanding of the content or even later, in case they missed classes. This relates to the issue of schedule flexibility. Another factor to highlight was the good interactivity during remote classes, both regarding the relation between teachers and students and among students themselves. Finally, it was mentioned that the organization of class materials and access to them improved with the online model.

Questions related to teachers were separated from the study aspects, as they emphasize the importance of the teachers' role at this critical moment, *i.e*. the beginning of the pandemic. The most cited points were the dedication and attention of professors, as well as the creativity in the classes and the improvement in communication through different channels, such as email and WhatsApp.

Finally, the last group refers to personal aspects, with answers about improvement in the discipline to study. Another interesting point mentioned was the shyness of some students, who feel more preserved in online classes, managing to participate more.

On the negative side, 14 keywords were highlighted, separated into five large groups — technology, interpersonal, environment, study and teacher —, which were also organized in Miro to facilitate visualization.

Aspects related to technology were the most cited as negative points. The connection to attend classes, with the dependence on good internet access, was the question that most stood out among all the answers to the questionnaires. Although the National Household Sample Survey: Access to the Internet and Television and Possession of a Cellular Mobile Phone for Personal Use has shown an increase in the number of households with internet access, which is present in 90% of Brazilian households, this issue is still quite complex, since for online classes it is necessary to have quality connection (IBGE, 2022). Therefore, the issue of connectivity was a hindrance in the remote teaching model, hampering the learning process and increasing inequalities among students. In addition, the lack of adequate equipment was frequently cited, which also directly harms the learning process, after all, many students attend classes on their cell phones, which is not the most appropriate channel.

Aspects related to the studies were also very critical, with frequent mentions to impairment in the learning process, as it is related to all the factors presented, the problem with access to the internet and connections, the difficulty of communicating with the teacher, the unfavorable home environment, and the lack of attention and discipline. Another issue mentioned was the application of practical classes, corroborating what was raised in research on particularities of teaching design and systematic survey. Practical design classes require laboratories and equipment suited to the disciplines, as well as the manipulation of materials or even specific software, which is difficult to replace or adapt to the remote model. In addition, in these classes, the teaching-learning process goes beyond watching/listening, such as in online classes, since it involves the cognitive system more broadly, provided only by the face-to-face environment.

Some students commented on the disorganization of classes and the institution, especially those who started classes later. About the classes themselves, some mentioned the superficiality of the content, and others, the matter of the class being boring, lacking dynamism.

With regard to teachers, some mentioned the unpreparedness of teachers, commenting on problems in conducting classes, handling tools, and organizing information. It is important to emphasize that this point has been widely discussed

in the works presented on teaching in the pandemic, attributing to older teachers a greater difficulty in adapting to online classes. However, with the questionnaires sent, it was not possible to reach the same conclusion, due to lack of data that could be crossed. Finally, still regarding teachers, difficulty in communication was also reported, especially students who had a more flexible class model or even asynchronous classes. It is important to note that these aspects were also raised in the positive points, which makes it clear that it is not something deterministic in the research, but still relevant to be highlighted as a point of analysis in further research.

The other group dealt with the interpersonal aspect, using the keyword "interaction", which was often cited as negative. The lack of personal contact with colleagues and professors and socializing is still a significant item for academic life. Even though social contact is made possible through technological tools, face-to-face contact provides more incentives for sharing, exchanging and trusting people.

Finally, issues related to the study environment were highlighted, specially lack of adequate space for both theoretical and practical classes. The lack of privacy, due to sharing spaces and equipment, family dynamics with a lot of noise, and household chores were points raised as factors that also directly influence the learning process.

In the questionnaires sent to teachers, the positive and negative points about remote classes were also asked. It is interesting to observe that the challenges are different from those of the students, with work overload and, consequently, physical and emotional overload, which also impair the development of the classes, in comparison with the students' responses. The information obtained was analyzed in a spreadsheet, as well as in the students' questionnaires, separated into keywords and organized in post-its to facilitate visualization.

For the positive points, 16 main keywords were highlighted, which were separated into four large groups: teaching, student, day-to-day, and interpersonal.

Aspects related to teaching itself were the most cited as positive, with reports on learning new digital tools that helped classes and content organization, such as Google Classroom, mindmap, and the like; and new teaching methodologies, with the organization of online group dynamics, real-time research. It was also mentioned that remote classes were an opportunity to review the content of the classes, including current affairs and using more theory, since the practical activities had to be adapted.

Aspects related to students were less pointed out, but some teachers reported that student engagement in classes and activities was important, even those who were not in regular classes. In addition, the result of the activities was also a positive point in this regard.

The day-to-day aspects were similar to the points mentioned by the students, mainly regarding the optimization of time and the convenience of being at home, considering the issue of commuting to institutions, as said by the students, since Rio de Janeiro has a low-quality urban mobility system. In addition, the issue of more time for lesson planning and focus was also mentioned.

Finally, in the group of interpersonal aspects, according to the students' questionnaires, affectivity was much commented on in the answers and, although this point is something that already existed in the face-to-face mode, it was highlighted as important in the challenging moment of the beginning of the pandemic. The connection is also highlighted, with the horizontal relationships between teacher-student and even between fellow teachers being made explicit. Some mentioned that it was important to maintain remote activities as a way of belonging and connecting with the institution.

As for the negative points, 15 keywords stood out, sorted into five large groups: personal, professional, interpersonal, teaching and student.

Several negative points were mentioned related to the issue of work itself. Therefore, this was separated into a specific group, called professional. Although the aspects are all interconnected, those related to the work itself differ from teaching and everyday issues. Work overload was the most cited of all negative points, with reports of excessive meetings, training, extra assistance to students, video recording and editing, organization and preparation of new content, which connects with institutional demand, a point most commented on by professors from private institutions. An important point was the cost of technology, through the acquisition and repair of equipment and internet connection, which was also mentioned by professors from private institutions. On a smaller scale, but no less important, moral harassment was mentioned, especially by superiors, about excessive demands, which is directly related to work overload and institutional demand.

Right after the questions about professional matters, the group that deserves to be highlighted is the personal questions, with answers that refer to physical exhaustion, due to sitting in front of screens for a long time; emotional exhaustion, due to the context of the pandemic, family issues and even work; and psychological and mental exhaustion, with overwork, demands, attention and concern for students.

Another frequently reported point was the loss of interaction with students during classes. Teachers mentioned that most students did not interact during classes, with cameras turned off and little feedback. This point is directly related to the point most cited as negative in the students' questionnaires, *i.e.* technology, difficulty with a quality internet connection, and lack of adequate equipment.

It appears that interaction and engagement were also cited as positive points by a small number of teachers, which corroborates the issue of difficulty with technology by the majority. Following this bias, questions related to the students themselves were grouped, with points associated with lack of engagement in activities, teachers' concern with students' digital access and lack of feedback from some.

Finally, the questions about teaching connect with the students' responses regarding the practical classes. Teachers cited the difficulty in proposing activities that would replace laboratories, using alternative methods and materials, which

caused damage to some disciplines. Some professors from private institutions mentioned the excess of students per class, since the virtual environment has no space limitation; some institutions took advantage of this to increase the number of students per class, which consequently leads to overwork and emotional and psychological exhaustion.

Less mentioned, but also important, was the issue of subject evaluation, especially those that required the application of traditional tests. In the digital environment, it is more difficult to develop an assessment that measures students' knowledge without them having access to the information. This point is interesting to reflect on the positive aspects of new methodologies and didactics. Once students have access to information, it is important to think about what an evaluation model would be like in which they could learn to consult and externalize what was learned.

The negative points of the professors' questionnaires lead us to reflect on the importance of the professors' role in the teaching-learning process in undergraduate courses and highlighted in the pandemic, with their immeasurable effort to maintain activities, crossing their physical, mental, and emotional limits. This leads us to think about the precariousness of their work, which, although not the focus of this research, has already been discussed even before this scenario and now takes center stage, and should be looked at with greater caution in its entire context.

Finally, questions about vision of the future were elaborated in the questionnaires, asking how they imagined the return of face-to-face classes and the world in a post-pandemic scenario. Such questions were elaborated with the intention of bringing insights to the thesis and forwarding the next stage of the research.

The affinities diagram was also used to analyze the answers, organizing the keywords of the answers in post-its. The number of student responses was much higher than that of teachers, in addition to being broader, unlike the teachers, who focused on answering about the future of teaching itself. Therefore, the criteria for organizing the keywords were also different.

For the students' responses, eight spheres were determined: environmental, social, technological, economic, educational, personal, health, and professional, plus a group of generic responses. Post-its in cold colors are words with more positive characteristics, while those in warm colors are more negative. This criterion for organizing and analyzing responses was based on the concept of polarity, used in future studies, and worked as a thermometer, considering the current context. As for the teachers' responses, the grouping criterion was based on the previous organization on remote classes, with three large groups: technology, teaching/learning, and teacher.

In the students' responses, most of the comments revolved around the technological sphere. Many said that technology will be even more present in our daily lives in the future, that the world will be increasingly technological. Some have cited virtual reality, and a negative answer, but worth reflecting on, is technological alienation.

It should be noted that technology also has its downsides and must be analyzed alongside other issues, which will be done later in the construction of scenarios.

The second group with more answers about the future was the social sphere, with answers that assumed that social interaction will be increasingly virtual, while others, in lesser quantity, point to the appreciation of the face-to-face. There were also many positive responses regarding social awareness, looking at the other, at society, empathy. It is noticed that actions to help others at the beginning of the pandemic made people reflect on the importance of the other to the other and the hope that in the future this will be more consolidated.

In the teachers' questionnaire, questions related to the teaching-learning process were more recurrent. Many mentioned that remote classes, according to the online teaching model, will be a trend in the future, with emphasis on theoretical disciplines and project guidance and course completion work. Distance learning was also cited as promising, especially in private educational institutions, as it is something more viable in economic terms. The hybrid model was another highlight; some professors said they believed it would be interesting to maintain some face-to-face activities and others, remotely, balancing the issue of time and displacement, much cited as positive points of remote classes.

Other answers about teaching-learning regarded rethinking teaching methodologies and practices, adjusting content, time, and class dynamics. With regard to learning, students became self-taught, a consequence of new models mediated by technology, which demand more discipline and time management. Finally, a divergent issue regarding the quality of teaching: on the one hand, the optimistic view of improving quality, due to the facilitation of technological tools, the impulse to re-elaborate practices and methodologies; on the other, the premise that there will be a drop in quality due to the capitalist logic in higher education, which has been growing in recent years.

The group called "technology" was the second largest on future responses and is directly correlated with teaching-learning responses, since most responses revolved around digital tools. Some punctual observations, though no less important, were more detailed, such as the continuation of online meetings, lectures and events, due to the advantage of time and displacement. Finally, the last group refers to teachers themselves, citing the issue of the devaluation of the professional and the precariousness of work, especially in private educational institutions, which is a point that is often raised in works on the impacts of the pandemic.

The issue of technology was evident in the answers about the future, the consolidation of digital tools for communication and information management, virtual interaction, carrying out activities such as work orientation, meetings, lectures, and some events, facilitating traveling and saving time. The new online and hybrid teaching models also appeared as possible trends, as well as remote work. In addition, more human issues were also highlighted, such as physical socialization, emotional aspects, social and environmental awareness, as well as concern for work relationships.

FINAL CONSIDERATIONS

The pandemic resulting from Covid-19 boosted several transformations that were already taking place in contemporary society, such as the use of technology and more attention to social and environmental issues. After three years since the beginning of the health crisis, several impacts can be seen and the direction toward the consolidation of some transformations that were already taking place.

Higher education, although still seen by many as displaced by society, due to its time being different from the demands of the professional sphere, has as its premise to form, in addition to trained professionals for the job market, citizens who are aware of the environment in which they live, contributing somehow to society. After the efforts and various strategies to continue classes at the time of physical isolation imposed by the pandemic, higher education has proven to be very resilient, since the use of different strategies to quickly continue classes was a great demonstration that it adapts and responds to society. Although there are many challenges in this process, it is possible to extract learnings and prospect a better-quality education both for the academic community and for society as a whole, which will somehow be impacted.

Design is a transdisciplinary area that uses creativity to solve problems and co-create solutions, with the objective of contributing to the creation and maintenance of the artificial world, involving the designers' reflection on their activities. It also has the function of integrating science and technology, developing projects for the daily life of a society, being an area of knowledge that involves the creation of solutions for both simple and more complex problems, such as products, services, systems, and environments, considering all aspects of the context, from aesthetics to functionality.

Design teaching is an area of study that has particularities, as it is based on a balanced dynamic between theory, practice, and production. In addition, there are several specialties in design that require technological, analytical, and cognitive skills, which makes it even more complex. Design education should not be considered simply training for practice, but an education that encompasses several layers of expertise, and should aim to form people who are critical and sensitive to current issues. Therefore, future design education must consider the new cultural cycle, more plural among human beings, more sensitive to environmental issues, and considering cyberspace as a means of communication and information sharing.

According to research carried out in design teaching during physical isolation due to the pandemic, it was noticed that some emerging aspects of the 21st Century became protagonists, such as the concept of cyberculture. This concept is linked to that of cyberspace, which presents a new social dimension, resulting from a global movement in which real-time connection predominates. It is a learning space in which the use of media tools is presented as a resource to be used in the teaching and learning process, in addition to the search for greater freedom and individuality of the subjects and attention to environmental issues.

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Conflict of interests: nothing to declare – **Financial support:** none.
Authors' contributions: VICHY, P. L.: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Administration, Writing – Original Draft. MEDEIROS, L.: Conceptualization. Formal Analysis, Methodology, Project Administration, Supervision, Validation, Visualization, Writing – Review & Editing.

Article

https://doi.org/10.22398/2525-2828.823107-124

Innovation practices based on creative industry: a study in the Paranhana region, Rio Grande do Sul, Brazil

Práticas de inovação por meio da indústria criativa: um estudo na região do Paranhana/RS

Eduardo Zilles Borba[I], Valmir Mateus Portal[II], Marley Rodrigues[II]

ABSTRACT

The article discussed innovation practices originated from actions of organizations linked to the creative industry, specific in the region of Paranhana, Rio Grande do Sul. It was based on the principle that the creative industry has the potential to collaborate with regional development, valuing production and consumption practices that are intrinsic to the intellectual and cultural capital of certain territories. The problem raised is: how do organizations in the region of Paranhana appropriate the characteristics of the creative industry to encourage innovation? Through an exploratory and descriptive methodology, interviews were conducted with managers, in order to collect and analyze qualitative data on their creative experiments that culminate in innovative actions. As a result, a mapping of innovation practices driven by creative industries in that region is presented, with a guiding trend being identified for the action of creative companies or consultancies linked more to the optimization of processes of traditional organizations than to the creation of new products or services. In short, results appear as initial mapping of innovation practices from the creative industry, proving to be a useful instrument for the action of organizations in this region.

Keywords: Creative industry. Innovation. Creativity. Regional development.

RESUMO

O artigo discute práticas de inovação originadas em ações de organizações vinculadas à indústria criativa, especificamente na região do Paranhana (RS). Parte-se do princípio de que a indústria criativa possui potencial para colaborar com o desenvolvimento regional, valorizando práticas de produção e consumo intrínsecas ao capital intelectual e cultural de determinados territórios. Lança-se o seguinte problema: de que forma organizações na região do Paranhana se apropriam das características da indústria criativa para estimular a inovação? Por meio de metodologia exploratória e descritiva, foram conduzidas entrevistas com gestores, a fim de coletar e analisar dados qualitativos sobre suas experimentações criativas que culminam em ações inovadoras. Como resultado é apresentado levantamento de práticas de inovação impulsionadas pelas indústrias criativas na região, sendo identificada tendência para a ação de empresas ou consultorias criativas ligadas mais à otimização de processos de organizações tradicionais do que propriamente à criação de produtos/serviços. Em suma, os resultados surgem como mapeamento inicial de práticas de inovação por meio da indústria criativa, revelando-se instrumento útil para a ação de organizações nessa região.

Palavras-chave: *Indústria criativa. Inovação. Criatividade. Desenvolvimento regional.*

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Received on: 03/08/2023. **Accepted on:** 05/24/2023

INTRODUCTION

Transformations in work, consumption, and regional economy have generated opportunities for inland companies to serve markets in other territories and, at the same time, threats, with the arrival of competitors that previously operated only in large centers and capitals (PRATT, 2014).

One of the ways to stand out in an increasingly competitive market has been the ability to differentiate products or services with some kind of added creative value (BILAN *et al*., 2019). Thus, this article had the intention of verifying, specifically in the region of Paranhana, in the countryside of Rio Grande do Sul, how the logic of creative industry has been applied by organizations, in the sense of seeking, through creativity, for aspects of marketable innovation. It is based on the principle that the practices of a creative industry contribute to regional development, as they value the production and consumption of goods and services originating from an intellectual and cultural capital belonging to certain territories and their population (FLORIDA, 2011; PRADELLA, 2013; CURADI; BRANDÃO, 2019).

The following research problem is raised: how do organizations located in the Paranhana region appropriate the characteristics of creative industries to stimulate innovative practices? Through an exploratory and descriptive methodology, of a qualitative nature, a selection of companies in the region that fit the parameters of creative industry is presented, in order to understand how their products, services or creative solutions potentiate innovation practices that, consequently, collaborate with regional development. The choice of this study *locus* is justified both by the fact that the authors participate in a postgraduate program in Regional Development and by the desire to understand how the characteristics of creative industries, still under development in this region, can stimulate innovation.

The article presents an initial survey about the innovation practices driven by the existing creative industries in the Paranhana region, also identifying trends for actions by companies, consultancies, and creative professionals more linked to process innovation in traditional organizations in the region than to the actual creation of products or services to the final consumer.

FUNDAMENTAL ASPECTS OF INNOVATION AND CREATIVE INDUSTRY

Responsible for stimulating social, economic, and cultural development, innovation is a relevant factor for stimulating growth in organizations. Faced with increasingly fierce market scenarios, innovation emerges as a competitive advantage for public and/or private institutions, causing significant changes in processes, products, services and even in the culture of those involved, whether employees, managers or communities from certain regions (ZOGBI, 2008; VICENTINE, 2009). At the other extreme of this study is the creative industry. According to Souza e Silva (2022), Brazil has a culture rich in diversity, history, and creativity. Analysis of reports by the National Bank for Economic and Social Development (*Banco Nacional de Desenvolvimento Econômico e Social* – BNDES) indicates a growth trend in the creative industry in Brazil above world growth, reflecting the size of the creativity

market for the generation of products, content, and services in the country (SOUZA; SILVA, 2022).

As discussed by Bessant and Tidd (2009), the term *innovation* raises a series of possible definitions. Over time, this variety continues to expand, however these authors stress that the concept usually has some common ground: doing something new, establishing change processes, or even successfully testing new combinations that change the previous cycle.

One of the first theorists to disseminate the concept of innovation was Schumpeter (1997), basing the theory on five assumptions:

- new good or new quality of good (of product);
- new production or marketing process (of process);
- new market (of market);
- new source of inputs (of inputs);
- new organization in the industry (organizational).

Based on this understanding, it is clear that innovation can be a differential for the health of organizations in the 21st century, being a crucial factor in leveraging competitiveness or, simply, a practice to guarantee their survival. It should be noted here, as reflected by Pradella (2013), that the interest of organizations in innovation concerns the need to explore a competitive position that encourages development and entrepreneurial behavior, not only in their managers, but in all the minds that constitute the company's human capital.

When adding the ideas presented by the cited authors, it is evident that innovation is an essential element in the business environment, considering that it is linked to the competitive advantage of institutions and, consequently, to better performance. However, more than that, innovation can also be seen as a social phenomenon, as it introduces changes that extend beyond technique and technology, resulting in transformations that affect the lives of individuals, groups, regions, localities, and the whole society (ZOGBI, 2008; BESSANT; TIDD, 2009; VICENTINE, 2009; PRADELLA, 2013).

When talking about innovation as a social phenomenon, it makes more and more sense to add aspects related to creative industry to the discussion. That is, if innovation involves both technical aspects of reconfigurations of a product or service and social aspects related to people and their procedures, we suggest that organizations that are inserted in some creative industry generate precious contributions to innovation phenomena. The following argument may be quoted to summarize this thought:

> Regardless of the sector in which it operates (industry, commerce, service, etc.), business management must pay attention to market movements, the company's situation, flexibility for change, a systemic view for decision-making, and also the negotiations in all spheres (customer, employee, supplier, etc.) (ZILLES BORBA *et al.*, 2021, p. 330).

Bendassolli *et al*. (2009), in a survey on definitions of the term creative industry, highlight that the first element to be emphasized for understanding the

performance of a person or organization in this field is creativity as a crucial agent of their work. That is, creativity is not seen as a differentiator, but as a key element in the generation of intellectual property. In second place, comes culture and the notion of utility/value of the cultural object attributed by consumers; however, this value is not linked only to physical and material properties, but to the notion of utility generated by it. The third aspect says that creativity and culture, when added and transformed, create intellectual properties and through them generate economic value (BENDASSOLLI *et al*., 2009).

Carvalhal and Muzzio (2015) contextualize the differences between the expressions of creative economy and creative industry. Through the contribution of several studies, the authors emphasize that this field is in the process of solidification. They use the creative industries concept attributed to its origin in individual creativity, skills and talents, with the potential to generate jobs and wealth via intellectual property. Thus, they present four subdivisions of activities in creative economy: tangible and intangible heritage; Art; media; and creativity.

METHODOLOGY

The research was carried out through an exploratory and descriptive methodology, of a qualitative nature, in which a multiple case study is configured through a sample of six companies linked to the creative industry and that, in some way, promote regional development through innovative practices.

For data collection, in-depth semi-structured interviews were applied, individually, between the months of June and July 2022, via videoconferences of 50 to 60 minutes. On that occasion, researchers talked to each of the interviewees about: company context (block A), engagement with the creative industry (block B), and innovation practices (block C).

It is noteworthy that the six interviews were recorded for the purposes of consultation by the researchers and preparation of descriptive notes on the main topics of the participants' speeches. This technique was fundamental to visualize the relationships between creative professional practices and innovation for regional development in the territory of Paranhana. It should be noted that all respondents and their companies were kept anonymous during data analysis, being recognized throughout this research as R1, R2, R3, R4, R5, and R6 (Chart 1).

Chart 1. Research participants.

Respondents	Business area	City	Creative industry
Respondent 1 (R1)	Telecommunications	Taquara/RS	Creative services
Respondent 2 (R2)	Software	Taquara/RS	New media
Respondent 3 (R3)	Editorial group	Taquara/RS	Publishers and print + audiovisual media
Respondent 4 (R4)	Advertising	Igrejinha/RS	Creative services
Respondent 5 (R5)	Digital technologies	Igrejinha/RS	New media
Respondent 6 (R6)	Architecture and urbanism	Taquara/RS	Cultural sites + design

Finally, it is stated that the respondents were business partners, directors and/or administrative managers, once that in order to collaborate with this research, they needed to have macro knowledge about the management, processes and details of the products/services delivered to the market.

For data analysis, it was decided to conduct a content analysis based on the teachings of Bardin (2016). Through this analysis technique, it was possible to organize the contents by proximity, creating dimensions and categories of analysis that help the discussion of the problem initially proposed with this work (MORAES; GALIAZZI, 2007; BARDIN, 2016). The categories are conceived as important aspects for understanding the object of study, but somehow, they can be approximated in dimensions of subjects classified in the speeches of the authors and the interviewees, giving order and meaning to the research findings.

DATA PRESENTATION AND ANALYSIS

By gathering the data collected from the interviewees, it was possible to organize them into two main dimensions (creative industry and innovation), totaling six categories. Anyway, it was noticed that some of the categories cross each other, without there being a clear border between them, as the content that originates them also influences the others, in a movement of addition. The most evident case of this correlation was identified in the category of analysis *valuing creativity and innovation*, which works perfectly to describe aspects of both dimensions (Figure 1).

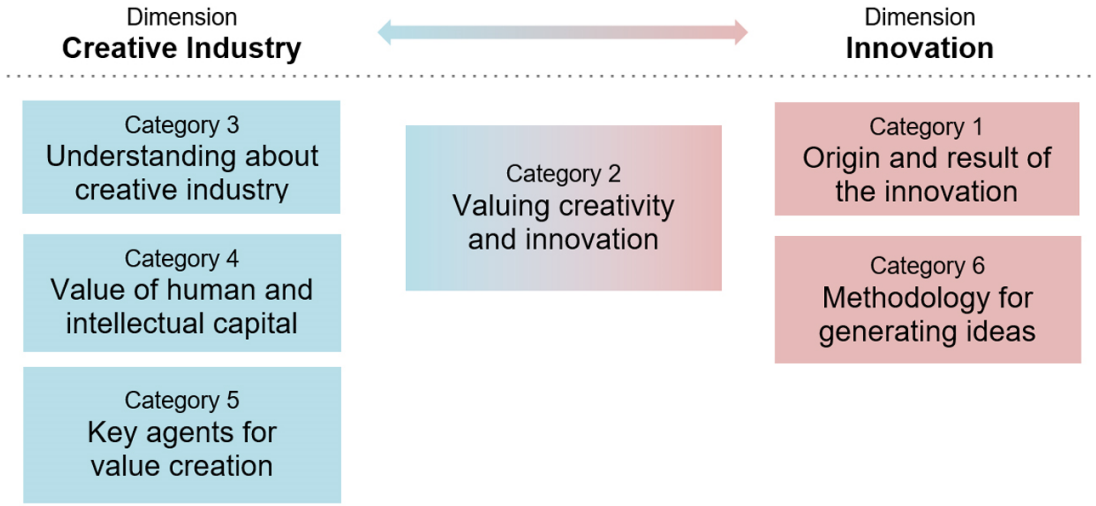

Figure 1. Organization of dimensions and categories of research analysis.

Still, it is important to highlight that the dimensions were previously created by the researchers, being deductive aspects pointed out based on the theoretical framework and on the reflections of the problem and research objectives. That is, during the exercise of designing the in-depth semi-structured interview questions, researchers already identified the existence of the *creative industry and innovation* dimensions. On the other hand, the mapping of categories followed premises of Bardin's (2016) empirical exercise, as only based on the collected data was it possible

to approximate ideas, speeches, and thoughts of the participants to create categories of analysis by similarity and not by exclusion. The six categories raised were:

- Origin and result of the innovation;
- Valuing creativity and innovation;
- Understanding of the creative industry;
- Value of human and intellectual capital;
- Key agents for value creation;
- Methodology for generating ideas (Chart 2).

Origin and result of innovation

The conception of this category is directly related to the responses of the six participants discussed in questions Q1, Q13, Q14, and Q16. The essence of its configuration is based on the intrinsic aspects of the *innovation* dimension, as it exposed their practices and perceptions about the starting point for the construction of innovative processes, products or ideas, as well as the results achieved in their application.

Notably, the three companies related to the development of creative solutions based on digital technologies indicated that the origin of their innovation came both from a market demand and from the identification of problems to be solved in management processes, training and/or visualization of the flow of customer data (R1, R2, and R5). In this sense, R5 underlined that, due to the fact that his company acts in the creation of personalized solutions, through the use of exponential technologies (artificial intelligence, internet of things, virtual and augmented reality, three-dimensional printing), the service work methodology applied with customers allows one to deeply understand their business (products, production processes, work teams, etc.).

Through this cooperative approach, R5 explains that the possibility of implementing creative solutions in the most varied internal activities of organizations becomes clearer. "Most of the time, our customers don't even notice the flaws or the failure to take advantage of certain processes and internal activities", suggests R5, adding that identifying problems is the starting point in the search for creative and personalized solutions. This behavior indicates that innovation practice is not just about identifying market demands, but something more complex, with research on practices, structures and people to, only then, identify opportunities to be met through technological innovation and creativity projects that result in process innovation and even product creation (ZOGBI, 2008; BESSANT; TIDD, 2009).

It was found that the companies in which R1, R2, and R5 work are much more interested in seeking innovation practices that change their customers' internal processes than in thinking about innovating products for the final consumer. Perhaps this inclination is justified by the fact that the three are in the field of digital technologies. In this regard, the interviewees make it clear that, often, the solutions created depend on a marriage between technical knowledge (software and hardware mastery) and creative knowledge (the intellectual capital to appropriate software

Chart 2. Tabulation and organization of data collected from respondents.

Questions (block A)	**Categories**	**Dimensions**
Q1 - Briefly contextualize your company, explaining the area of activity and the main products services.	C1 - Origin and result of innovation	Innovation
Q2 – What is the main differential of your company?	C2 - Valuing creativity and innovation. C4 - Value of human and intellectual capital.	Creative industry
Q3 - How many people work in your company?	C5 - Key agents for value creation. C4 - Value of human and intellectual capital.	Creative industry
Q4 - Is the company's current focus on creating products/services or on improving processes?	C6 - Methodology for generating ideas	Innovation
Q5 - How do you understand that your company helps in regional development? Q6 - Does your company operate exclusively in the region (Paranhana)?	C5 - Key agents for value creation. C2 - Valuing creativity and innovation. C4 - Value of human and intellectual capital.	Creative industry/ Innovation
Questions (block B)	**Categories**	**Dimensions**
Q7 - What is your understanding about creative industry? Comment a little about your perception on the subject.	C3 - Understanding about creative industry	Creative industry
Q8 - When you think about your business, what are the fundamental agents for generating value in the product/service (machinery, technical people, people with emotional intelligence, physical structure, financial capital)?	C5 - Key agents for value generation	Creative industry
Q9 - How does your company encourage creativity and innovation in the region? When you think about it, do you have in mind the public sector, private organizations, end consumers or students?	C2 - Valuing creativity and innovation	Creative industry/ Innovation
Q10 - Do higher education institutions in the region contribute to the formation of brains capable of meeting the demands of the creative industry? Q11 - Do you hire, or have you hired people who are graduating or have graduated from higher education institutions in your region? Q12 - Thinking about valuing brains, do you consider that consumer demand in the region values what you develop?	C4 - Value of human and intellectual capital	Creative industry

Continue...

Chart 2. Continuation.

Questions (block C)	Categories	Dimensions
Q13 - Have you recently gone through an innovation process or helped another company in this process? Q14 - Did the innovation come from a market need or did it create another market niche? Q15 - Do you use methodologies to generate ideas?	C1 - Origin and result of the innovation (explain the type of innovation)	Innovation
Q16 - What were the results achieved with the implementation of innovations (profit, production speed, savings in materials, job creation, etc.)?	C6 - Methodology for generating ideas	Innovation

and hardware). "*Since we set up teams with people from our company and, also, from the client, we study process details to the point of creating something new, which increases its competitiveness*", explains R5. About this practice in the development of creative solutions that directly affect client-company processes, he mentions the creation of a training in virtual reality designed for the learning stage of machinery use in the footwear industry:

> *We created a team with people from both companies (customer and supplier) and came to the conclusion that, with the use of virtual reality, we could apply immersive training that added value to the process that already existed but was only carried out with a video-tutorial for several people. In this case, using greater participation and involvement of the learner, we generate an individual, immersive, and participatory experience, with gamification elements that help you to understand the workings of a machine to point out shoe toes. We apply digital technology, video games, and interactive animation to simulate the work station itself, optimizing training in the following aspects: a) understanding in a practical way how the machine works; b) optimizing the learning time and the gap that existed in the previous training process, between watching the video and using the machine; c) reinforcing the importance of using PPE [personal protective equipment]; d) reducing errors and, consequently, expenses with materials (R5).*

With a similar perspective, R2 highlighted that its software solutions help other companies to start an innovation process. "*These are companies that have nothing to do with the creative industry sector, but which, with our creativity, manage to innovate in their sector*", he explains. This statement was corroborated by participants R1 and R5, when they suggest that the creative and technological skills of the projects benefit traditional organizations or organizations that are outside the circuit of creative industries in the Paranhana region (ZILLES BORBA *et al*., 2021). "*Every time we insert our software into a company's processes, we are starting an innovation process*", points out R2. According to him, the data intelligence generated by his digital product allows companies to consult information about any process, providing a better understanding of the business.

It is important to say that the organizations that are part of this research and have nothing to do with the field of digital technologies point to another source of focus for the search for innovation. While R3 explains that the need for innovation came from a market demand in which they were forced to change their products to follow current trends in journalism, R4 states that the need for innovation came from an internal demand, that is, their advertising agency needed to rethink content production processes in order to correct failures in the productivity of its creative team.

In the case of the publishing group, R3 also indicates that the production of multimedia content by journalists is progressing well and with quality, but in the commercial sector there are doubts and insecurities about how to appropriate multiplatforms to sell advertisements. This idea of performance by advertising brands, as explained by R3, would not be something linked only to the organizational culture of the editorial group, but to a need that must be addressed with advertisers in the Paranhana region.

> *Our advertiser still doesn't understand much about this, as they want to buy specific media space, in a program, instead of thinking strategically about actions on multiplatforms. We need to improve aspects of innovation in order to show advertisers that there is a new content consumption culture and that this is not something exclusive to big cities and capitals, but a reality in our region* (R3).

The advertising agency that participated in the research, through R4, indicated that, like the journalism group, it undergoes an internal innovation process. "*Today we are in the eye of the hurricane of an innovation in the agency's demand management process. We've been wanting to modify some internal processes for some time now*", says R4. According to her, the agency has a very high cooperative spirit, which sometimes hinders the final delivery of advertising products, as some people end up helping others and are not able to handle their tasks. Thus, R4 explains that the agency started to delegate responsibilities:

> *Aspects of project management have become fundamental in our work. For example, we meet weekly to check what the team's main responsibilities, tasks, deadlines, and deliverables are so that, only after this is finalized, does anyone think about helping a colleague in another activity. This has been very important for us to visualize the agency's production* (R4).

At this point, it is pertinent to highlight that, unlike the cases presented, respondent R6, owner of an architecture office specialized in the recovery of historical heritage, explains that generating innovation for her client involved the development of a product. After all, the idea of recovering a manor house in the city of Taquara (Rio Grande do Sul) was aimed at generating value for an old property in disuse. "*The client came to us to understand how we could add value to an old building (a cultural heritage of the city) instead of demolishing it to make something more modern*", emphasizes R6. Basically, based on design, the architecture team used creativity to work on the manor's aesthetic and functional aspects, without

neglecting historic architectural elements that collaborate to maintain the building's visual identity. "*There was an integration of updated technologies and materials, but without losing the cultural identity of the product, as we somehow used our creativity to maintain a dialogue between past and present*", explains R6. In this case, even if the innovation came from a need in the real estate and rental market in the region, the work of the architects involved archaeological studies, something that, according to the interviewee, is a trend in architecture and urbanism in the countryside regions of Rio Grande do Sul.

Still in this category, deeper aspects of innovation were diagnosed, such as the company's own context (Q1) or the results achieved with creativity and innovation (Q14, Q16). For example, the three companies that operate in the field of digital technologies reinforce that the results achieved with the reformulation of processes at their clients were the real collaboration for the development of the region, through elements of the creative industry. "*The employees of the footwear industry that we serve started to learn the shoe production processes in a deeper, motor and cognitive way*", says R5. For the industry served, the creativity applied in immersive training in virtual reality allowed the learning stage to use the machines to be faster than that which had already been applied with demonstrative videos. But, according to the interviewee, the benefits went even further, as the customer noted greater savings in materials and a reduction in the number of accidents. A similar feeling is reported by R6: "*We gained local recognition, [...] we generated a series of creative jobs, in addition to providing the local community with a symbolic space that will continue to express the history of the city*".

Valuing creativity and innovation

When asked about aspects of valuing innovation and products/services originated by the creative industry, respondents had different perceptions. At first, they were encouraged to reflect on the differentials that their own company delivers to the regional market (Q2) and then discuss the possible contributions of their creativity to regional development (Q5, Q6, and Q9). That said, it was evident that the formatting of category 2, *valuing creativity and innovation*, covers the two dimensions of analysis in the research: creative industry and innovation (MORAES; GALIAZZI, 2007).

When looking especially at its characteristics and qualities as a business located in the Paranhana region (Q2), respondents raised the following topics: intelligence and intellectual capital (R1, R2, R4, R5, and R6), co-creation with customers (R2 and R5), credibility and transparency (R3, R5, and R6) and focus on a specific sector in its field of activity, such as, for example, intelligence in condominium intercoms in the telecommunications sector (R1), digital transformation in the footwear industry (R5) or restoration of historic buildings in the field of architecture (R6). Here, the existence of a common denominator among all statements is diagnosed: intelligence. This is in line with the ideas of Bendassolli *et al*. (2009) and Carvalhal and Muzzio (2015) about intellectual capital being the main raw material of creative industries, reinforcing people's creativity as a competitive advantage for these companies.

However, it was observed that the intelligence factor is used by the six companies to value both the properties of the creative industry (internal differentials of companies that provide creative services) and the properties of innovation (differentials applied in the services, products or processes of their clients that are not necessarily companies linked to the creative industry). For example, valuing employees' creative skills is something directly linked to the concepts of creative industry (FLORIDA, 2011), since human intellectual capital is a preponderant factor for the supply of disruptive ideas. This was pointed out by respondents R1, R2, R5, and R6. On the other hand, the fact of providing a creative product/service or an innovative methodology that promotes business management and intelligent decision-making also indicates a focus on the use of creativity to stimulate innovation. This aspect was much underlined by R1, R2, and R4.

The appreciation of creativity and innovation for regional development was also present in the answers of the research participants (Q5 and Q6). Four participants said they work practically only in the Paranhana region (R3, R4, R5, and R6). Although they did not close their doors to clients from other regions — Vale do Sinos, Serra Gaúcha and the capital —, there was a clear intention to promote the transformation of companies in their region through creativity, as well as to provide jobs for creative professionals in these locations.

The ways to encourage regional development were also varied in the research, which can be justified by the very diversification of areas of activity of the participating companies. That said, it is reiterated that the sample does not match the total universe of companies in the region that operate in creative industry, but with a cut that helps to reflect on the collaborations that this type of work can have to encourage innovation.

It should be noted that, if a few years ago people moved to the large business centers or capital of Rio Grande do Sul to work with creativity, the interviewees stated that they value creative intellectual capital. R3, for example, emphasizes that its communication vehicles, in addition to informing society, foment the debate on regional development, in addition to connecting its audience to activities promoted by non-governmental organizations and regional public bodies.

In his speech, R5 points out that, due to the fact that his company assembles teams of freelancers to work on projects to implement industry 4.0, there is a need to seek local professionals to participate in the projects. According to him, it is valued for networking among creatives in the region, opening opportunities for people who work with technological innovation. "*If we need a photographer who captures 360° images, we don't look for someone from Porto Alegre or São Paulo to shoot in Igrejinha and Taquara, but rather for locals*", he explains.

Finally, the training of the people who work on their teams was another important point in setting up a category for valuing creativity and innovation in this research. That is, in addition to valuing creativity and innovative initiatives, respondents reported that they promote training to develop employees' creative skills. In fact, this is in line with the thinking of Florida (2011) and Bendassolli *et al*. (2009)

when explaining that creativity must be exercised, consolidating technical, cultural, and social aspects.

Understanding creative industry

This category aimed to identify the understanding of research participants regarding the concept of creative industry and whether their organizations fit into this sector. We sought to identify whether there was an understanding and practice of the creative industry in the structure of the companies participating in the research.

From the perspective of Bendassolli et al. (2009), the concept of creative industry is initially related to creativity, a key element in the generation of intellectual property. According to the authors, culture and the notion of utility/value of the cultural object attributed by consumers are also components of creative industry, however this value is not only linked to physical and material properties, but to the notion of utility generated by it. The third aspect is that creativity and culture, when added and transformed, create intellectual properties and through them generate economic value (BENDASSOLLI et al., 2009). Carvalhal and Muzzio (2015) contextualize the creative industry directly from creativity, skills and individual talents with the potential to generate jobs and wealth through intellectual property.

Based on this assumption, it was verified that among the interviewees there is no consensus on the concept of creative industry. For R2, R3, and R6, the core of the concept is focused on innovation. It is noteworthy that R1, R2, and R4 mentioned that people are the main element. Only R6 pointed to the generation or creation of value. Interestingly, two interviewees declared that they did not know how to conceptualize the term.

Observing the data, it was possible to list answers according to the areas of activity of the interviewees. In the answer given by R1, from the telecommunications sector, the focus was on "*listening to suggestions from customers and employees*", because from the interviewee's business perspective, there needs to be a horizontal ecosystem. R2, from the software sector, approached the issue closely with Pradella's (2013) innovation bias, describing the following: "*The industry that creates the new again*". For R3, from the editorial group, the concept of creative industry would be linked to something that promotes an innovative idea, explaining that its current focus is on promoting technological innovation. R4 highlighted that common sense itself considers that advertising agencies work with creativity, linking the creative act here again. R5, even without bringing the concept, stressed the importance of people in the process. Finally, R6 indicated that his understanding of creative industry is everything that can generate value and contribute to the economy.

Analyzing the data, it was noticed that the interviewees did not conceptualize creative industry. non-conceptualization is not a demerit for their organizations or formations, leading to believe in two aspects:

- lack of regional promotion regarding creative industry, mainly in the Paranhana region;

- use of nomenclatures and methodologies specific to their areas of expertise.

However, in other points of the interviews, it was seen that the interviewees act according to the scope of creative industry.

Value of human and intellectual capital

Questions Q2, Q3, Q6, and Q10 are related to the category on the value of human and intellectual capital. All interviewed companies operate in the Paranhana region, but five also serve other regions. R1 and R2 operate nationwide, R4 serves customers in the metropolitan region of Porto Alegre, Rio Grande do Sul, R5 also serves the Vale do Sinos region, and R6, projects in the Serra Gaúcha. Territoriality brings variations related to their areas of work. Telecommunications and software companies had national coverage (R1 and R2). The others indicated regional scope.

Assessing the amount of human capital, respondents were asked how many people work in their business. In the sample, interviewees declared having 87 people working directly in their businesses. Of this universe, 92% of people are concentrated in the areas of telecommunications (R1), software (R2), publishing (R2), and advertising (R4). The areas of digital technologies (R5) and architecture and urbanism (R6) have the lowest concentration of people, but it is important to emphasize that the interviewees highlighted that they seek freelancers to work on projects, without creating an employment relationship.

When questioned about the differentials of their business, all of them highlighted characteristics and attributes of their products or services. For R1, its differential is intelligence in the context of thinking about telecommunications. For R2, it is about usability and execution of complex tasks through the software. R3 pointed out credibility and transparency. R4 valued its agility in delivering services. In turn, R5 indicated that its differential is the delivery of customized solutions. In turn, R6 said that they value aesthetics, in addition to adding value to products with the reuse of materials in architectural intervention. Here, it is emphasized that, regardless of the attributes mentioned, in all cases human and intellectual capital are key aspects (FLORIDA, 2011), however the differentials presented were more related to the results delivered than to the means necessary to achieve them.

When asked about the role of higher education institutions, in particular about their contribution to training people capable of serving the creative industry and encouraging innovation in the Paranhana region, most respondents positively evaluated the role of colleges and universities, but some criticisms and observations were pointed out. For R2, there are teaching problems in Brazil, as this creative training should start early, in basic education. R2 points out issues such as reading and interpreting texts, difficulty in mastering a second language, especially English, and the need to learn programming language from an early age. R5 ponders that the role of higher education institutions is to bridge the gap between knowledge and people in the region, enabling greater practices and applications of theoretical knowledge in market simulation situations.

Key agents for value creation

This category is related to questions Q3, Q5, Q6, and Q8, related to the *creative industry and innovation* dimensions. Such questions are based on the complexion about valuing creativity and innovation, the value of intellectual capital and agents for value generation.

Of the six respondents, four have between 18 and 23 employees (R1, R2, R3, and R4). R5 has no employees, but establishes partnerships with professionals due to project demands. R6 has only three employees, but has several partners to carry out architectural works and repairs when customer demands arise.

When questioned about how they understand that their company helps in regional development, the interviewees started the reflection by describing how they perceive their company in the regional context. R2, for example, believes that its product enhances strategic management practices by encouraging plan, do, check, act (PDCA), an interactive management method used to control and improve processes and products.

In R3's view, the service his company provides to society in the region is based on provoking debates and discussions on aspects of regional development. He points out that it is necessary to keep everyone informed about what happens around them and also encourage them to discuss subjects and topics of common interest. "*We have an important social role in shaping regional opinion*", argues R3.

This idea is in line with what Curadi and Brandão (2019, p. 304) say when they state that "mass media, such as radio, TV, cinema, digital media, newspapers, and magazines are propagating instruments of speeches". For the authors, the press constructs, over time, narratives about national, regional, and local development processes, spreading free and frank communication formats among individuals, thus assuming a relevant role in the development of regions.

R4, from the advertising area, indicated that their services clarify to the population what companies in the region offer the market, showing all their brand communication creativity. According to R5, the fact of bringing emerging technologies to an inland region, which is not familiar with innovative digital interfaces, is also a way of providing opportunities for professionals to get in touch with the future.

Bilan *et al*. (2019) consider it essential for regional development to have access to innovative technologies, as they are essential means for the dynamization of these territories, support for other policies, and expansion of organizational and innovation capacity, causing positive impacts on economic and social results.

In turn, R6 understands that its contributions in the field of architecture and urbanism value regional development through the recovery and maintenance of the cities' historical and cultural heritage.

> *The private sector, investors and owners of old buildings have been our main focus of clients, in the sense of using architecture to recover, generate value, and create identity, in order to make it a business that benefits those who rent, sell or buy these spaces [...] in addition to delivering to the local society a heritage recovery service that tells its own story* (E6).

About this statement, Florida (2011) emphasizes that the social transformations that the conservation of built areas or public spaces can bring to cities are relevant in solving urban problems, reactivating local economy and contributing to regional development.

With regard to the fundamental agents for value creation, some interviewees pointed out aspects such as investments in marketing (R4, R6), machines (R1, R3), and financial capital (R3), however they were unanimous in suggesting that people are fundamental agents in the generating value for their business. According to R2, although these values may change throughout the company's life cycle, all processes will always revolve around people (employees, suppliers, and customers).

Interestingly, R4 underlined that the people in her advertising agency are the main agent for generating value to creative services, but she believes that the sum of creative intelligence with emotional intelligence has been something very important for the configuration of a good atmosphere in the organization. About this, it is worth highlighting the speech of R5 on how people become essential agents for the generation of value in companies: "*Brains are our greatest asset here in the company. We understand that this is our greatest asset, because we need people capable of taking a critical look at the processes of organizations, in order to identify a problem to be solved*".

This critical view of R5 emphasizes the importance of the process of developing the skills and competences of the people involved with the organization. In addition, this look is important to assist in decision-making processes and in the search for creative and innovative ideas. This importance of human capital in generating value was also highlighted by R6, when associating the skills and knowledge generated by employees and partners to contribute to the outcomes of their work: "*It takes a skilled workforce to execute architectural ideas and concepts,* [...] *people who understand that the product they are making is different*".

Methodology for generating ideas

In this category, the debate on the need to use appropriate instruments and ways to foster creativity and innovation in companies was deepened.

R1 highlighted that their company uses several methodologies and currently adopts its own method, based on data collection with customers via questionnaires and periodic meetings with internal groups. R2 pointed out two methodologies used by the company: fact, cause, action (FCA), which is a high-performance management tool used as a facilitator for problem solving; and the PDCA cycle, which is a tool used to control and improve processes and the SWOT matrix (strengths, weaknesses, opportunities, threats).

R3 stated that his company does not employ a specific methodology. According to him, "*everyone is free to create and present ideas*". For the interviewee, horizontality in the management of relationships and communication between employees favors the creation of programs and tables for journalistic products. Similarly, R4 pointed out that his advertising agency does not adopt specific methodologies for

generating ideas, as "*ideas are generated freely, from a conversation over coffee to an unscheduled chat for advertising brainstorming actions*". For R6, there is not, in fact, a methodology adopted by her architecture and urbanism company, however she points out that one must be open to ideas from collaborators and partners.

> *When we work with the recovery of a building, there is a natural process of educating employees and project partners about the history of the building. This happens very naturally, as we do not give courses and training to our employees, but rather, we talk daily, in order to make them aware of the value of culture, history, architecture* (E6).

It is important to emphasize that the companies in the sample did not show concern in using specific methodologies for the generation of individual or collective ideas, being a punctuated gap for improvements in the innovation practices of these creative industry agents in the Paranhana region (with the exception of R2). Even if this does not prevent creativity as a result of one's product, it cannot be said that there is rigor in putting it into practice. Anyway, it was diagnosed that the fact of not using a formal methodology does not constitute an impediment to innovation, creativity, and development of projects or products among the companies that participated in the research.

FINAL CONSIDERATIONS

The article presented a discussion about innovation practices originating from organizations linked to the creative industry in the Paranhana region, in the interior of Rio Grande do Sul. Based on the theoretical understanding of the assumptions and collaborations of the creative industries and on the empirical data collected with six managers of companies in the region, a selection of creative actions was presented in which intellectual capital stood out and that, in some way, awakened practices of innovation in organizations and, with that, help in regional development (economic, cultural, social, etc.).

The first conclusion reached was that, despite practicing creative actions, the companies in the sample do not clearly recognize themselves as organizations framed in a creative industry. Despite demonstrating practices of management, creation and development of products, services or creative solutions that help other companies (or even the organization itself), the understanding of what constitutes creative industry is still low, indicating the need for public institutions and private companies in the Paranhana region to leverage this discussion.

Also, based on the intersection of empirical data with the theory of innovation and the creative industry, it was possible to verify a guiding tendency for the action of companies, consultancies or creative professionals more linked to the optimization of processes in traditional organizations than to the creation of disruptive products for the final consumer. Perhaps, the characteristic of business in the region, made up of cities such as Taquara, Igrejinha, Parobé, Três Coroas, Riozinho, and Rolante, where the footwear industry forms a nationally recognized production pole, influences that small and medium-sized companies or groups of professionals develop creative actions to be applied in these large corporations. That is, the

intellectual capital of the people who work in the region seems to be acting collectively, in smaller groups, providing creative practices for traditional companies and with classic management models, consequently encouraging the implementation of innovation processes that, in turn, enhance regional development. Here, regional development is understood as more than innovation and increased competitiveness of organizations, as these actions, even if due to specific demands, generate new jobs, knowledge, and culture.

Finally, the results achieved with this approach suggest an initial mapping of innovation practices through the creative industry in the region, being a useful instrument for consulting organizations in this region or other territories that have similarities. That is, it was concluded that the application of this methodological approach, although limited to a group of organizations in a given region and, therefore, far from exhausting the discussion on the subject, is valid for the continuation of the exercise of mapping the practices of the creative industry in Paranhana. As a future work, the research team aims to expand this tracking of the innovations generated by the region's creative industries and, with this, reflect on possible impacts on regional development.

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Conflict of interests: nothing to declare – **Financial support:** none.
Author's contributions: Zilles Borba, E.: Conceptualization, Formal analysis, Investigation, Methodology, Writing — Original draft, Writing — Review & Editing. Portal, V. M.: Conceptualization, Formal analysis, Investigation, Methodology, Writing — Original draft, Writing — Review & Editing. Rodrigues, M.: Conceptualization, Formal analysis, Investigation, Methodology, Writing — Original draft, Writing — Review & Editing.

Article

https://doi.org/10.22398/2525-2828.823125-149

Analysis of the dynamics and specialization of creative activities in Brazilian capitals and Unesco creative cities

Análise da dinâmica e especialização das atividades criativas nas capitais brasileiras e cidades criativas da Unesco

Jonas da Silva Henrique[I]

ABSTRACT

The main objective of this study is to discuss the growth of creative activities, which interface with tourism, in the 27 Brazilian capitals and in the creative cities recognized by the United Nations Educational, Scientific and Cultural Organization of Santos (state of São Paulo) and Paraty (state of Rio de Janeiro), in Brazil. To this end, a statistical application was carried out with data from the Annual Social Information Report from 2011 to 2020. To compare local potentialities in different periods, the location quotient, shift-share, and its Esteban-Marquillas formulation were used. The results illustrate that, as of 2017, the shrinkage rates of creative activities were higher than the shrinkage rates of conventional activities. The location quotient elucidates that there were no abrupt structural changes in terms of spatial concentration of creative activities; the shift-share emphasizes the worsening of the shrinkage of the creative economy, coinciding with the periods of economic/institutional crises and social distancing due to the COVID-19 pandemic.

Keywords: Creative economy. Shift-share. Creative cities.

RESUMO

Este artigo tem por objetivo discutir o crescimento das atividades criativas, que fazem interface com o turismo, nas 27 capitais brasileiras e nas cidades criativas reconhecidas pela Organização das Nações Unidas para a Educação, a Ciência e a Cultura de Santos (SP) e Paraty (RJ). Para tanto, realizou-se uma aplicação estatística com dados da Relação Anual de Informações Sociais de 2011 a 2020. Para comparar as potencialidades locais em diferentes períodos, optou-se pelo uso do quociente locacional, shift-share e seu desdobramento Esteban-Marquillas. Os resultados encontrados ilustram que, a partir de 2017, as taxas de encolhimento das atividades criativas foram superiores ao encolhimento das atividades convencionais. O quociente locacional elucida que não houve mudanças estruturais abruptas em termos de concentração espacial das atividades criativas, o shift-share enfatiza o agravamento do encolhimento da economia criativa, coincidindo com os períodos das crises econômicas/institucionais e de distanciamento social derivado da covid-19.

Palavras-chave: *Economia criativa. Shift-share. Cidades criativas.*

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Received on: 10/06/2022. **Accepted on:** 03/21/2023.

INTRODUCTION

This study arises from the need to understand and monitor the progress of creative activities that interface with tourism within two established periods: from 2011 to 2015, when the Department of Creative Economy is established with the Brazilian Ministry of Culture (*Ministério da Cultura* – MINC), formulating public policies, guidelines, actions, and objectives for the creative economy; and from 2016 to 2020, a period that begins with a serious institutional crisis, followed by redirecting effective public policies for culture and creative activities, economic crisis, termination of the MINC in 2019 and, in 2020, the health crisis due to the new coronavirus (COVID-19) pandemic.

We begin this investigation by identifying the potential territories for analysis with the highest level of homogeneity and susceptible to disaggregation in Brazil. Subsequently, we observe the Brazilian capitals that are part of the Creative Cities Network of the United Nations Educational, Scientific and Cultural Organization (UNESCO), such as Belém (state of Pará/PA), Belo Horizonte (state of Minas Gerais/MG), Brasília (Federal District/DF), Curitiba (state of Paraná/PR), Fortaleza (state of Ceará/CE), Florianópolis (state of Santa Catarina/SC), João Pessoa (state of Paraíba/PB), and Salvador (state of Bahia/BA), and the cities of Paraty (state of Rio de Janeiro/RJ) and Santos (state of São Paulo/SP), which are not capitals, but are also endorsed by Unesco as creative. By identifying that most of the localities that form creative clusters are established in territories with higher levels of urbanization and population density (GOLGHER, 2008; MACHADO; SIMÕES; DINIZ, 2013; MELO; PAIVA, 2016), we decided to cover all Brazilian capitals and creative cities as the reference macro-region, totaling 29 cities.

Once the region of analysis was delimited, some investigations were carried out aiming at identifying the transformations that occurred in the creative activities in their determined territories from 2011 to 2015 and from 2016 to 2020. These periods, although recent, present different economic, institutional, political, and sanitary circumstances, which induces us to investigate, compare, and shed light on alternatives that are key to the creative economy.

Therefore, we seek to distinguish between internal and external factors that explain the progress of creative activities from their productive structure, based on the shift-share method, which compares growth (the effectively observed growth) and homothetic growth (the one that the observed unit would obtain if it evolved according to all the units of analysis), highlighting whether the local dynamism occurs by a structural factor (for reasons exogenous to the locality) or by a differential factor (for reasons endogenous to the locality). To collaborate with the recognition of the variations in creative economy, the location quotient (LQ) assists in distinguishing the level of specialization (concentration) of the creative clusters analyzed.

To corroborate the general purpose of this investigation, this article is divided into five parts. In addition to this introduction, the following sections comprise a literature review that directs the guidelines for performing this study; the methodological description, which details the criteria adopted for the statistical applications; the presentation of results; and, finally, the final considerations.

THE CREATIVE ECONOMY IN URBAN CENTERS

One of the characteristics cited by the literature specialized in creative economy is that the so-called clusters, or creative concentrations, tend to be concentrated in urban centers. Activities involving audiovisual, performing arts, design, gastronomy, fashion, and music converge in the urban space of large agglomerations, enjoying the benefit of proximity to the main regional, socio-cultural economic interactions, and locally-established urban amenities.

The incidence of adequate conditions for carrying out creative and cultural activities motivates the local economy, improves its image and presentation, and can collaborate with tourist activities and new ventures. In addition to these effects, structures that include the performance of creative activities contribute to development processes, including respect for diversity and the inclusion of local populations (PERLOFF, 1979; CWI, 1980; BILLE; SCHULZE, 2006).

When there are concentrations of varieties related to the cultural and creative field, the potential for knowledge spillover among actors becomes eminent, generating an environment conducive to new organizations and innovations that transcend creative activities, reaching manufacturing and service activities. These movements were named by Lazzeretti, Boix and Capone (2013) as "cross-fertilization." Thus, a region with diversified economy would be able to develop new activities, expanding its alternatives for accelerating growth and, consequently, the economic development.

The concentration of activities related to art and culture can be an active protagonist in regional and urban developments, as long as it is organized and ordered by public policies that aim to complement the various areas of the creative economy. In the short term, there is an increase in the general demand for goods and services with local characteristics, which stimulates development in the long term — in addition to stimulating industrial development with skills for innovation (BILLE; SCHULZE, 2006).

Recognizing cultural and creative activities promotes, among other aspects, the valorization of local traditions, praising the identity of the community and the respect for diversity, and collaborating with the vitality of local intangible values. This whole transition process goes through the recognition of public managers, entrepreneurs, and community institutions that culture, entertainment, and urban amenities are important factors for people to choose their destination as a permanent home or for tourism purposes. Large world centers, such as London, New York, and Chicago, explore the attributes derived from creative economy, and this aspect is one of their main sources of wealth generation, employment, and income distribution (CWI, 1980; BILLE; SCHULZE, 2006).

Tracking and monitoring creative activities in urban centers make the actors start considering economic, urban, and social policies focused on the revitalization of areas in central regions and also in the peripheries of the city. This type of policy was formulated in Europe as of 1980, when the main strategy was planning based on the structure of cultural and creative production as an alternative for economic development (MARKUSEN; GADWA, 2010).

From the new demands, creative tourism emerges in urban centers with concentration and specialization in creative activities. This economic modality aims to generate experience for tourists from the interaction and learning of what is proper to the region to the consumption of local production (RICHARDS, 2011).

Territories with creative specialization tend to leverage the tourism derived from the creative activities contained there, as they are based on the local intangible, that is, on knowledge, expressions, and skills in the production of cultural goods and services that generate interests for individuals exogenous to the local culture. The new interactions derived from tourism generate economic surpluses for the local community and new experiences and accumulation of knowledge for tourists (ASHTON, 2013).

Regarding studies on Brazil, Golgher (2008) began his investigation by observing the spatial distribution of highly qualified workers and their occupation in creative activities in Brazil. In his findings, the author described an evident heterogeneity among the states, highlighting that the lowest concentration occurs in the North and Northeast of Brazil.

Later, Golgher (2011),[1] when constructing an entertainment index as a proxy of a locality that strongly attracts qualified, creative, and productive people, reported that the metropolitan regions of Rio de Janeiro, Salvador, Baixada Santista, Natal, and Fortaleza obtained the main results. Still in this analysis, the author highlighted the existence of a spillover effect between neighboring municipalities, due to the dynamics of commuting movements of residents around the central regions.

Machado *et al*. (2013)[2] associated the development of creative clusters in Brazilian municipalities with urban amenities. In their findings, the authors considered the relationship between large concentrations of creative resources, as well as creative industries, creative places, and individuals working in creative occupations, the "economies of agglomeration." In other words, large urban centers, in which there are higher levels of urbanization and infrastructure, universities and cultural centers, benefit from these amenities and also from the interactions existing in the region, incorporating value and innovations to cultural products, in addition to receiving the validation of local traditions.

When verifying the spatial distribution of the leisure industry in the Brazilian municipalities, correlating them with the development level, Ribeiro *et al*. (2014) found the highest levels of specialization and concentration in São Paulo and Rio de Janeiro.

By investigating the characteristics of the municipalities of the Brazilian metropolitan regions from the perspective of artistic and cultural activities, Ribeiro and Lopes

1 Golgher (2008; 2011) used the proportion of workers in the creative sector, adapting data from the 2000 Demographic Census, according to the Brazilian Classification of Occupations (*Classificação Brasileira de Ocupações* – CBO), to distinguish creative occupations. This approach is similar to that employed by Florida (2005).

2 The authors consider direct and indirect cultural/creative occupations, as recommended by the Brazilian Classification of Occupations for Household Surveys (*Classificação de Ocupações para Pesquisas Domiciliares* – COD 2010).

(2015)[3] identified specific structural patterns, competitive characteristics, specialization and dynamism. When considering all 5,454 Brazilian municipalities, their results highlight only 2% of the municipalities with relevance in artistic and cultural activities, in addition to noting that such municipalities are located in large urban centers.

Melo and Paiva (2016)[4] advanced in the investigation on creative clusters in medium-sized Brazilian municipalities, seeking to isolate the scale effect of large centers, contributing to the understanding of the development of creative activities in peripheral cities. In their results, they found that the cities that stood out as creative clusters are concentrated in the South and Southeast regions and on the coast of the Brazilian Northeast, but with different patterns of location.

At the national level, public policies aimed at the creative economy were institutionalized and driven from the creation of the Department of Creative Economy (adjunct to the MINC) in 2011. Their objectives include the expansion of the transversalities of public policies, incorporated into the government and society to reduce regional socioeconomic inequalities and promote the diffusion of creative activities throughout the national territory, especially in regions of late development (MINC, 2011).

Considering the studies carried out to map and evaluate the concentration/dispersion of cultural and creative activities in Brazil, our research intends to use, as a reference, the activities related to the creative economy and to investigate, among other aspects, the growth and local specialization of creative activities in the 27 Brazilian capitals and the creative cities of Santos/SP and Paraty/RJ, recognized by Unesco. The chosen period aims to identify the panorama of the creative economy based on the Plan of the Department of Creative Economy established in 2011 and also to analyze the results for each surveyed city, allowing the comparison with the period of economic and institutional crisis and the COVID-19 pandemic, demonstrating what are the alternatives for resuming the growth of creative economy from the potentialities observed in the previous period.

Creative economy: delimitation of the research field

Despite the diversity of available studies on creative economy, there is no consensus on the delimitation of the activities that surround it. However, in the specialized literature, different activities compose the field based on intellectual capital, creativity, and innovation potential.

As highlighted by the United Nations Conference on Trade and Development (UNCTAD, 2008), there is a recommendation to elasticize and adapt the concept of creative economy, as well as the involved activities, for development in different perspectives.

3 In this study, the authors consider cultural/creative services, including the field of audiovisual, teaching of art and culture, book editing, management of cultural spaces, libraries, museums, restoration activities, and associative organizations linked to culture.

4 In this investigation, the authors consider employees linked to the cultural sector or creative activities, according to the classification of Machado, Simões and Diniz (2013).

Based on the studies and monitoring of the Creative Industry Development Agency of Minas Gerais – P7 Creative Observatory (Agência de Desenvolvimento da Indústria Criativa de Minas Gerais – Observatório P7 Criativo, 2018) and the Tourism Observatory of Belo Horizonte (Observatório do Turismo de Belo Horizonte, 2019), this research aimed at following the creative activities that interface with tourism, considering three major groups:

1. Functional creations

Architecture and design: cutting of gems and manufacturing goldsmithery and jewelry artifacts; manufacture of costume jewelry and similar artifacts; development of custom computer programs; architectural services.

Fashion: manufacture of garments (mass production and tailor-made); costume jewelry and related artifacts; rental of clothing and accessories; manufacture of leather artifacts and other related activities.

Advertising: consulting activities in advertising; market research; agency services for spaces; advertising and publicity.

2. Culture

Performing arts: performing arts, shows and complementary activities; management of spaces for performing arts, shows and other artistic activities; activities of associative organizations linked to culture and art; teaching of art and culture.

Visual arts: photography and similar activities; artistic creation.

Heritage: activities of libraries and archives; activities of museums and exploration, artistic restoration and conservation of historical places and buildings and similar attractions; activities of botanical gardens, zoos, national parks, ecological reserves, and environmental protection areas.

Gastronomy: restaurants and other food and beverage establishments; street food services; catering, buffet and other ready-made food services; manufacture of canned fruits; manufacture of canned vegetables; manufacture of fruit juices and vegetables; milk processing; manufacture of dairy products; manufacture of ice cream and other edible ices; manufacture of bakery products; manufacture of biscuits; manufacture of cocoa and chocolate products; manufacture of pasta; manufacture of spices, sauces, seasonings, and condiments.

3. Media

Audiovisual: cinematographic, video and television shows production activities; film, video and television show post-production activities; cinematographic, video and television show distribution; cinematographic exhibition activities; broadcast television activities; programmers and activities related to pay television; rental of videotapes, DVDs and the like; film clubs.

Editing and editorial: editing of books; editing of newspapers; editing of magazines; editing of registers, lists, and other graphic products; editing integrated to the printing of books; editing integrated to the printing of newspapers; editing integrated to the printing of magazines; editing integrated to the printing of registers, lists, and other graphic products; news agencies.

Music: manufacture of musical instruments; sound recording and music editing activities; radio activities.

Based on the activities listed and classified, according to each cluster, the METODOLOGY section contains the codes of the National Classification of Economic Activities (*Classificação Nacional de Atividades Econômicas* – CNAE) for recognition and replication of the experiments carried out in this investigation.

METHODOLOGY

To monitor the growth of the creative economy of a region based on its productive structure, the shift-share method, also known as structural-differential, was chosen. This technique allows distinguishing whether the growth of a given locality is due to its productive structure (by the dynamism of the observed clusters) or due to the participation in the general growth of activities related to the field of creative economy throughout the reference macro-region (HADDAD, 1989).

With the application of the shift-share, it is possible to indicate whether the growth of a certain region is due to these two factors:

1. productive structure, mainly composed of more dynamic sectors than the others observed;
2. increasing participation in the regional distribution of productive capacity (occupations).

Thus, the growth of a region is constituted by a structural variation and a differential variation (HADDAD, 1989). The mathematical formalization of the shift-share method is defined as follows:

$$E_{ij}^{1} - E_{ij}^{0} = \Delta E_{ij} = \Delta E_{ij}(r_{in} - r_{n}) + E_{ij}(r_{ij} - r_{in}) \quad (1)$$

Where:
E_{ij} =total number of occupations of cluster *i* in region *j*;
r_{ij} =percentage change in employments of the observed cluster *i* in region *j*;
r_{in} =percentage change in employments of the sector throughout the refence macro-region;
1=final year of investigation;
0=initial year of investigation;

Among the presented terms, there are the following correspondences for the possible effects to be identified:

Macro-regional or total effect

$$EM_{ij} = E_{ij}r_{n} \quad (2)$$

Structural effect

$$EE_{ij} = E_{ij}(r_{in} - r_{n}) \quad (3)$$

Regional effect

$$ER_{ij} = E_{ij}(r_{ij} - r_{in}) \quad (4)$$

Esteban-Marquilas (1972) presents the formulation of the shift-share method, incorporating the extraction of information on the allocation effect and the competitive effect and enabling the analysis considering two periods, initial and final. Hence, it is possible to verify the effects that occurred in the periods chosen by the researcher from the components: regional variation (R), structural variation (S), differential variation (D), competitive effect (C), and allocation effect (A). Its formalization is described as follows:

$$\underbrace{\textstyle\sum_i E_{ij}^1 - \sum_i E_{ij}^0 =}_{VT}$$

$$\underbrace{\textstyle\sum_i E_{ij}^0 (r_{it} - 1)}_{R} + \underbrace{\textstyle\sum_i E_{ij}^0 (r_{it} - r_{tt})}_{E} + \underbrace{\textstyle\sum_i E_{ij}^{\prime 0} \left(r_{ij} - r_{it}\right)}_{C} + \quad (5)$$

$$\underbrace{\textstyle\sum_i \left[\left(E_{ij}^0 - E_{ij}^{\prime 0}\right)\left(r_{ij} + r_{ii}\right)\right]}_{A}$$

As shown in Equation (1), TC is the total representation of employments in the creative economy clusters between the final and initial periods in region *j*. Therefore, the total net change (TNC) is represented by:

$$TNC = TC - R = E + C + A \quad (6)$$

In the formalization of Equation (2), R represents the change in employment if region *j* obtained a growth rate of activities related to the field of creative economy in all regions, where:

$r_{tt} = \left(\sum_i \sum_j E_{ij}^1\right) / \sum_i \sum_j E_{ij}^0$ represents the employment of creative activities in all regions;

$r_{it} = \sum_j E_{ij}^1 / \sum_j E_{ij}^0$ represents the growth rate of employment in creative activities in cluster *i* throughout the reference macro-region;

$r_{ij} = E_{ij}^1 / E_{ij}^0$ is the rate of employment growth in cluster *i* of region *j*;

$E_{ij}' = \sum_i E_{ij} \left(\sum_{ij} E_{ij} / \sum_i \sum_j E_{ij}\right)$ is the homothetic employment in the cluster, if region *j* had the same employment structure of the reference macro-region.

Based on the information found in the allocation effect, the proposal of Esteban-Marquillas (1972) highlights possible categorizations, as described in Table 1.

For complementing the analysis of the results found with the shift-share method, we sought for the indicator that would allow comparing the percentage participation of a locality in an exclusive cluster to the percentage participation in the same region in the total of the reference macro-region. To this end, LQ is indicated by Isard (1972) and Haddad (1989). Its representation is according to the following equation:

$$LQ = \frac{E_{ij} / E_{tj}}{E_{it} / E_{tt}} \quad (3)$$

Table 1. Allocation effect – Esteban-Marquillas (1972).

Categorizations	Allocation effect	Components	
		Specialization $(E_{ij}^{1} - E_{ij}^{0})$	Competitive Advantage $(r_{ij} - r_{it})$
Specialized competitive advantage	positive	+	+
Nonspecialized competitive advantage	negative	-	+
Nonspecialized competitive disadvantage	positive	-	-
Specialized competitive disadvantage	negative	+	-

Source: adapted by the author from Haddad (1989).

As described in Equation 3, in this investigation, the LQ seeks to quantify the concentration and importance of activities related to the field of creative economy in relation to the total employment of the reference region. Therefore, E_{ij} represents the number of people employed in activities related to the field of creative economy in city *j*; E_{it} represents the number of people employed in all activities in city *j*; E_{it} represents the total number of people employed in the field of creative economy in all reference cities; and E_{tt} is the total number of people employed in all activities in the reference cities.

In this analysis, the LQ compares the percentage participation of the occupation clusters of the creative activities considered in this investigation with the percentage participation of the other occupations of the entire macro-region of reference. In cases in which the result is higher than 1, the location will be considered as specialized in activities related to the field of creative economy; in cases with values lower than 1, the proposed cluster is considered nonspecialized.

Study sites, period and database

To obtain a higher level of heterogeneity, the reference territory of this study comprises the 27 Brazilian capitals and also the Unesco creative cities of Santos (SP) and Paraty (RJ). To this end, data from the Annual Social Information Report (*Relação Anual de Informações Sociais* – RAIS, MINISTÉRIO DO TRABALHO E PREVIDÊNCIA, 2023) for the years 2011, 2015, 2016, and 2020, were used.

The chosen periods are strategic to intertemporally identify and compare the effects of public policies from the creation of the Department of Creative Economy (adjunct to the MINC), with its management plan from 2011 to 2014, with the period of economic, political, and institutional crises as of 2015, with the termination of the MINC, and the redirection of specific public policies to activities related to the field of creative and cultural economy at the national level that occurs as of 2017. In the year 2020, the period of social distancing due to the COVID-19 pandemic aggravated the situation.

However, all the applied statistics allow to identify and compare the periods, the occurrences on the activities related to the field of creative economy, as well as to compare their results, identifying locations of specialization and which are the

activities with the greatest dynamic structure for the recovery of the creative economy in the post-pandemic period.

The activities related to the field of creative economy, selected by this study, have as reference the publication of the P7 Creative Observatory, carried out by Agência de Desenvolvimento da Indústria Criativa de Minas Gerais (2018), and also the Mapping and Analysis of the Creative Economy, published by Observatório do Turismo de Belo Horizonte (2019). To enable the observation of the results, the creative activities are grouped as presented in Chart 1.

Chart 1. Creative activities considered and their respective clusters.

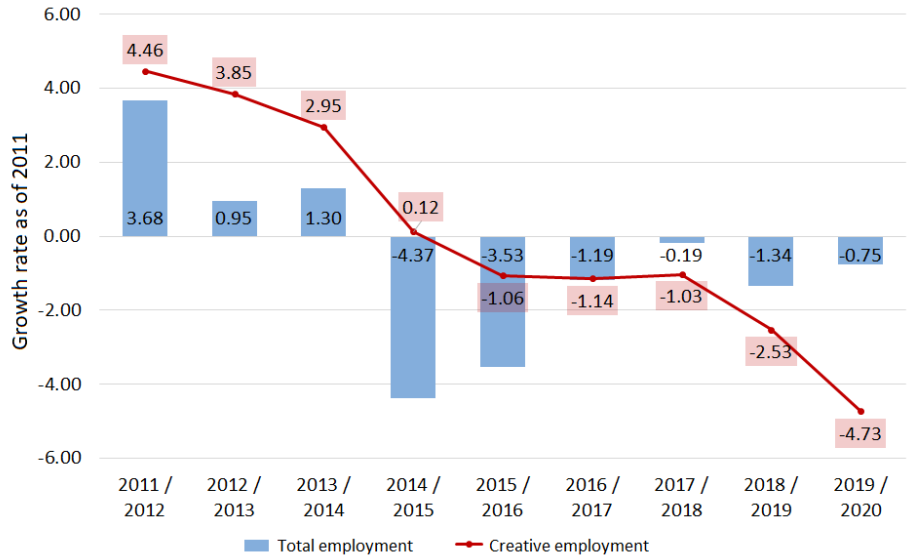
Functional creations		Media		Culture		Culture	
Group	**CNAE**	**Group**	**CNAE**	**Group**	**CNAE**	**Group**	**CNAE**
Architecture and design	32116	Audiovisual	59111	Gastronomy	56112	Visual arts	74200
	32124		59120		56121		90027
	62015		59138		56201	Music	32205
	71111		59146		10317		59201
	71197		60217		10325		60101
	74102		60225		10333	Heritage	91015
Fashion	74901		77225		10511		91023
	15319		94936		10520		91031
	15327	Editing and editorial	58115		10538		
	15335		58123		10911		
	15394		58131		10929		
	13405		58191		10937		
	14118		58212		10945		
	14126		58221		10953		
	14142		58239	Performing arts	90019		
	14223		58298		90035		
Advertising	73114		63917		94936		
	73190				85929		

Source: Prepared by the author.
CNAE: National Classification of Economic Activities.

Thus, the application of the methods considers ten major economic groups and 61 different activities. The statistics identified in this study allow us to identify and compare, in different periods, which clusters of the selected activities have the greatest capacities to promote creative economy before the period of social distancing due to the COVID-19 pandemic (from 2011 to 2015) and with the impact of COVID-19 (2016 and 2020, the initial year of the pandemic). All information was extracted from the RAIS microdata (MINISTÉRIO DO TRABALHO E PREVIDÊNCIA, 2023).

RESULTS

The investigation on the dynamics of creative activities that interface with tourism, in Brazilian capitals and creative cities of Unesco, begins from the observation of the annual growth rate starting in the year 2011 until 2020, as shown in Graph 1.



Source: prepared by the author based on RAIS data.

Graph 1. Growth rate of formal employment — 2011 to 2020 (creative capitals and cities).

Based on the results highlighted in Graph 1, we observed that the annual growth rate of creative activities that interface with tourism is higher than the growth rate of formal employment until the year 2015. From 2016 onward, we observed negative growth rates in all the surveyed years, being aggravated as of 2018 and, mainly, when observing the last period (2019/2020), which was impacted by the health crisis resulting from COVID-19. By observing the years 2017 to 2020, we verified the occurrence of higher negative growth in the activities of the analyzed cluster when compared with other economic activities.

Based on these statistics, we observed the first indications of the different guidelines of public policies, at the federal level, adopted during the governments of Presidents Dilma Rousseff (2011–2014, 2015–2016), Michel Temer (2016–2018), and Jair Bolsonaro (2019–2020).

Taking these results into account, we sought to observe the intra-regional dynamics of creative activities related to tourism in the reference macro-region throughout the investigated period. In total, we found that over 80% of the individuals working in activities deemed creative in this analysis are concentrated in ten of the 29 surveyed cities, and São Paulo (SP) accounts for over 30% of the occupations in all analyzed periods, followed by Rio de Janeiro (RJ), with approximately 11%, as

well as the results found by Ribeiro and Lopes (2015), including Belo Horizonte (MG) and Fortaleza (CE) with percentages above 6%.

Despite the evident shrinkage of occupations of the creative cluster of this analysis, as of 2015, we observed that, in the main cities investigated, there were no significant changes in the percentage intra-regional dynamics, providing evidence of the maintenance of productive representativeness in each capital and creative city analyzed. This information is highlighted in Table 2.

Table 2. Percentage distribution of formal employment in activities of the creative cluster in creative capitals and cities — 2011 to 2020.

City	2011 (%)	2012 (%)	2015 (%)	2016 (%)	2019 (%)	2020 (%)
São Paulo	33.02	32.71	31.49	31.32	30.87	30.98
Rio de Janeiro	11.22	11.25	11.14	11.33	11.04	11.16
Belo Horizonte	6.76	6.70	6.59	6.62	6.54	6.46
Fortaleza	6.38	6.34	6.32	6.20	5.80	5.79
Brasília	5.36	5.28	5.38	5.38	5.68	5.76
Goiânia	5.20	5.23	5.24	5.20	5.12	5.11
Curitiba	4.75	4.67	4.66	4.65	5.07	5.02
Porto Alegre	3.92	3.90	3.69	3.62	3.57	3.50
Salvador	3.72	3.75	3.76	3.76	3.74	3.64
Recife	2.78	2.95	3.04	3.00	2.85	2.78
Total (%)	83.11	82.78	81.31	81.08	80.28	80.20

Source: prepared by the author based on RAIS data.

The applications of this research begin with the LQ.[5] In this investigation, we considered all the activities in the field of creative economy that interface with tourism, as a single group, comparing it with the other occupations existing in the local economy. Thus, results above 1 mean that the unit of analysis (observed city) is relatively more important, in the macro-regional context (all the observed cities), considering all creative activities, than, in general terms, the other productive sectors of the local economy.

In view of the results presented in Table 3, we verified that the city of Paraty (RJ) is the city that obtained the highest results of LQ in all analyzed periods, followed by Goiânia (state of Goiás/GO), Fortaleza (CE), Florianópolis (SC), São Paulo (SP), and Santos (SP). This result means that the cluster observed in these cities assumes its leading role in the local economy, with a surplus in its production capacity, indicating that the activities of the creative cluster considered in this analysis, in the region, are deemed as basic, i.e., focused on export

5 To avoid false positives, LQ results are followed by relative participation (RP). That is, values above 1 for the LQ should be followed by values consistent with the results obtained by the RP.

Table 3. Location quotient and relative participation for creative activities that interface with tourism in 2011, 2015, 2016, and 2020.

City	First analysis period				Second analysis period			
	LQ — 2011	RP (%) — 2011	LQ — 2015	RP (%) — 2015	LQ — 2016	RP (%) — 2016	LQ — 2020	RP (%) — 2020
Paraty	2.89	1.96	2.70	2.02	2.86	2.19	2.92	2.11
Goiânia	1.70	1.16	1.68	1.25	1.65	1.27	1.62	1.17
Fortaleza	1.57	1.07	1.47	1.10	1.48	1.14	1.37	0.99
Florianópolis	1.36	0.92	1.34	1.00	1.29	0.99	1.31	0.94
São Paulo	1.24	0.84	1.18	0.88	1.17	0.90	1.14	0.82
Santos	1.20	0.81	1.18	0.88	1.16	0.89	1.20	0.87
Curitiba	1.00	0.68	0.98	0.73	0.97	0.75	1.04	0.75
Porto Alegre	1.00	0.68	0.94	0.70	0.93	0.71	0.96	0.69
Belo Horizonte	0.93	0.63	1.04	0.78	1.04	0.80	0.96	0.69
Vitória	0.93	0.63	0.95	0.71	0.96	0.74	0.96	0.69
Teresina	0.92	0.62	0.89	0.67	0.89	0.68	0.97	0.70
Natal	0.91	0.62	1.09	0.81	1.05	0.80	0.99	0.72
Brasília	0.88	0.59	0.82	0.61	0.80	0.61	0.83	0.60
Salvador	0.85	0.58	0.90	0.67	0.91	0.70	0.89	0.64
Rio de Janeiro	0.85	0.58	0.85	0.63	0.88	0.68	0.96	0.69
Campo Grande	0.85	0.58	0.97	0.72	0.96	0.74	0.98	0.71
Aracaju	0.83	0.57	0.89	0.66	0.89	0.68	0.97	0.70
Cuiabá	0.83	0.56	0.88	0.66	0.89	0.68	0.92	0.67
Maceió	0.81	0.55	0.97	0.72	0.99	0.76	1.08	0.78
Recife	0.75	0.51	0.82	0.62	0.82	0.63	0.78	0.56
Boa Vista	0.67	0.46	0.77	0.57	0.82	0.63	0.80	0.58
João Pessoa	0.66	0.45	0.81	0.61	0.86	0.66	0.95	0.69
Rio Branco	0.66	0.45	0.62	0.46	0.66	0.51	0.63	0.46
Palmas	0.62	0.42	0.65	0.48	0.64	0.49	0.72	0.52
Macapá	0.54	0.37	0.61	0.46	0.55	0.43	0.51	0.37
Porto Velho	0.52	0.35	0.61	0.45	0.61	0.47	0.61	0.44
São Luís	0.47	0.32	0.58	0.44	0.58	0.45	0.57	0.41
Belém	0.46	0.31	0.52	0.39	0.51	0.39	0.49	0.35
Manaus	0.38	0.26	0.44	0.33	0.45	0.34	0.43	0.31

Source: prepared by the author based on RAIS data.

(or reception of tourists, considering the productive characteristics of the activities of the creative field in each location of analysis).[6]

The cities of Belo Horizonte (MG) and Natal (state of Tio Grande do Norte/RN) only stood out as basic activities — out of the creative cluster related to tourism — in

6 As highlighted by Haddad (1989), cities that present results with values lower than 1, for creative activities, indicate that these activities are nonbasic, that is, the production is aimed at the market of the very surveyed city.

the years 2015 and 2016, possibly benefited by the implementation of public policies at the national level. According to the data, in 2020, during the health crisis arising from the COVID-19 pandemic, the cities of Paraty (RJ), Goiânia (GO), Fortaleza (CE), Florianópolis (SC), São Paulo (SP), Santos (SP), and Curitiba (PR) remained with results above 1 for the LQ as well as at the beginning of the observed period. Moreover, the city of Maceió (state of Alagoas/AL) was included, which stands out as a basic production in activities of the creative cluster.

It should be noted that, as highlighted by Golgher (2008; 2011) and Machado *et al*. (2013), activities related to creative economy in Brazil tend to be concentrated mainly in cities located in the South and Southeast, although, according to our results, the city of Fortaleza (CE) presented results with LQ>1 (Table 3), in addition to occupying the fourth position among the main cities considered in this analysis (Table 2).

It is noteworthy that, although the activities of the creative cluster, after the year 2015, accumulate negative growth until the year 2020, there are no indications of territorial changes in specialization/concentration. In other words, with the exception of the city of Maceió (AL), which started presenting LQ>1, and Porto Alegre (state of Rio Grande do Sul/RS), with LQ<1, the other territories maintained the same productive structure, in terms of representativeness, in the reference macro-region, in activities of the creative cluster. In Table 4, we present the results of the application of the shift-share method.

Table 4. Results of the shift-share analysis for creative activities that interface with tourism — 2011 and 2015.*

Structural and differential growth	Structural growth higher than differential decrease	Differential decrease higher than structural growth	Structural and differential decrease
Aracaju	Brasília	Belo Horizonte	São Paulo
Belém	Florianópolis	Curitiba	
Boa Vista	Goiânia	Fortaleza	
Campo Grande	Rio Branco	Porto Alegre	
Cuiabá	Salvador	Rio de Janeiro	
João Pessoa	Teresina	Santos	
Macapá		Vitória	
Maceió			
Manaus			
Natal			
Palmas			
Paraty			
Porto Velho			
Recife			
São Luís			

Source: prepared by the author.
*For further details of the results, see the Appendix.

The structural component (motivated by external factors – federative public policies, macroeconomic mechanisms, world economic growth, etc.) of the shift-share analysis demonstrates the number of related jobs that one of the considered locations gains or losses, in relation to the composition of the considered clusters. The differential component (related to internal factors – local public policies, infrastructure, human capital, internal characteristics, etc.) is a function of the specialization of the reference region in some activities, considering the local comparative advantages.

When observing the homothetic growth of the entire reference region, we verified that the advance should be 11.82% – as shown in Table 6, Appendix. In this sense, 15 out of the 29 cities showed growth (%) for structural and differential reasons. When observing the structural growth higher than the differential growth, that is, the growth as a function of the general growth of the reference macro-region, there is the occurrence in six observed cities. Regarding the decrease of differential attributes higher than structural growth, it occurs in seven cities.

The structural and differential decreases that were reported in the city of São Paulo in the period from 2011 to 2015 were surprising. Possibly, the results obtained for São Paulo were motivated by the low percentage impact that occurred in the period of analysis in relation to the advances verified in the other observed cities and capitals.[7]

When observing the formulation of the shift-share method with the application proposed by Esteban-Marquillas (1972) for the period of 2011 and 2015, in Chart 2 we verify that, among all the activities related to functional creations, culture and media, the activity related to gastronomy (culture) is the one that presents more cities with competitive advantage and specialization, especially in the North and Northeast regions. When observing the North region, the city of Belém (PA) stands out, with competitive advantage and specialization in five out of the ten groups of activities of the creative cluster considered in this analysis, especially in activities related to culture.

Conversely, activities related to heritage and architecture (functional creations) presented competitive advantage and specialization in the surveyed cities in the South and Southeast regions. Although it is not a creative city recognized by UNESCO, the city of Porto Alegre (RS), in the South region, includes all groups of creative activities with competitive advantage and specialization, with the exception of the fashion cluster (functional creations), with competitive advantage, but nonspecialized.

In the Midwest region, the city of Campo Grande (state of Mato Grosso do Sul/MS) stands out, with competitive advantage and specialization for activities related to advertising (functional creations), performing arts (culture), gastronomy (culture), and audiovisual (media). We verified that, in the city of Cuiabá (state of Mato Grosso/MT), there is competitive advantage, although nonspecialized, in seven creative clusters, especially in activities related to culture.

7 The results with greater details are found in Table 6, Appendix.

Chart 2. Formulation of Esteban-Marquillas (1972) — 2011 and 2015.

FU	City	Functional creations			Culture				Media		
		Architecture and design	Fashion	Advertising	Performing arts	Visual arts	Heritage	Gastronomy	Audiovisual	Editing and editorial	Music
North											
PA	Belém	1		3	3	1	1	1	1		3
RR	Boa Vista	2			3	2		1	1		3
AP	Macapá	2			3			1	3		3
AM	Manaus	1	2	3	2	2	3	1	1	1	2
TO	Palmas	2		1	3	3		1		3	3
RO	Porto Velho	3	2	2	2	3	3	3	1	2	1
AC	Rio Branco			2	2	3	3	3	3	1	1
Northeast											
MA	São Luís	2		1	2	2	3	1	1	3	3
PI	Teresina	2	3	2	2	3	3	2	2		2
CE	Fortaleza	2	3	2	2	2	2	2		2	2
RN	Natal	3	2	1	2	1		1			3
PB	João Pessoa	2	2	1	2	1	2	1		2	3
PE	Recife	2		3	3	2	3	1		3	3
AL	Maceió	2		2	2	1	2	1	2	2	1
SE	Aracaju	1		1	3	1	1	1	2	3	1
BA	Salvador	3		2				3	2	3	3
Midwest											
MS	Campo Grande	3	2	1	1	3		1	1	3	3
MT	Cuiabá	2		2	2	2		2		2	2
DF	Brasília	3	2	3	3	3	3	3		2	
GO	Goiânia	2	1		2	2		2		2	2
Southeast											
MG	Belo Horizonte	3		3		1	3	3			
RJ	Rio de Janeiro	1		3	3	2	1	3	1	1	
RJ	Paraty				3			1	3		3
SP	São Paulo	1	2	3	2	3	1	3	3	1	1
SP	Santos	1	1	1	1	1	1		3		3
ES	Vitória	1		3	3	1	2	3			1
South											
PR	Curitiba	1		2		1	1	3	3	2	
SC	Florianópolis	3		3	1	3	1	3	3	3	3
RS	Porto Alegre	1	2	1	1	1	1	1	1	1	1

Source: Prepared by the author.
Typology: 1 (green) — competitive advantage, specialized; 2 (blue) — competitive advantage, nonspecialized; 3 (red) — competitive disadvantage, specialized; blank space — competitive disadvantage, nonspecialized.

From the results found so far, we advance to the comparison between periods when analyzing the results of the shift-share analysis for the years 2016 to 2020. The results highlighted in Table 5 represent a moment of several turbulences in Brazil,

Table 5. Results of the shift-share analysis for creative activities that interface with tourism — 2016 to 2020.

Structural and differential growth	Structural growth higher than differential decrease	Differential decrease higher than structural growth	Structural and differential decrease
Aracaju	Manaus	Belém	Fortaleza
Boa Vista	Rio Branco	Belo Horizonte	
Brasília	Teresina	Goiânia	
Campo Grande	Vitória	Macapá	
Cuiabá		Natal	
Curitiba		Porto Alegre	
Florianópolis		Porto Velho	
João Pessoa		Recife	
Maceió		Rio de Janeiro	
Palmas		Salvador	
Paraty		São Paulo	
Santos			
São Luís			

Source: prepared by the author.

from the institutional sphere and the economic crisis, which accumulated changes in the field of employment, in addition to changes in political directions that occurred during the period from 2016 to 2020 (as highlighted in Graph 1).[8]

As a result of the issues in the 2016–2020 period, we observed that the overall number of activities of the creative field in the surveyed cities was more impacted than those observed in other activities (Graph 1). Within the crisis environment, aggravated as of the years 2017 and 2018, the homothetic growth driven by the shift-share calculation for the activities of this analysis was -9.14%. Considering the scenario verified in the period, only the cities of Paraty (RJ), Palmas (state of Tocantins/TO), and João Pessoa (PB) presented positive growth rates.

In Table 5, we can observe that the shrinkage of activities observed in the period was lower than expected in cities that were classified as structural and differential growth. In the other cities where structural growth was verified, higher than the differential decrease, there was also a shrinkage of activities of the creative field with rates lower than the homothetic shrinkage resulting from the observed period.

8 It should be noted that in the year 2020, there was a period of social distancing due to the COVID-19 pandemic, whose effects are evident at a global level.

In this sense, structural reasons were responsible for impacts not as important as in the other locations.[9]

Still concerning Table 5, when observing the cities that were classified as differential decrease higher than the structural growth, we identified that the percentage of shrinkage observed in the activities of the creative field was higher than the homothetic shrinkage in the analyzed period. Among all the surveyed locations, between 2016 and 2020, we observed that the city of Fortaleza (CE) started presenting a structural and differential decrease, i.e., there is a shrinkage of the observed activities greater than the homothetic shrinkage observed in the period, for structural and differential reasons.

When analyzing the results found in the formulation of the shift-share method by Esteban-Marquillas (1972), still in the period from 2016 to 2020, compared with the previous period from 2011 to 2015, we found that gastronomy is still the main set of activities with competitive advantage and specialization, verified in 13 out of the 29 surveyed locations. These results remain prominent, especially in the Northeast region.

Regarding functional creations, we noticed that, still in the Northeast region, except in the city of Salvador (BA), all the cities observed in the region present results with competitive advantages, although nonspecialized, for activities related to architecture and design. Moreover, as for results with competitive advantages, specialized and nonspecialized, we found that most of the surveyed cities, with the exception of those in the South region, present results in these categories (1 and 2).

Analyzing the situation of the 2016–2020 period, the following cities stand out: Porto Alegre (RS), South region; São Paulo (SP), Southeast region; Campo Grande (MS), Midwest region; Teresina (state of Piauí/PI), São Luiz (state of Maranhã/MA), and Maceió (AL), Northeast region, with competitive advantages, specialized and nonspecialized, in the different clusters of activities of the creative field considered in this analysis.

However, the results shown in Chart 3 highlight the main indications of the recovery of activities of the creative field in its different clusters. The cities that present most of the clusters as competitive disadvantage, although specialized (3 – red), such as Florianópolis (SC), in the South region; Belo Horizonte (MG) and Rio de Janeiro (RJ), in the Southeast region; and Porto Velho (state of Rondônia/RO) and Rio Branco (state of Acre/AC), in the North region, present potential for economic recovery, in activities of the creative field, in the clusters of functional creations, culture, and media.

It is known that the competitive decrease and specialization of creative activities observed in this analysis was partly due to the period of social distancing in the COVID-19 pandemic. Therefore, in this study, we shed light on the clusters with local development potential, whose results obtained some kind of competitive

9 More detailed results are shown Table 7, Appendix.

Chart 3. Formulation of Esteban-Marquillas (1972) — 2016 to 2020.

FU City		Functional creations			Culture				Media		
		Architecture and design	Fashion	Advertising	Performing arts	Visual arts	Heritage	Gastronomy	Audiovisual	Editing and editorial	Music
North											
PA	Belém	3		3	2	1		3	3	2	1
RR	Boa Vista	2	2	2	2	3		1	3		3
AP	Macapá	3	3	2	2	3					
AM	Manaus	1		2		2		3	1	2	1
TO	Palmas	1	2	1	3	2		1	1	2	2
RO	Porto Velho	2			2	3	3	3	2	3	1
AC	Rio Branco		2	3	2		3	3	1	3	2
Northeast											
MA	São Luís	2	2	1	1	3	2	1	3	2	2
PI	Teresina	2	1		2		2	1	2	2	2
CE	Fortaleza	2	3	2	2						
RN	Natal	2		3	2	3	2	3	2		2
PB	João Pessoa	2	2	3	2	1		1	2	2	3
PE	Recife	2		1		2	2	3			3
AL	Maceió	2	2	2		1	2	1		2	2
SE	Aracaju	2	2	1	2	3	1	1	3		3
BA	Salvador			1	3		1	3	2		2
Midwest											
MS	Campo Grande	2	2	1	1	1		1	1		3
MT	Cuiabá		1	2	2	2		2		2	
DF	Brasília			2	2	3	2	1	2	2	
GO	Goiânia	3	1	2	2	2	3	2	3	2	3
Southeast											
MG	Belo Horizonte	3		3	1	3	3	3			
RJ	Rio de Janeiro	3			3	2	1	3	3	3	2
RJ	Paraty				2			1		2	3
SP	São Paulo	1	2	2	1	2	3	1		3	1
SP	Santos		2	2	2	2	3	3	3		
ES	Vitória	1		3	1	3	2	3		2	1
South											
PR	Curitiba	3	2		2	3	3	1		2	2
SC	Florianópolis	3		3	3	1	3	3	3	3	1
RS	Porto Alegre	1	2	1	3	2	1	1		1	

Source: Prepared by the author.
Typology: 1 (green) — competitive advantage, specialized; 2 (blue) — competitive advantage, nonspecialized; 3 (red) — competitive disadvantage, specialized; blank space — competitive disadvantage, nonspecialized.

advantage or specialization in some creative clusters, both in the contemporary period from 2016 to 2020 and in the recent historical context from 2011 to 2015, in which the growth rates of activities of the creative field were found to be positive and increasing.

FINAL CONSIDERATIONS

The development of this research allowed us to understand the relationship of the activities of the creative field that interface with tourism, in Brazilian capitals and creative cities recognized by UNESCO, generating subsidies for monitoring and reflection, indicating alternatives to resume the growth of these activities in each location based on their potentialities.

The starting point of this research was the construction developed by Golgher (2008; 2011), Machado *et al*. (2013), Ribeiro *et al*. (2014), Ribeiro and Lopes (2015), Melo and Paiva (2016), who, considering the Brazilian reality, provide directions for new assertive investigations on creative activities, clusters, and their territories.

The delimitation of what is meant by activities of the creative field (organized by the CNAE codes), as well as their clusters, is based on studies carried out by the P7 Creative Observatory (endorsed by the João Pinheiro Foundation — AGÊNCIA DE DESENVOLVIMENTO DA INDÚSTRIA CRIATIVA DE MINAS Gerais, 2018), which provides information and guidelines for understanding the creative economy of the state of Minas Gerais, as well as its economic situation, and also the studies carried out and monitored by Observatório do Turismo de Belo Horizonte (2019).

Upon beginning the research, we verified the expansion of creative activities, with rates higher than those found in conventional activities until the economic crisis of 2015. As of 2016, we observed that the rates of shrinkage of creative activities related to tourism were higher than those found in other economic activities. These movements worsened as of 2018, when abrupt changes occurred in the guidelines of public policies involving the economies of culture and creativity. This study shows the worsening of the situation related to creative activities in the period of social distancing due to the COVID-19 pandemic.

The results of the applications of the LQ emphasize the concentration of activities of the creative field in cities of the South and Southeast regions, although the city of Fortaleza (CE) presents results for the LQ>1, being the main city in the Northeast with higher levels of concentration of the group of activities of interest.

Although the results, over the observed period, indicate that activities related to creative economy showed negative growth rates, especially after 2019, the results of the LQ indicate that there was no restructuring at the spatial level. In other words, the existing productive structures in each location of analysis, although diminished in the last years of analysis, remain with the same hierarchies of concentration, being Paraty (RJ), Goiânia (GO), Fortaleza (CE), Florianópolis (SC), São Paulo

(SP), and Santos (SP) those in which the observed activities remain representative in all observed periods.

From these indications, we observed, in the shift-share analysis for the first analyzed period (2011 to 2015), that the homothetic growth would be 11.82%. In all, the cities of Rio de Janeiro (RJ), Fortaleza (CE), Curitiba (PR), Santos (SP), Belo Horizonte (MG), Vitória (state of Espírito Santo/ES), and Porto Alegre (RS) presented results with structural decrease higher than structural growth, and São Paulo (SP) with differential and structural decrease. The formulations of Esteban-Marquillas (1972) highlight that activities related to gastronomy assume competitive advantage and specialization in most of the surveyed cities, especially in the North and Northeast regions.

When analyzing the results of the shift-share, for the period from 2016 to 2020, there are findings attesting to the shrinkage of the creative activities observed in this investigation. The homothetic growth presented a rate of change of -9.14%. Only the cities of Paraty (RJ), Palmas (TO), and João Pessoa (PE) presented positive rates of total growth, which were motivated by structural and differential reasons.

The result of the formulation of Esteban-Marquillas (1972) points out that gastronomy, although presenting results of competitive disadvantages, but specialized, in most localities, stands out as one of the main clusters of the creative economy considered in this analysis. Furthermore, we verified that performing arts, architecture and design, editing and editorial are the clusters that present competitive advantages, although nonspecialized, in some of the observed territories.

Among the results of this study, it is expected, from the understanding of the potentialities of the activities of the creative field in each investigated locality, that this information can generate subsidies for reorganizing creative economy, restructuring public policies and specific directions for the best use of the productive capacities of the local creative economy.

Although RAIS data (MINISTÉRIO DO TRABALHO E PREVIDÊNCIA, 2023) are the most recent and comprehensive for observing creative activities in all Brazilian cities, only activities with formal employment registration are included, which may be a limiting factor for this study. In this sense, we hypothesized that the number of activities observed is higher than those represented by RAIS data (MINISTÉRIO DO TRABALHO E PREVIDÊNCIA, 2023), even if they are occupations of precarious ventures and employments. Therefore, it is important that public policies aimed at resuming the growth of the creative economy take into account the evidence presented in the present study, without disregarding the aspects of informality.

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Conflict of interests: nothing to declare – **Financial support:** none.

APPENDIX

Table 6. Overall results of the shift-share analysis between 2011 and 2015.

Territory	Total (%)	Regional (%)	Structural (+/-)	Differential (+/-)	Description
w Velho	17.68	11.82	5.11	0.75	SDG
Rio Branco	12.27	11.82	4.03	-3.58	SGHDD
Manaus	29.38	11.82	4.83	12.73	SDG
Boa Vista	30.87	11.82	4.88	14.17	SDG
Belém	22.38	11.82	4.26	6.30	SDG
Macapá	27.68	11.82	4.00	11.02	SDG
Palmas	37.06	11.82	3.73	21.51	SDG
São Luís	34.60	11.82	3.61	19.17	SDG
Teresina	21.45	11.82	-0.89	10.52	DDHSG
Fortaleza	10.61	11.82	-7.10	5.89	SGHDD
Natal	24.53	11.82	3.27	9.43	SDG
João Pessoa	40.88	11.82	3.47	25.58	SDG
Recife	22.16	11.82	3.18	7.16	SDG
Maceió	41.83	11.82	4.94	25.07	SDG
Aracaju	18.90	11.82	3.63	3.45	SDG
Salvador	13.07	11.82	3.72	-2.47	SGHDD
Belo Horizonte	9.07	11.82	1.37	-4.12	DDHSG
Vitória	7.41	11.82	4.03	-8.45	DDHSG
Paraty	30.89	11.82	7.57	7.44	SDG
Rio de Janeiro	11.00	11.82	2.25	-3.07	DDHSG
Santos	9.34	11.82	5.39	-7.88	DDHSG
São Paulo	6.64	11.82	-2.90	-2.28	SDD
Curitiba	9.60	11.82	3.22	-5.45	DDHSG
Florianópolis	14.41	11.82	4.56	-1.97	SGHDD
Porto Alegre	5.17	11.82	2.78	-9.43	DDHSG
Campo Grande	29.73	11.82	2.73	15.18	SDG
Cuiabá	25.45	11.82	3.76	9.87	SDG
Goiânia	12.77	11.82	-6.28	7.23	DDHSG
Brasília	12.40	11.82	5.06	-4.48	SGHDD

Source: prepared by the author.
Differential growth higher than structural decrease (DGHSD); structural and differential growth (SDG); structural growth higher than differential decrease (SGHDD); differential decrease higher than structural growth (DDHSG); structural and differential decrease (SDD); structural decrease higher than differential growth (SDHDG).

Table 7. Overall results of the shift-share analysis between 2016 and 2020.

Territory	Total (%)	Regional (%)	Structural (+/-)	Differential (+/-)	Description
Porto Velho	-11.04	-9.14	2.45	-4.35	DDHSG
Rio Branco	-8.58	-9.14	1.62	-1.06	SGHDD
Manaus	-7.50	-9.14	2.64	-1.05	SGHDD
Boa Vista	-1.50	-9.14	2.23	5.41	SDG
Belém	-12.30	-9.14	2.33	-5.49	DDHSG
Macapá	-15.32	-9.14	2.13	-8.53	DDHSG
Palmas	1.90	-9.14	3.06	7.98	SDG
São Luís	-3.87	-9.14	1.84	3.44	SDG
Teresina	-2.64	-9.14	-0.04	6.55	DGHSD
Fortaleza	-15.12	-9.14	-3.80	-2.18	SDD
Natal	-16.59	-9.14	1.30	-8.74	DDHSG
João Pessoa	1.26	-9.14	1.95	8.46	SDG
Recife	-16.00	-9.14	1.97	-8.82	DDHSG
Maceió	-1.28	-9.14	2.16	5.70	SDG
Aracaju	-1.41	-9.14	2.55	5.18	SDG
Salvador	-11.97	-9.14	1.85	-4.68	DDHSG
Belo Horizonte	-11.38	-9.14	1.14	-3.37	DDHSG
Vitória	-7.58	-9.14	1.94	-0.38	SGHDD
Paraty	6.75	-9.14	3.16	12.73	SDG
Rio de Janeiro	-10.54	-9.14	0.99	-2.39	DDHSG
Santos	-6.44	-9.14	2.45	0.25	SDG
São Paulo	-10.11	-9.14	-1.67	0.71	SDHDG
Curitiba	-1.85	-9.14	1.49	5.80	SDG
Florianópolis	-1.32	-9.14	2.53	5.30	SDG
Porto Alegre	-12.16	-9.14	1.44	-4.46	DDHSG
Campo Grande	-1.49	-9.14	1.76	5.90	SDG
Cuiabá	-0.25	-9.14	2.56	6.34	SDG
Goiânia	-10.69	-9.14	-3.76	2.21	SDHDG
Brasília	-2.76	-9.14	2.50	-3.88	SDG

Source: prepared by the author.
Differential growth higher than structural decrease (DGHSD); structural and differential growth (SDG); structural growth higher than differential decrease (SGHDD); differential decrease higher than structural growth (DDHSG); structural and differential decrease (SDD); structural decrease higher than differential growth (SDHDG).

Article

https://doi.org/10.22398/2525-2828.823150-167

History of psychiatry management at Instituto Municipal Nise da Silveira: creative and cultural actions that impact asylum deconstruction in the Brazilian society

História da gestão da psiquiatria no Instituto Municipal Nise da Silveira: ações criativas e culturais que impactam a desconstrução asilar na sociedade brasileira

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ABSTRACT

Asylum deconstruction has been a theme that has brought, both in academia and society, several discussions that have emphasized the struggle for the deinstitutionalization of madness and for the "end of asylums", as well as the historical constitution of health and mental illness. In this trajectory of deinstitutionalization of madness, the Instituto Municipal Nise da Silveira (IMNS) has acted on several fronts, ranging from the architectural restructuring of the institute, as well as the creation of devices capable of building a new vision of mental illness in society. This study sought to understand the history of psychiatry management in Brazil and the Nise da Silveira Institute, as well as to analyze how the Institute's creative and cultural actions impact on the deconstruction of the need for clinical hospitalization in closed institutions in Brazilian society. This article joins the interpretative paradigm, since it understands that the phenomena are socially constructed, and are constituted from the interactions of social agents. It was decided to use in-depth interviews, document analysis, and ethnographic-inspired methods, seeking to be part of the experience lived by mental health users. The results suggest that the restructuring movement intensified with the Psychiatric Reform in Brazil, whose proposal was the reformulation of the mental health treatment policy in the country. Therefore, IMNS has acted on some fronts, it can be seen that internal and external actions were included in the strategic planning, called "inside" and "outside" actions in the institutions.

Keywords: History of psychiatry. Art and culture. Hospital management. Psychiatric reform. Asylum deconstruction.

RESUMO

A desconstrução asilar tem sido um tema que suscita, tanto na academia quanto na sociedade, várias discussões que enfatizaram a luta pela desinstitucionalização da loucura e pelo fim dos manicômios, bem como a constituição histórica da saúde e da doença mental. Nessa trajetória de desinstitucionalização da loucura, o Instituto Municipal Nise da Silveira tem atuado por meio de algumas frentes, que vão desde reestruturação arquitetônica do instituto, bem como a criação de dispositivos capazes de construir uma nova visão sobre a doença mental na sociedade. Este estudo buscou compreender a história da gestão da psiquiatria no Brasil e do Instituto Nise da Silveira, bem como analisar de que forma as ações criativas e culturais do instituto impactam na desconstrução da necessidade da internação clínica em instituições fechadas na sociedade brasileira. Este

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Received on: 04/19/2023. **Accepted on:** 05/19/2023

artigo filia-se ao paradigma interpretativo, visto que compreende que os fenômenos são construídos socialmente e se constituem das interações dos agentes sociais. Optou-se por utilizar entrevistas em profundidade, análise documental e métodos de inspiração etnográfica, buscando fazer parte da experiência vivida pelos usuários de saúde mental. Os resultados sugerem que o movimento de reestruturação se intensificou com a reforma psiquiátrica no Brasil, cuja proposta foi a reformulação da política de tratamento da saúde mental do país. Sendo assim, o Instituto Municipal Nise da Silveira tem atuado por meio de algumas frentes, e percebe-se que foram incluídas no planejamento estratégico ações internas e externas, chamadas na instituição de ações "do lado de dentro" e "do lado de fora".

Palavras-chave: *História da psiquiatria. Arte e cultura. Gestão hospitalar. Reforma psiquiátrica. Desconstrução asilar.*

INTRODUCTION

The new coronavirus pandemic has significantly increased the demand for mental health in the world (OLIVEIRA, 2021). Social isolation, necessary to contain the spread of the virus, gave rise to mental disorders in many individuals in Brazil, but facing these disorders is not a recent issue. For some decades now, psychiatric reform has been a topic that has raised, both in academia and society, various discussions that have emphasized the struggle for the deinstitutionalization of madness and the end of asylums — social isolation —, as well as the historical constitution of health and mental illness.

In this context, Bercherie (1989) underlined that the modification of the mental state needs to remove alienated people from their usual perceptions. In Pinel's view, isolation was necessary to bring the alienated person back to reason with the help of the treatment institution (*apud* AMARANTE, 2007). Alves et al. (2009) pointed out that, mainly from the 1940s, several experiences of transformation of the psychiatric hospital were implemented, such as, for example, the therapeutic community and institutional psychotherapy. Another point raised was that the failure of this type of organization was related to the management of the hospital itself and that the solution, therefore, would be to change the institution.

In addition to the points discussed above, sector and preventive psychiatry, which intended to define mental health and no longer the disease, placed the importance of approaching the community as a central point in the development of treatment. According to Alves *et al.* (2009), studies appeared at the time on antipsychiatry and Italian democratic psychiatry, which directed several questions to this science, its knowledge and the care practices that existed until then.

In that same decade, in Brazil, in 1946, Nise da Silveira, a psychiatrist at the former Hospital Municipal Pedro II, refused to use methods such as electroshock, insulin coma, and lobotomy, against which she undertook intense battles (MELO, 2009). When she opposed to these practices, the creation of an innovative clinical proposal began (MELO, 2009; FERREIRA, 2010), providing changes (SILVEIRA, 1992) in Brazilian psychiatry, which represented a founding and paradigmatic act of her rupture with the psychiatric system of the time. She began a fight against that closed space, resorting to creativity and empathetic acceptance. In this movement,

Nise da Silveira opposed to clinicalism (MELLO, 2014) — a current born in Germany at the beginning of the 20th century which did not recommend activities for people in crisis, since they should be treated in bed — as well as to isolation and asylum segregation. In her trajectory of more than 50 years in the practice of psychiatry, she faced many obstacles from the moment when other possibilities of treatment were adopted, with emphasis on occupational therapy as the modality that guided her clinic (MELLO, 2014).

During the 1980s, the psychiatric reform movement was strengthened as a space for struggle, with the first emergence of the Psychosocial Care Center (*Centro de Atenção Psicossocial* – Caps), in São Paulo, São Paulo, in 1986. Later, in 1989, this experience unfolded with the creation of the *Núcleos de Atenção Psicossocial* (Naps), which, for Amarante (1995), meant the implementation of an unprecedented psychiatric system that actually substituted the model used at the time, presenting the first demonstration possible to put an end to the asylum system. The emergence of these devices represented the main strategy in the progress of the psychiatric reform (BRASIL, 2004), marking the beginning of the intervention process to the hospital-centered model. Considering these transformations, "a new mental health project for the country was built" (AMARANTE, 1995, p. 94).

Only in 2001 was Law No. 10.216 enacted, known as the Psychiatric Reform Law, which provides for the protection and rights of people with mental disorders and redirects the mental health care model (BRASIL, 2001). This movement proved to be an achievement and a big step toward changes in the field of mental health. Thus, it is important to emphasize that the psychiatric reform seeks an assumption and ethical criterion for the inclusion of the "mentally ill" in society (VASCONCELOS, 2000, p. 162).

In this sense, the objective of the article was to understand the history of Instituto Municipal Nise da Silveira and of psychiatry management in Brazil, as well as to analyze how the creative and cultural actions of the institute impact on the deconstruction of the need for clinical hospitalization in closed institutions in Brazil. Thus, by revisiting the management history of Instituto Municipal Nise da Silveira in the process of deinstitutionalization, contributions can be made to rethink current practices and the temporal evolution of psychiatric reform in public psychiatric hospitals in the country.

METHODOLOGICAL COURSE

Initially, when starting the visits to the study site, the authors used ethnographic procedures to get closer to the field of study. For Fetterman (1989), ethnographic research was developed through anthropology studies that sought to know and analyze native peoples in their natural environments, identifying their behaviors, problems, and stimuli. Through this method, the researcher describes a social group based on the understanding of people, objects, and symbols in their context, and researchers become interpreters of the studied reality (ARAUJO; ROCHA, 2019). For Araujo and Rocha (2019), this approach avoids artificial responses typical of controlled or laboratory conditions.

Baztán (1995) conceptualizes ethnography as carrying out a descriptive study on a given community, and fieldwork, particularly participant observation, constitutes a process. The author highlights the ethnographic process, composed of four stages. In the first stage, the researcher needs to delimit the field, making clear the object to be investigated, the location, the time used for data collection. In the second stage, there is an investigation making use of documentary sources to deepen the understanding of the object to be studied. Then, in the third stage, the researcher must enter the field and make daily systematic records, through the field diary, writing information from his day-to-day observations in contact with the researched community. Armed with a considerable range of information about that culture, the researcher begins the fourth stage, which is to leave the field to produce a report. At that moment, interpretation begins, according to Flores-Pereira and Cavedon (2009). The researcher, when leaving the field taking the texts, written records, and documents with them, must analyze them afar from the lived experience.

Therefore, the authors used ethnographic-inspired methods applied to organizational studies in field research. Participant observation, field diary, and in-depth interviews were used at all stages. In order for the authors to approach the phenomenon to be studied, they became collaborators of Instituto Municipal Nise da Silveira in April 2019, using participant observation as the methodological procedure.

Data collection was carried out through documentary, bibliographic, and oral sources, from testimonials, audiovisual resources, and ethnography, using primary and secondary data. Primary data were obtained through participant observation at the research locus and interviews with professionals from Instituto Municipal Nise da Silveira and the Nucleus of Articulation and Cultural Intervention (*Núcleo de Articulação e Intervenção Cultural* – Naic), volunteers, professionals from the Health Department and professionals who worked with Nise da Silveira. Additionally, data were collected through documents, objects, texts, images, interview recordings, correspondence, official letters, requests, judicial processes, private documents, letters, books, reports, journals, paintings, sculptures, photographs, films, music, speeches, spaces, architectural constructions, instruments and work tools, utensils, clothing, housing, means of transportation, means of communication, cultural, aesthetic, technical and historical senses that objects express and can be organized in any type of language, be it written, oral or numeric.

Before the interviews, a script was drawn up so that respondents could focus on questions related to the proposed theme. All interviews were conducted personally by the authors and recorded through digital recordings.

For data analysis, content analysis was adopted (BARDIN, 1994), seeking to identify the connections, codes, and categories existing in the material recorded in the field diary, in the transcripts of the interviews carried out and in the other data collected for analysis. The authors, based on Bardin's classification (1994), established that the analysis process is composed of the following steps:

- pre-analysis: when the material is organized, a general reading is made of it, in order to choose what should be analyzed;
- exploration and analysis of the material: when the collected data are codified and categorized;
- data interpretation: carried out based on the researcher's theory and perception.

Thus, the authors gathered material collected for analysis (transcription of interviews, documents, reports, articles, etc.). In general, they organized the investigated material. The following should be understood at this stage:

- Skimming: first contact with the data collection documents, moment in which the texts, interviews, and other sources to be analyzed began to be known;
- Choice of documents: selection of the most relevant documents for defining the analysis *corpus*;
- Formulation of objectives: through the initial reading of the data, it was possible to validate the materials used according to the research objectives.

Once the first phase was concluded, the exploration of the material was carried out.

In the second stage, a thematic content analysis was carried out, through the identification of meaning units (quote/quotation) and the attribution of a label (code) to represent the idea in the selected materials. All citations relevant to the purpose of the research were coded. During the process, comments can be created for documents, citations, codes, families, and analysis notes. At this stage, the authors worked with the *a priori* (more general) categories and identified *a posteriori* (more refined) categories, which became definitive.

Finally, in the third phase, the treatment of results, inferences, and interpretations took place. At this stage, the treatment of results, understanding and highlighting of information for analysis took place, culminating in inferential interpretations and reflective and critical analysis by the authors.

HISTORY OF PSYCHIATRY

When analyzing the European scenario and colonial Brazil, in intervals prior to the 17th century, individuals with mental pathologies moved freely in everyday social life, being excluded only from the population in cases considered dangerous. The European perspective would change in the 17th century. That is, people who showed signs of mental disorders were subjected to confinement in institutions, a phenomenon later called by Foucault (1972) as "the great confinement of the poor". Meanwhile, the Brazilian Holy Houses of Mercy played a role similar to that of European boarding schools, confining not only people with mental pathologies, but also aged people, orphans, beggars, and the sick.

In the 1930s, the Society of Medicine and Surgery of Rio de Janeiro was structured, initiating movements and protests against the unfavorable situation of patients hospitalized in Holy Houses of Mercy by health professionals and members

of these institutions (MACHADO, 1978). Due to this wave of similar demonstrations and mobilizations, the construction of Hospício Pedro II was carried out in 1852, in Rio de Janeiro, currently known by the name of Instituto Municipal Nise da Silveira, marking a crucial moment in the institutional scenario of Brazilian psychiatry (MACHADO, 1978; AMARANTE, 1995; FAGUNDES JÚNIOR *et al*., 2016).

The reformulation of the mental health perspectives in the country, according to Alves *et al.* (2009), was proposed by the Brazilian psychiatric reform, starting with the process of deconstructing the logic of compulsory hospitalization, with the expected restructuring of assistance related to the psychopathological field in Brazil. The movement originated in the 1970s, constituting a political-social process (TENÓRIO, 2002) inspired by the Italian model, bringing the basic premise of the extinction of psychiatric hospitals and their replacement by care and community mental health care services (GOULART, 2007).

Based on studies carried out in European health institutions by Michel Foucault, Machado (1978) brought five central points for the organization of life in hospices in Brazil:

- establishment of institutional isolation;
- organization of the institution's internal space;
- surveillance of patients at all times and places;
- time management;
- repression, control, and individualization, mainly dependence and submission of the alienated to the supreme figure of the doctor (MACHADO, 1978).

Practices of coercion, containment, and punishment of inmates in institutions were seen as possible forms of treatment, as well as forced labor in agricultural colonies, constituting the basis for moral procedure in Brazilian psychiatric facilities.

The mobilization of new therapeutic resources, aimed at reducing psychiatric hospitalizations, began with the anti-asylum struggle and the psychiatric reforms proposed by François Tosquelles and Franco Basaglia. From the second half of the 20th century, the practices adopted by asylums ended up being compared to the treatment and techniques used in concentration camps in post-war scenarios, appalling public opinion on the subject. This change of perspective brought with it one of the main motivations to start the fight in favor of dismantling the asylum (BOARINI, 2006; AMARANTE, 2008). In 2001, the Psychiatric Reform Law was enacted, which helped to reduce the number of beds. Thus, it was noticed that the treatments proposed by Nise da Silveira were innovative, serving as a historical basis for therapeutic devices aimed at the institutional transformation of Brazilian psychiatry.

Instituto Municipal Nise da Silveira: asylum deconstruction

Through a bibliographic review and document analysis regarding the trajectory and studies of Nise da Silveira and the psychiatric reform in Brazil, it is possible to note that the psychiatric practice focused on delicacy and sensitivity would allow the occurrence of manifestations and discussions referring to the necessary changes

in the logistics of care for psychotics in asylums and outside these institutions in effect at the time, in the early 1940s. Nise would promote, during this period, a great advance on academic and professional reflection in psychiatry, resulting in a dense process of resistance, cultural transformation, and innovation. Her work and research were focus mainly on therapeutics, surpassing the importance of the diagnostic function, synthesizing never seen and creative environments in the work-spaces, providing a new experience in the lives of patients, who were identified as and called "clients" by Nise da Silveira. On this aspect, Mário Pedrosa (1980, p. 11) points out:

> The first thing to notice [in these artists] — with more or less talent, more or less attacked by illness — is that none of them could have been what they are or what they were in isolation [...] in solitude, any of them could have simply been destroyed by life. The society of Engenho de Dentro, with all the precariousness of its resources, anchored their lives.

Innovations and transformative actions for the time marked the paths trodden by Nise da Silveira, even in moments long before the beginning of the Brazilian psychiatric reform. The articulation, elaboration, and implementation of new clinical perspectives are part of Nise's legacy, focusing on the necessary research development and organization of training spaces in the field of mental health for the development of the reform (MELO, 2011).

Brazilian occupational therapy had an extensive theoretical and clinical basis for its application, with unpublished studies, aimed at changing the panorama regarding the lives of treated patients, with constant records of observed and obtained results, in addition to care and analysis of artistic and creative capacities of clients to prove and validate the treatments carried out. Nise's theory and practice are thus beyond any reformist proposal. The reasoning, related to resizing the imaginary, would enable the return to the subject and the redefinition of social ties (MORIN, 1998).

In recognition of the revolution in the treatment of people with mental pathologies, the psychiatrist was the inspiration behind the production of a film in 2016, called *Nise: the heart of madness* (NISE: O CORAÇÃO DA LOUCURA, 2016) The name of Nise da Silveira is frequently quoted in various manifests, meetings, and speeches in public spaces when the subject is mental health. Discussions about madness, especially in the mainstream media, through soap operas and the news, would allow a sort of possibilities on how to deal with the so-called mental illnesses (GIDDENS, 1991).

Nise da Silveira's legacy is seen as a reference for current practices, having given new meanings to culture and madness, allowing the gradual successful replacement of hospitals and traditional psychiatric treatments, bringing with it sensitivity and emotion to favor cultural media. Therefore, revisiting the work of Nise da Silveira and analyzing the trajectory of the Brazilian asylum deconstruction process can bring contributions to rethink current practices of care, treatment, and reintegration of users of mental health services in Brazil.

Instituto Municipal Nise da Silveira: context and management model

Instituto Municipal Nise da Silveira dates back to 1911, when its land, in Engenho de Dentro, located in Rio de Janeiro, housed the first agricultural colony for the alienated sent from the former Hospício Nacional de Alienados (HNA). In the first decades, it functioned as part of the Assistance to the Insane network, which had the Praia Vermelha hospice as its central institution. However, throughout the 1940s, with the decision to transfer HNA to Engenho de Dentro, the colony received the medical and administrative structures of the former hospice, which included patients, employees, and part of the institution's collections. From then on, it became the main psychiatric center of the city of Rio de Janeiro and was renamed as the National Psychiatric Center (*Centro Psiquiátrico Nacional*) and later as the Pedro II Psychiatric Center (*Centro Psiquiátrico Pedro II*). In the 2000s, the administration of the old center was passed on to the municipal sphere, and the institution was renamed Instituto Municipal Nise da Silveira.

The municipalization of Instituto Municipal Nise da Silveira and its transformation into an institute took place amid the search for consolidation of proposals for a psychiatric reform and the decentralization of management and health policies in the country (BRASIL, 1911; 1999).

Currently, Instituto Municipal Nise da Silveira has a permanent archive, which organizes and keeps the documentation of a permanent nature, today encompassing the clinical collection until 1949 and the administrative collection produced until 1999, inventoried in 2000. The input of documents has been taking place as other documents of these clippings are located in the institution. In addition, there is the intention that the clinical documentation, now considered intermediate (1950-1975), be gradually transferred to the permanent archive, however there is still no transfer plan. The Alexandre Passos Library originates from the library of the former HNA, also transferred to the institute in the 1940s, where it continued to be expanded.

For the permanent archive, Instituto Municipal Nise da Silveira has some research instruments, such as name indexes and Excel spreadsheets for some parts of the funds. The library has two databases available, one online, for books and theses, hosted in the Virtual Health Library, and another in free software, for journals. This space is known as the Documentation and Memory Center.

Currently, one can see a great effort by the Documentation and Memory Center to consolidate itself as a research center, since in recent years some actions of this project have been discontinued. The coordination of the Documentation and Memory Center makes the collection available for external research and defends the memorial construction beyond the intellectual role, for an active participation in the field of mental health and history of medical-psychological knowledge (RIBEIRO; LAMB; MASCARENHAS, 2018). In this sense, the coordination of the Documentation and Memory Center understands that the work of preserving these collections is fundamental for the development of practical and theoretical reflections in the field of mental health.

In addition to these spaces, Instituto Municipal Nise da Silveira has the Museum of Images of the Unconscious (*Museu de Imagens do Inconsciente*). Currently, the museum has a collection of around 350,000 works, including paintings, drawings, models, and woodcuts, and has held more than 100 exhibitions in Brazil and abroad, always emphasizing the scientific aspect of the collection. These exhibitions attracted a large audience, either because of the fascination of the forms or because of the revelation of the unconscious. Recently, the Banco do Brasil Cultural Center (*Centro Cultural Banco do Brasil* – CCBB, 2021) held an exhibition that brought together around 90 works by clients of the Museum of Images of the Unconscious. It was through these works of art that Nise deepened her knowledge of the processes that unfolded within those individuals, revealed through images and symbols. The work of the museum is part of the history of the psychiatric reform in the country and, through its activities, has influenced the process of transformation of spaces and therapeutic methods, constituting a center of reference in the field of mental health (FIGUEIRA; AMARANTE; BELANCIEIRI, 2007). According to Motta (2005), Nise carried out a revolution for the psychiatric molds of the time, by proposing a method of approaching psychotic internees, generally institutionalized for long periods of time.

New management model: asylum deconstruction process through art and culture

The concept of creative economy emerges in this study from the new model proposed by the psychiatric physician Nise da Silveira. It is a concept that can be defined as a set of economic activities that involve the creation, production, and distribution of cultural and creative goods and services. In 2010, the United Nations Conference on Trade and Development expanded the concept of creative economy by making the following statements:

> (1) Creative economy is an evolving concept based on creative assets that potentially generate economic growth and development; (2) It can stimulate income generation, job creation and export earnings, while promoting social inclusion, cultural diversity, and human development; (3) It embraces economic, cultural, and social aspects that interact with technology, intellectual property, and tourism objectives; (4) It is a set of economic activities based on knowledge, characterized by the dimension of development and cross-linking at macro and micro levels to the economy in general; (5) It is a viable development option that demands innovative and multidisciplinary policy responses, in addition to inter-ministerial action (UNCTAD, 2010, p. 10).

For Miguez (2007), creative economy promotes new possibilities for the creation and distribution of cultural and creative content, which, in turn, generates new business opportunities, income generation, and employment. For the author, creative economy has enormous potential to promote economic development, social inclusion, and cultural diversity, provided that appropriate policies and strategies are adopted to encourage the formation of collaborative networks and the protection of intellectual property rights.

These creative economy principles influence the assumptions of the new management model at Instituto Municipal Nise da Silveira. Art and culture gain importance in economic growth and development at the institute, as well as stimulating income generation and promoting the social inclusion of users in this asylum deconstruction process.

In this sense, as a psychiatrist deeply involved in the recovery process of patients, Nise da Silveira believed that art, culture, and creativity were powerful tools for understanding and treating mental illness. She developed a therapeutic approach that combined conventional psychiatry with occupational therapy and art therapy (painting, sculpture, music, drawing, among others). In her work, she highlighted the importance of creativity, culture, and access to cultural resources in promoting mental health and curing mental disorders, as well as fundamental resources for generating economic value for users of Instituto Municipal Nise da Silveira.

With the municipalization of *Centro Psiquiátrico Pedro II*, which became Instituto Municipal Nise da Silveira, the process of deinstitutionalization began. This movement, which began with nominal recognition, needed to align itself with the values defended by its patron and, for that, promoted several organizational changes:

- implementation of the community therapeutic residency program (Ministry of Health Ordinance No. 106/2000, which creates and regulates therapeutic residential services);
- transformation of day hospitals into territorially based Caps;
- transfer from the psychiatric emergency to the general hospital;
- implementation of the Historical Archives Recovery Project (*Projeto de Recuperação dos Arquivos Históricos*) and creation of the Psychiatry Memorial in Brazil (*Memorial da Psiquiatria no Brasil*).

According to Oliveira (2007), in the 1980s, *Centro Psiquiátrico Pedro II* was responsible for a great advance in the assistance provided to mental health users, but the absence of a policy for mental health care in the city of Rio de Janeiro and the isolation of patients on the walls of the asylum did not allow the asylum deconstruction process to take place.

For the asylum deconstruction process, the elaboration of a strategic planning began that had internal actions of great impact so that they reflected external actions, that is, the division of "inside" and "outside" actions. The two fields of action are interdependent and have a single objective: "The aim is to deconstruct an 'engine from within' to design an 'engine from outside'" (OLIVEIRA, 2007, p. 25).

The process of organizational change began with the implementation of a new structural model. In this sense, the direction extinguished the directions of the hospital complex and created an organizational structure based on coordination of areas of technical actions, which were subordinated to a technical coordination. This new organizational structure now has the following "inside" actions:

- Psychosocial Care Program;
- Housing Program;
- Psychiatric Inpatient Program;
- Child and Adolescent Care Program;
- Community Center;
- Museum of Images of the Unconscious;
- Study Center.

For Oliveira (2007), the first four programs mentioned and the Community Center have several actions that deserve to be highlighted for the beginning of the asylum deconstruction process. The Museum of Images of the Unconscious and the Study Center, on the other hand, seek to preserve the history and memory of psychiatry and expand academic studies in the field of mental health in Brazil, but these internal actions sought administrative support in three sets of actions to promote and sustain the change in the organizational structure of the institute. First, administrative actions compatible with the deinstitutionalization process were developed, which were intended to reduce resistance to change. In a second moment, a human resources department was created, which, in partnership with the Study Center, promoted staff training and allocation of human resources in programs and projects. Finally, the Management Information Center was restructured to provide information for the decision-making process for assistance actions.

In addition to an inner point of view, the management of Instituto Municipal Nise da Silveira, in line with the creative economy concept, implemented "outside" actions to complement this new management model. The first challenging action was clinical care for psychiatric patients at the institution. The death rate of the medical block was 30%; the data showed a high indicator, above the target. As part of the strategic planning, the old medical block was handed over to the municipal health network, although it is still physically installed in the complex. The results of this action were promising. There was a reduction in deaths, and this fact helped to mobilize other actions, listed below:

- Psychosocial Care Program, whose objective is to carry out these actions for the territory and the community;
- Attention to children and adolescents, offering services that were transferred to Caps Infantil Maria Clara Machado, in a house in the community located in the neighborhood of Piedade;
- Attention to the community of residents, based on the principle that the clientele is made up of residents of Instituto Municipal Nise da Silveira, favoring actions that seek to individualize spaces, objects, belongings, clothes, gestures, personal routines of residents;
- Community Center, Archival Project and Museological Project, for the occupation of the former asylum space. The Community Center has the mission of developing projects for the community that include cultural, social, educational, and income generation projects for mental health users. The other

two projects seek the recovery of archival and bibliographic heritage for historical research, in addition to the construction of a memorial of Brazilian psychiatry, to help keep the memory alive and thus the legacy of Nise da Silveira and her importance in Brazilian psychiatry. Art and culture are important resources for promoting mental health and treating mental disorders. Through artistic expression, patients can develop self-awareness, communication, and problem-solving skills, as well as access a sense of purpose, meaning, and social connection.

In 2014, another restructuring took place at Instituto Municipal Nise da Silveira. A new director was appointed, and with that came the need to implement a new organizational structure. At that moment, Naic was created, with the objectives of articulating the institute's cultural devices and intervening in them.

In order to understand the current organizational structure of Instituto Municipal Nise da Silveira, an organizational chart was created based on the triangulation of collected data and interviews with the institute's professionals (Figure 1).

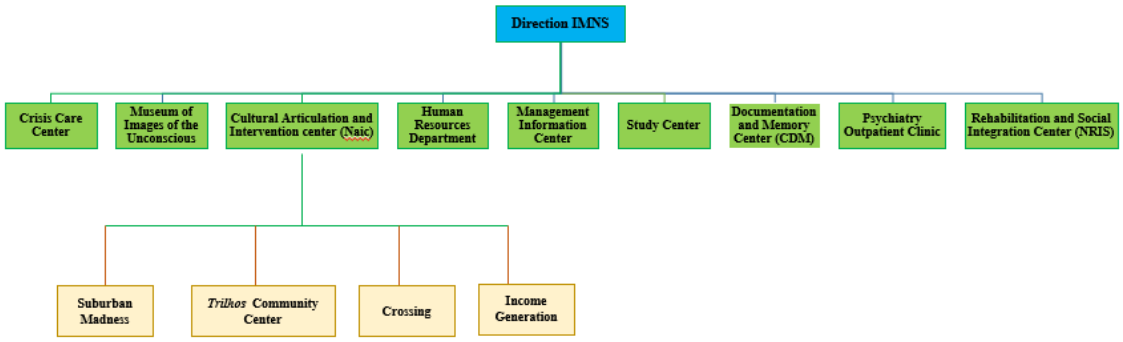

Figure 1. Organization chart of Instituto Municipal Nise da Silveira (IMNS).

The current organization chart of Instituto Municipal Nise da Silveira is consisted of nine departments, which are subordinated to the board:

- Crisis Care Center (*Núcleo de Atenção à Crise* – NAC): its function is to welcome acute and medium/long-stay patients in the process of deinstitutionalization during the crisis;
- Museum of Images of the Unconscious: operates through the art studios of the occupational therapy section. In addition to being a space that gathers and preserves the works created, it also functions as a research center;
- Naic: promotes facilitation, articulation, and investment in cultural actions. This core is responsible for various activities, from the carnival block to art and music workshops, which can generate products made by patients that are displayed and sold as artistic products. Creative economy comprises these activities, which bear in common the ability to generate wealth and employment through the exploitation of intangible resources, such as creativity, innovation, and culture;

- Human Resources Department: responsible for all processes related to people management;
- Management information center: performs data analysis and generates reports for management, in addition to providing technical support to other areas;
- Study Center: responsible for monitoring and approving all the institute's academic research;
- Center for Documentation and Memory: its activities are aimed at the preservation and maintenance of historical collections of psychiatry and madness in Brazil;
- Psychiatry outpatient clinic: provides outpatient care for hospitalized mental health users and also for patients undergoing treatment;
- Rehabilitation and social integration center: assists in the rehabilitation and social integration of medium/long-term mental health users.

On September 6th, 2021, Instituto Municipal Nise da Silveira experienced a milestone in its history. The walls of the institute were demolished to make way for the Nise da Silveira Urban Park (*Parque Urbano Nise da Silveira*) (MATTOSO, 2021).

> The wall did not fall, it was knocked down. It was overthrown by the work of asylum deconstruction that was carried out by hands, dismantling, brick by brick, the walls of social exclusion. Of the many patients who blended in with the landscape, today there are only seven in the process of resuming community life, in an ordinary house like any other. (PONTES, 2020).

The legacy that Nise da Silveira left at Instituto Municipal Nise da Silveira is undeniable, but one cannot fail to mention that this achievement is woven by many professionals and users of mental health services, as well as by all who support the anti-asylum fight. Carta de Bauru (2017) was a manifesto for this struggle, which cited several important aspects, in which freedom in a society without asylums is highlighted as a fundamental value.

In the last 20 years, more than 300 internees at Instituto Municipal Nise da Silveira were able to return to social life, leaving the rigid hospital routine and enjoying citizenship again. The deinstitutionalization of madness makes it possible for people who lived inside to gain the right to freedom. The current City Hall of Rio de Janeiro signed a commitment to transfer the asylum park to Parque Nise da Silveira.

FINAL CONSIDERATIONS

In recent decades, asylum deconstruction, which represents clinical treatment by hospitalization in closed institutions, has been a theme that raises several discussions regarding the anti-asylum struggle, which aims to end asylums. This movement intensified with the psychiatric reform in Brazil in 2001, whose proposal was the reformulation of the mental health treatment policy in the country.

In this trajectory of deinstitutionalization of madness, Instituto Municipal Nise da Silveira has acted on some fronts, ranging from the architectural restructuring of the institute to the creation of devices capable of building a vision of what has been

called madness in society through culture. In this sense, the institute's managers prepared a strategic plan, in which action plans and organizational restructuring initiatives were created.

Among many initiatives, in 2015, Naic was created, whose proposal is to facilitate and articulate, collectively, through culture, the occupation of the city and spaces in society historically inaccessible to madness. Naic's guidelines are in line with the concepts of creative economy, which are characterized by a strong presence of talent and creativity for the production of goods and services, which encourages the development of patients through active participation in the artistic workshop, whose results are exhibited and offered for sale as an artistic production. In this way, the creative economy has great potential to generate jobs, stimulate innovation and promote economic and social development, which are essential to collaborate with the asylum deconstruction process.

In the case of Instituto Municipal Nise da Silveira, internal and external actions were included in the strategic planning, called "inside" and "outside" actions in the institution. With this strategic planning and its action plans, several opportunities and challenges emerged, of which it is possible to highlight the architectural set, with several hospitals within a single complex, as well as the power struggle between the teams, competing for similar actions, hindering the existence of a hegemonic group for this great moment of transformation (OLIVEIRA, 2007).

In an attempt to minimize the power dispute at Instituto Municipal Nise da Silveira, Naic was created, whose proposal is to facilitate and articulate, collectively, through culture, the occupation of the city and spaces in society historically inaccessible to madness, aiming to integrate the devices that work cultural actions, and not to make an intervention, as it is entitled. In this sense, Naic seeks to act as a facilitator and fundraiser in cultural actions through partnerships and public notices of cultural incentives, guaranteeing the sustainability of the projects, in line with the asylum deconstruction process.

However, in addition to the internal challenges of the teams, one cannot ignore the economic and financial crisis in the country and, consequently, in the Unified Health System (*Sistema Único de Saúde*). This crisis is putting state health programs as well as mental health programs at risk. In order for the programs to be sustainable, Naic and its devices have made a great effort to raise funds with the help of the community, public notices, and partners in the territory itself. As each device has its own management model and total autonomy in the decision-making process, Naic is often called upon in times of crisis, facilitating the articulation of its devices and the territory and integration with them.

Analyzing the "outside" actions, the results were promising, reducing the number of deaths and the mobilization of several actions, of which the following stand out:

- Psychosocial Program and Care;
- Attention to children and adolescents (*Atenção às crianças e aos adolescentes* – Capsi);

- Attention to the community of residents;
- Community Center.

Currently, there are already two projects aimed at recovering archival and bibliographic heritage, in addition to the proposal for the Memorial of Madness (*Memorial da Loucura*), helping to keep alive the memory of Instituto Municipal Nise da Silveira and the legacy left by the psychiatrist. To give continuity to the proposed form of work, creative economy emerges as an important engine that guides these actions.

Still regarding internal and external actions, the question remains: what is still missing in the asylum deconstruction process at Instituto Municipal Nise da Silveira? It is noticed that the institute has promoted several actions in this process, such as: significant reduction of beds in the psychiatric hospital, new services and experiences that help to exercise care in the territory, the guarantee of the transformation of public attention in mental health in the state, the development of multiple art, culture and income generation projects, promoting the autonomy of users of mental health services, and especially the willingness to fight against what affects human dignity. One can observe in this process the Naic and its devices promoting the construction of bonds of affection and solidarity, a legacy left by Nise da Silveira. All users of mental health services are recognized by name and surname; before, they did not even have a birth certificate.

Nise's trajectory has always been marked by innovative and transformative actions, a legacy composed of articulation, elaboration, and implementation of a new clinical proposal. Although the proposal at the time was not aligned with the current asylum deconstruction process, questioning its management and clinical treatment, as well as its opposition to the oppressive system of the hospice, favoring sensitivity and emotion through culture. After the research was carried out, there was resistance from devices aimed at the institute's culture to link them to the figure of Nise da Silveira, although users recognize Nise as the person who implemented a new form of treatment. The need for memory and history studies is presented for a better deepening of the issue.

Currently, Naic, realizing the importance of the legacy left by Nise da Silveira, created the income generation project *Casa de Cultura Nordestina*, which rescued Nise's memory and provided a space for users of mental health services to produce and sell their products to the community. The project has great potential for generating income for the clientele, but it is still in its beginning. There is a need for investment and dissemination of the project, as well as to train users to become entrepreneurs.

Users depend greatly on the institute, even for basic needs, such as, for instance, food. Since its cafeteria had to close during the pandemic, patients were in a situation of misery. Therefore, during the social distancing caused by the COVID-19 pandemic, Naic carried out some solidarity campaigns with donations for the families of users of the mental health services of Instituto Municipal Nise da Silveira.

The importance attributed to asylum deconstruction is understood, but the need to promote means for the clientele to survive, have freedom, and autonomy to meet their physiological, social and safety needs is also observed.

As mental health is an object of study little explored in creative economy works, it is recommended that studies in this segment be resumed in other contexts of analysis. The country needs to seek a way to plan, coordinate, execute, lead and control different segments of the various areas of knowledge that can be affected by creative economy, as seen in this study, which addressed a theme in the health area that resorts to production of therapies through art and creativity, generating products for patients that enable income generation.

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Conflict of interests: nothing to declare – **Financial support:** none.
Authors' contributions: Pinheiro, A. C. O. S.: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Supervision, Validation, Writing — Original draft. Araujo, F. F.: Formal analysis, Investigation, Methodology, Validation, Writing — Review & Editing. Pinheiro, M. S.: Investigation, Software, Visualization, Writing — Review & Editing.

Article

https://doi.org/10.22398/2525-2828.823168-183

Livestreaming: an analysis of the motivations for subscribing to channels on the Twitch platform in Brazil

Streaming *ao vivo: uma análise das motivações para inscrição em canais da plataforma Twitch*

João Renato de Souza Coelho Benazzi[I,II], Luiz Felipe Milazzo Barbosa[II]

ABSTRACT

We explored the phenomenon of subscription to channels on the Twitch platform in Brazil. The objective of this study was to conduct an exploratory analysis of a new form of digital entertainment that is present in contemporary times, livestreams. Using data gathered with a focus group, it proposes a classification of motivations for that consumption decision. Finally, the results obtained give rise to a reflection on how the consumption of such entertainment services are influenced by the identification of gamers with content creators and the sense of community that outcomes from such interaction, both of which are strongly associated with the growth of new media and its uses in contemporary times.

Keywords: Twitch. Livestreaming. Identity. Sense of Community. Gamer culture.

RESUMO

Este trabalho analisa o fenômeno das inscrições em canais da plataforma Twitch no Brasil. Toma-se o caso de participantes de um grupo de foco para suscitar a classificação de motivações de tal decisão de consumo. O objetivo do trabalho consiste em apresentar uma análise exploratória sobre uma nova forma de entretenimento digital que se faz presente na contemporaneidade, as live streams*. Por fim, os resultados obtidos ensejam uma reflexão a respeito de como o consumo de tais serviços de entretenimento é influenciado pela identificação dos* gamers *com os criadores de conteúdo e pelo senso de comunidade que advém de tal interação, ambos fortemente associados ao crescimento das novas mídias e a seus usos na contemporaneidade.*

Palavras-chave: *Twitch.* Streaming *ao vivo. Identidade. Senso de comunidade. Cultura* gamer*.*

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Received on: 06/07/2023. **Accepted on:** 07/05/2023

INTRODUCTION TO THE THEME AND PROBLEM OF THE STUDY AND ITS CONTEXTUALIZATION

In the early 2010s, a new form of entertainment became popular: livestreaming, a phenomenon that today attracts the attention of millions of viewers daily (WISE, 2022). Among the pioneers of the movement is the Twitch platform, which has an average of 30 million viewers per day (WISE, 2022). Much of the revenue generated on streaming platforms comes from ads, but other means of generating revenue from the viewer have also been created.

Twitch, the focus of this work, has developed a business model based on monthly subscriptions or monthly fees. The platform has millions of content developers, which are made available in channels, and some of these, selected by the site itself, can become partners and receive subscriptions from users. These subscriptions cost between 7.90 and 40 BRL per month depending on the level chosen and provide a series of benefits to the viewer, such as: subscriber badge, personalized emotes (an emote is a special Twitch emoticon), ad-free viewing and access to the chat restricted to subscribers. Revenue generated through these subscriptions is then split between the content developer and Twitch itself. Using this model, Twitch enabled the platform to grow, attracting millions of streamers who were interested in this new career (MURPHY, 2022; WISE, 2022).

It is worth mentioning here the important connection that Twitch has with the video game culture. The platform was born with a focus on streaming game content and has developed a loyal user base on the site for gameplay viewing (the game itself being played). Games have been associated with a social, leisure activity. The broadcast format carried out by Twitch allows the content creator and his audience to interact in real time, bringing closer and socializing a relationship that is traditionally distant. The gamer culture is present in many elements of the site, from the layout to the use of emotes in the platform's chat.

Many of the channels (content creators) have loyal audiences that develop specific languages and references, thus cultivating a sense of community among the users themselves, in short, a culture of its own. This sense of community and the benefits offered by the site itself, for example, the absence of advertisements in the transmission, would be some of the motivating factors for a viewer to subscribe to a given channel.

Thus, our study investigated the motivational factors acting in the decision to purchase a subscription, since it is possible to watch the content of the platform for free. It then proceeds with the following research questions: What are the reasons that people subscribe to channels on the Twitch platform? What is the influence of each one in this purchase decision process?

LIVESTREAM

Livestreams can be given meaning in two different ways: technology and product or service. In this research, the service concept was used. Even so, it is interesting to expose the technological aspect.

Streaming technology is nothing more than the exchange of information through a computer network. More specifically, in computing terms, streaming is how this data exchange happens (GOMES; LOURENÇO, 2012; SILVA, 2019). In the words of Gomes and Lourenço (2012); streaming is a technology that sends multimedia information by transferring data over computer networks. Users view a multimedia file over the internet. The big differences between streaming and downloading are the type of servers and the protocols used. On the other hand, the displayed file is not saved or stored in a folder, as in a download.

Over time, these same platforms also included livestreaming in their scope of action, allowing these transmissions to occur in real time. Rodriguez-Gil et al. (2018) illustrate the live feature: livestreaming usually designates the stream transmission of videos that are broadcast live, while they are recorded with a delay of a few seconds (RODRIGUEZ-GIL et al., 2018).

Even before it was called Twitch, Justin Kan, founder of justin.tv, created the site in 2005 as a big brother-style project. The entrepreneur filmed and shared videos of his own life with a webcam attached to his head. This unusual action attracted an audience to the site that showed interest in the way the technology was being used. The presence of a chat allowed this audience to interact with Justin and with each other in real time (COOK, 2014).

In 2007, justin.tv released access so that any user of the website could make their own broadcast. This change significantly increased the number of users on the platform, who began to transmit different types of content. The most popular of these new themes was content focused on electronic games, more commonly called games. Realizing such popularity, platform executives adopted this niche as the main focus of the business, so that in February 2014 there was a rebranding of justin.tv, which was renamed Twitch, more focused on games (POPPER, 2014). In October of the same year, Twitch was purchased by the giant Amazon, for US$ 970 million (COOK, 2014).

It is important to highlight the connection between the growth of the eSports segment and the growth of Twitch itself. For many spectators, the platform was the gateway to this competitive type of games. Tournaments began to be broadcast on the platform, and the number of viewers of the main events was already in the millions of viewers, among different means of transmission (CONFEDERAÇÃO BRASILEIRA DE E-SPORTS, 2017; CARVALHO, 2020). Chart 1 highlights this growth.

The platform is still predominantly focused on games, but in 2020, largely because of the COVID-19 pandemic, non-gaming content (which does not involve

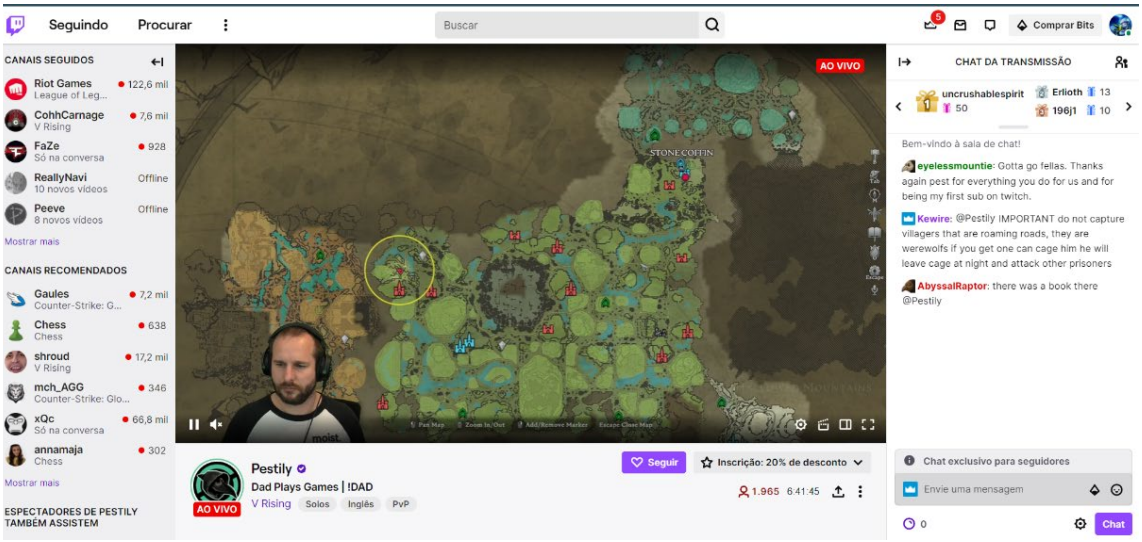
Chart 1. Growth of worldwide views in millions.

Year	eSports	Event	Views
2013	DOTA 2	The International	4.5
2016	League of Legends	World Championship	43
2017	League of Legends	World Championship	80
2018	League of Legends	World Championship	99.6

Source: adapted from Carvalho (2020).

electronic games) grew considerably in popularity (MICHAEL, 2021). Nowadays, categories that were left out during Twitch's rebranding are already highlighted, such as: "Only in conversation", "Sports", "Music" and several others.

Twitch transmissions specifically from the gamer category follow a conventional pattern, in which the streamer makes an audiovisual transmission showing the game he is playing at that moment (gameplay) and, in most cases, its physical image through a webcam. We point out that gameplay is not always shown in lives, as the creator often interacts with his viewers outside of a game. Associated with every broadcast is a real-time chat where viewers can dialogue with each other or with the streamer. This, in turn, usually interacts with the public through a microphone (HAMILTON; GARRETSON; KERNE, 2014). This typical stream model is shown in Figure 1.



Source: available at: https://www.twitch.tv/pestily. Accessed in: May 2022.
Figure 1. Example of streaming on Twitch platform.

There are basically two ways to generate revenue on Twitch: through advertisers or by selling digital products and services to viewers on the platform, including subscriptions. Part of the revenue is shared with the platform's partners, streamers who have become eligible to receive the benefits of the partner program by meeting certain criteria established by the site. As partners, content creators can receive submissions from viewers. Subscribing is one of the ways to support a streamer. By acquiring it, the viewer receives a series of benefits that also include the absence of ads when watching that channel, exclusive emotes, a subscriber badge and access to the restricted chat. Additionally, there may be other incentives subject to the discretion of each content creator, who has the means to establish their own rewards model. Examples of these incentives are exclusive access to the channel's community on other social networks, points programs and sweepstakes, and even a personal thank you spoken aloud during the stream.

There are three ways to obtain an application: one is by paying cash; the second, receiving a monthly fee as a gift from another user; and finally, members of

Amazon Prime are entitled to one subscription per month at no additional cost (MURPHY, 2022). This study focused on the first means of obtaining an application, as this is how you can be sure that the buyer sees value in the application itself. That said, some of the interviewees had registrations obtained by different means, but always having obtained at least one of them through specific payment.

This system in which the content creator receives a slice of the revenue generated, either through advertisements or subscriptions, has attracted many gamers in search of a new career. Livestreaming is increasingly seen as transforming the games industry itself, because it has generated a space for criticizing games and also, therefore, a form of advertising for developers and advertisers. In this context, advertisers are an important source of revenue for professional players, for presenters and for platforms (KAYTOUE et al., 2012). This movement has also been opening up space for independent developers to reach an audience and funding (JOHNSON; WOODCOCK, 2019b), since streamers are in this ecosystem with unprecedented influence, which helps to attract companies.

Another industry transformation vector pointed out by Johnson and Woodcock (2019b) is the effect of Twitch on the useful life of many products and on the way games are planned, demonstrating the survival or reemergence of older games, by bringing together the community of its fans on the Twitch platform. Finally, the authors argue that the platform has also been acting as a disseminator of knowledge behind product development.

CONSUMER IDENTITY

The element of identity in consumer use features prominently in studies of urban cultures, also supported by notions and literature from other scientific fields. Considering that the interaction and the abstract values and perceptions of individuals in the social dimension affect them as consumers reinforces the discussion in the areas of psychology and sociology over the last decades.

Woodward (2000) and Giddens (2002) provide perspectives on the cultural studies sphere and on modernity. It emerges that regarding individual daily decisions, less and less "incorporated norms" based on tradition fall, leading to the construction of new perceptions about themselves and about the different relationship groups. These are changes that lead to more reflective decisions and that shape innovative conduct. Each person's biography is a non-standard project, the result of individual choices and preferences (GIDDENS, 2002; BENAZZI, 2016).

In the modernity observed in Giddens (2002), the concept of lifestyle impacts the images constructed about oneself and about the subjects''group affiliations and belongings. This is the context in which the constitution of the subject and its forms of expression and relationship are subjected, not only in the affective and interactive dimensions, but also in the consumption one (BENAZZI, 2016). It is important to see that, at the origin of the concept of identity, the abstract factor is present when based on the differentiation that Castells (1999, p. 82) applies: "Identity, because of its character of self-definition, organizes meanings, while roles organize functions".

A greater effort to delimit the notion of identity adopted here also leads to the approach of Bauman (2005). The central question of identity operates around the definition of who one is, in a classificatory way. Individuals, thus, follow perceptions by joining communities of belonging, which function as reference points for identification. Communities explain identities when safeguarding the condition of choice. This is because communities differ, for the author, between those based on choice and those based on birth. National, ethnic and family groups, for example, have an absolute connection, "of life and destiny", while professional, affection, neighborhood groups and many others would be communities of individuals who believe and, therefore, constituted solely of a variety of ideas or principles. The differentiation becomes important when identifying the core of Bauman's (2005) reading, that is, the negotiable, transitory, revocable element of the individual's identity.

Such signs are not solidly fixed in time, let alone for life. It is not a matter of accepting sedimented values as a mechanism to help in life decisions (BENAZZI, 2016), but of focusing on the difference in terms of stability and commitment from the old style to contemporary life. High modernity, contemporaneity, is post-traditional. Therefore, it becomes possible to associate aspects of liquid modernity by Bauman (2005) and the formation and reflective constitution of self by Giddens (2002). Identity emptied of its rigid and innate aspect is understood as the set of meanings to be invented and not discovered, being in permanent negotiation and dispute (BENAZZI, 2016).

Reading Hall (2003) makes it possible to complement, for methodological purposes, the liquidity and negotiation movement of identity affiliations and their influences by distancing themselves from notions commonly associated with class categories, based on essentialist-economic analysis. We adopt here a criticism of the view that social class, emulating income level, is the central category or determinant of affiliations.

Thus, it was intended to observe in this study, as suggested by Solomon and Bamossy (2006), the relationship between consumption decisions on the Twitch platform and the social identity of its users. The possible types of self-classification that Twitch channel content consumers have are an applicable measure of the theoretical frameworks of Castells (1999), Giddens (2002) and Bauman (2005). Classifying self-perception as a reflection of the concept of identity can come from both the individual's lifestyle (in terms of consumption habits) and the sense of community.

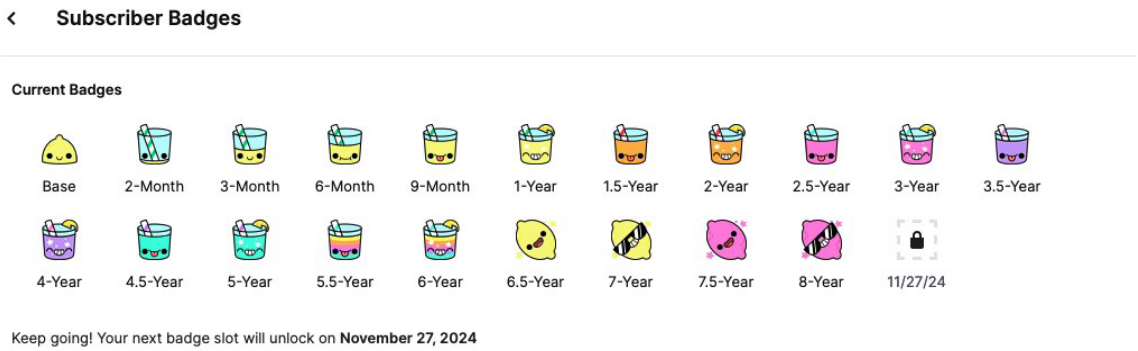
SENSE OF COMMUNITY

Sense of community is the concept addressed in this section, mainly using of understanding McMillan and Chavis (1986), since this social dimension is part of every transmission on the Twitch platform and can be the greatest motivating basis for channel subscriptions.

Unique content in a specific broadcast and the pleasure of interacting with and participating in the community of a broadcast were previously identified as reasons for engagement in streams (HAMILTON; GARRETSON; KERNE, 2014). In this

way, it is quite likely that this sense of community is also a motivator for subscription on the Twitch platform, as this offers benefits that directly affect belonging to the site's communities. A sense of community is a sense of belonging that members have, a feeling that members matter to each other and to the group, and a shared faith that members' needs will be met by their commitment to being together. The sense of community is then composed of four elements: affiliation, influence, reinforcement and shared emotional connection (MCMILLAN; CHAVIS, 1986).

The affiliation element represents this feeling of belonging, of knowing that one is part of the group and the community. This happens through a system of shared symbols that can include languages, rites of passage or clothing. Some of the most tangible benefits of channel subscriptions on the Twitch website are directly related to the membership element. An example is the acquisition of a subscriber badge that shows in the chat who is subscribed to that channel and for how long, as shown in Figure 2. Another important perk of subscriptions is obtaining personalized emotes in a specific channel, which further helps to build a unique language in the community.



Source: available at: https://help.twitch.tv/s/article/subscriber-badge-guide?language=pt_BR. Accessed in: May 2022.
Figure 2. Example of subscriber badge and its evolution.

Influence is a two-way street, because in a community each member must feel that he has the possibility to influence the group, at the same time that the group influences all its members. On Twitch, subscribers exert more influence on the chat of some channels that restrict the chat itself to subscribers only. In this way, only those who are actually part of the community participate. Also, many of the communities formed on Twitch streams expand to other media outlets to extend and maintain communication. These means include social networks such as Facebook and Reddit, as well as voice and instant messaging platforms such as Discord. Through these other means, community members can have even more influence.

Reinforcement, also described as integration and satisfaction of needs, is present in communities through the feeling, on the part of its members, that the group brings them some benefit. Strong communities understand that coming together will benefit everyone. These needs satisfied in a community can be functional or hedonistic.

It is possible to establish a parallel between these types of need, in the terms of Blackwell, Miniard and Engel (2005), and what McMillan and Chavis (1986) point out in the reinforcement of communities. People are attracted to others who have skills or competencies that benefit them in some way. For example, the satisfaction of this attraction or need may be purely functional, such as a search for information among members. Hedonistic needs are also present in reinforcement, and one of them demonstrated in the sense of community is the status of being a member. Sharing and wanting to be with people who share the same set of values are also two of the rewards of reinforcement, which can be extended to people who share the same lifestyle. Through the Twitch platform, for example, individuals can realize and reinforce the gamer lifestyle by participating in a community that shares the same lifestyle and spending time and money with it.

The final element is the shared emotional connection, which weighs heavily on the strength of a community. This emotional connection between members is developed in large part by continuous participation in a way that forms a historical background shared by members. A strong community demonstrates a willingness to continue sharing stories. The clip function on the Twitch platform allows viewers to create short videos of what just happened in a stream. In this way, it is easier to record and share unique moments that can compose this story and respective emotional connection shared in communities.

It is important to note that the Twitch platform, despite offering the option to register, is free, allowing you to be part of a community on the site even without being registered. Signing up is just a booster of belonging to these communities, with greater or lesser importance depending on the channel. Some streamers do not limit their chats to subscribers only at any time, for example, despite having that option. Overall, on the Twitch platform, the figure of the content creator (the streamer) is the point of convergence for these communities. As such, they are both a central symbol and the most influential figures in the communities formed in their channels.

METHODS AND PROCEDURES OF DATA COLLECTION AND ANALYSIS

In this research, there was a stage of data collection in the field carried out through a focus group mediated by technology, because of the restrictions of the COVID-19 pandemic, with typical characteristics of an exploratory research. According to Malhotra (2006, p. 157), focus groups "with less than eight participants hardly generate the momentum and group dynamics necessary for a successful session"; however, the author states that mini-groups with a moderator and four or five interviewees are adequate when "the problems at hand require more extensive investigation than would be possible to carry out in a standard group" (MALHOTRA, 2006, p. 162), which was the case of this data collection. Thus, the focus group was composed of six male Brazilians who had not had prior access to the questions. The information they had when entering the Zoom room was that of a

conversation about subscriptions on the Twitch platform. Thus, priority was given to the spontaneity of responses.

For a sequence consistent with the objectives of a focus group, a moderation was established, carried out by the researcher themself. This method obeys a qualitative research formula established in the field of marketing and other social sciences, in line with the considerations provided in Révillion (2001). Accordingly, a way is sought to achieve the following: to introduce the discussion from the desired angle and keep it alive; not to intuit right or wrong answers, leaving room for interviewees (IERVOLINO; PELICONI, 2001); to encourage participation and distribute the speaking time equally as much as possible, to eliminate biases (COPELAND, 1924); to build relationships with informants to deepen comments and answers considered relevant by the group or by the researcher; and to observe, as much as possible, the non-verbal communication and the rhythm of the participants in the planned time (FERNANDES; ANGELO; MARTINS, 2016).

The debate, which was divided into periods – referring to questions – evolved according to the moderator's convenience, in the sense of seeking a conceptual sequence of the work, as well as communicative fluidity. No time was previously determined for each question or subject, so that following a sequence of more general themes towards more specific ones, they naturally did not consume the same amount of time between them. The question/subsequent period was introduced when there was an exhaustion of elements considered relevant in the previous subject or when an idea emerged that was very similar to a planned subsequent questioning. Following this logic, for the benefit of communicative dynamics, it was decided to invert the order of questions previously imagined on two occasions during the 90 minutes. The data produced were transcribed, plus notes and reflections made by the observer.

It should also be noted that throughout the study the ethical principles of research were safeguarded, namely the right to self-determination, the right to privacy, the right to anonymity and the right to confidentiality. Finally, a systematic analysis focused on the study's topic of interest was carried out, during which categories of interest emerged.

An interpretative, systematic baseline analysis focused on the study's topic of interest was carried out, throughout which categories of interest emerged through content analysis of the informants' talks (BARDIN, 2009). Additionally, the intensity of what was observed in the participants' interaction was classified into three levels: strong, medium and weak. When all or almost all showed relevance to a category in their responses, the intensity was classified as strong. When about half expressed relevance of the category, it was classified as medium, and the rest classified as weak.

PRESENTATION AND ANALYSIS OF RESULTS

To start the conversation in the focus group, there was a brief moment of greeting and thanks for the presence of all participants. Their names have been omitted to preserve their personal privacy, which was also informed to them at the

beginning of the communication. Gifts will therefore be represented by a single letter. Then, a brief presentation by each participant was requested. Their data are displayed in Chart 2.

Chart 2. Profile of focus group participants.

Interviewee	Age	City	Topics of interest	Level of knowledge
X.	30	Rio de Janeiro (RJ)	Games, sports	High
N.	23	Fortaleza (CE)	Games	High
V.	29	Rio de Janeiro (RJ)	Games	Medium
T.	26	Rio de Janeiro (RJ)	Games, sports	Very high
P.	20	Brasília (DF)	Games	Medium
J.	28	Rio de Janeiro (RJ)	Games, cooking	High

Initially, the central question of the research problem was posed: What were the reasons for you to subscribe to Twitch channels? The result of this question is displayed in Chart 3, which encompasses aggregated interpretations of all data collection and approximates the general conclusions of this study. The concepts of reasons for purchase according to Blackwell, Miniard and Engel (2005) were associated, additionally performing a classification by type (personal or social), in addition to indicating its intensity (as already briefly described in this text).

Chart 3. Ranking of reasons for subscribing to Twitch.

Reason	Type	Intensity
Support the creator	Personal	Strong
No ads	Personal	Strong
Help personal friends	Personal	Medium
Access to community	Social	Medium
Compatible schedule	Personal	Medium
Get news or knowledge	Personal	Medium
Personal interactions with creator	Personal and social	Weak
Sweepstakes and points programs	Personal	Weak
Subscriber badge	Social	Weak
Emotes	Personal and social	Weak
Regionalism	Social	Weak

From the analysis of Chart 3, it can be seen that personal reasons are more frequent. Even so, the importance of the social type reason, access to the community, is considerably relevant. As will be discussed below, the sense of community is significantly valued by all participants, but it is not considered a reason for registration, as it is possible to be part of communities for free. Therefore, the predominant majority of personal reasons involving a subscription are recognized, but the exception is made that we can relativize the impact of social reasons in general, largely because of the sense of community.

The reasons most valued by the group in answering this question were explored further with two questions in sequence, which aimed to deepen the understanding of the question: Why do you want to support creators?; and Why do you think it is important not to see ads?

Next, the needs involved in the decision to purchase a subscription are pointed out. The concepts of needs according to Blackwell, Miniard and Engel (2005) were associated, performing a classification by type (utilitarian and hedonistic). The classification of needs is presented in Chart 4. The interviewees brought them up naturally (and not only through question stimuli), but also proactively through the debate on information and aspects that they value both to consume and to stop consuming. In this sense, the focus group participants went further and brought relevant aspects to the group and to the research itself throughout the debate, which greatly contributed to the construction of charts that summarize the results.

Chart 4. Ranking of needs.

Need	Type	Intensity
Support the creator	Utilitarian	Strong
No ads	Utilitarian	Strong
Help personal friends	Utilitarian	Medium
Access to community	Utilitarian and hedonistic	Medium
Compatible schedule	Utilitarian	Medium
Get news or knowledge	Utilitarian	Medium
Personal interaction with creator	Utilitarian and hedonistic	Weak
Sweepstakes and points programs	Utilitarian	Weak
Subscriber badge	Utilitarian and hedonistic	Weak
Emotes	Hedonistic	Weak
Regionalism	Utilitarian and hedonistic	Weak

We noted a predominance of the utilitarian type in the identified needs. These represent the functional elements of a membership's benefits. A dose of interpretation was used to categorize some of the needs into more than one type, given the slightly greater scope than the Blackwell, Miniard and Engel (2005) examples for some of the needs.

The absence of advertisements was emphasized with heightened enthusiasm by panelists when the question was introduced: Why do you think it is important not to see advertisements? Unlike the rest of the meeting, in which each person's turn was respected, everyone spoke at the same time, in unanimous revolt against the announcements. The opinion was clearly of the very strong type that ads get in the way of the experience on the platform. Expressions such as "*very boring*", "*repetitive*" and "*monotonous*" were used. One of the main negative points mentioned was the fact that the experience is interrupted and that a moment of climax can be completely lost, which is especially harmful during exhibitions of eSports championships.

Next, we sought to address the issue of complementarity in consumption. Considering the insertion level of the Twitch platform in the electronic games sector and the interest shown by the informants in it in previous stages of the conversation, the question to the group was: Do you play because you watch or do you watch because you play? The answer in this case was unanimous: all participants reported that the two reasons complement each other. It was said by J. that games he plays make him seek out and find previously unknown streamers making use of the same game content. P. mentioned that he likes to acquire knowledge involving games in which he works and that "*watching gives an incentive to play*". There is therefore a relationship of reciprocity between the content to be watched and the habits that are practiced.

In the games section of Twitch this relationship is quite clear. For informants, the games they watch are typically the same ones they are currently playing and vice versa. Thus, this study reinforces the idea that popular streamers follow popular games or even make them popular. This is the case of the game Among Us, which grew to unprecedented proportions through its sharing on Twitch by a well-known streamer called Sodapoppin (JAIN, 2022).

Next, the concept of a sense of community was approached through a series of questions. It was identified that community is one of the most prominent elements in the Twitch live stream service, as participants addressed this theme repeatedly, demonstrating conscious familiarity and engagement. The first questions were: do you participate in the chat on the platform? Have you made any acquaintances or friends through chat? The interviewees did not prove to be such avid participants in the streams' chat, nor did they make acquaintances or friends through it.

That said, two of the panelists briefly interrupted the objectivity that presided over the conversation to tell stories related to the chat. T. mentioned his positive experiences with "ganks" or "raids" when using the chat, which are a platform feature to transfer viewers from a stream that is ending to another one in progress, making there a lot of interactivity at that moment in the chat. Another positive experience mentioned was that of X., who recorded a remarkable moment of a transmission that he watched through the Clip resource. X. shared this clip with other chat members and the streamer himself, which made them very grateful amid much laughter.

These two examples of chat interaction can be related to the concept of emotional connection shared by McMillan and Chavis (1986), that is, a community shares historical baggage and reinforces its ties when it does so. Both participants seemed to show a lot of positive affect towards the community when telling these stories, so their submissions were well justified for themselves.

At this point in the conversation, the subscriber badge was also mentioned as a means of attracting more attention in the chat, to communicate with the streamer more easily. The participants did not show much interest in this facet of the badges, explaining that, in general, there are so many subscribers in popular broadcasts that the badges fail to attract attention. From the comments to this question,

the aesthetic aspect of the badge did not seem to have much relevance either. Therefore, the entry badge was considered a weak reason for entries.

A continuation of this question was: do you go beyond the Twitch environment using other means of communication or social networks related to these same communities? In the answers to this question, it was possible to perceive that there is a strong involvement with the community because there is intense traffic to more than one environment. The digital communication network Discord was cited by almost all members of the conversation as an extension of content and communication involving a specific community. Groups on Telegram, WhatsApp and Facebook were also mentioned. X. and T. mentioned making friends through these community extensions, which enhances belonging to these groups. It is important to remember, at this point, that access to these networks is limited to subscribers, as an incentive established by the streamers themselves.

The last question addressed the lifestyle theme directly. The lifestyle most associated with the platform in question, also verified in the group, was mentioned by name to test the affinity with the categorization: do you consider yourself gamers or some other similar designation? Only two of the participants considered themselves gamers, J. and T. The first demonstrated knowledge about the platform, mentioning its history and its relationship with games. The conceptions about the gamer concept differed among the participants. Some connected it to the idea of professional esports players, and others just to the hobby of playing video games.

N., in an attempt to distance himself from the gamer identity, proposed the term "*nerd*", as someone who follows various topics related to streams. N., T. and P., between relaxed tones, agreed that they were nerds. P. even used one of the elements of the lifestyle concept when exemplifying his inclusion in the nerdy group: "*I have nerdy attitudes*".

It was concluded that the denomination of an identity is quite subjective in the responses and in line with aspects of the concept of identity according to Castells (1999), Giddens (2002) and Bauman (2005). Even if the participants demonstrated connection with consumption habits, culture and communities that revolve around the electronic games sector throughout the focus group, it is perceived that there would be a high probability of fitting into the gamer lifestyle. Such self-perception, however, is diffuse, so that some of the focus group participants themselves do not accept the term well for different reasons. It presents itself as an ambivalent question, as Woodward (2000) and Giddens (2002) point out in the debate on identities and identifications in contemporary times.

Finally, one of the main conclusions of this study was that all participants who signed up showed an interest in supporting, recognizing, honoring and valuing the streamer activity, whether as a professional or as a provider of a contemporary service whose financial remuneration is essential in the conception of value of the group participants. This reinforces the idea of Johnson and Woodstock (2019a) that the streamer career is desired and a real phenomenon.

CONCLUSIONS

This work investigated the motivations related to users of the livestream platform Twitch, the main medium of this genre. More specifically, it focused on those paid subscribers of one or more channels, with data collection through a focus group. We sought to base the analysis on different theoretical perspectives in the field of social sciences, such as marketing, psychology and sociology. In the broader discussions of consumer behavior, contemporary society and consumer-related social interaction, a number of influential categories have taken shape in the context of Twitch channels. Through authors such as McMillan and Chavis (1986), Giddens (2002), Bauman (2005), Blackwell, Miniard and Engel (2005), Solomon and Bamossy (2006) and Benazzi (2016), a range of key concepts such as motivation, needs, identity, lifestyle and sense of community were talked about (Amazon Prime, 2022).

Much of the debate moved between the notions of identity and lifestyle. The results confirm that, although subtle, there is a difference between the two. The gamer identity is subjective, while the lifestyle, characterized by habits, was more clearly demonstrated. A strong demonstration of the lifestyle was achieved by complementarity, which was quite intense among the participants, identifying an opportunity for its application on the platform.

Among the main findings, the research identified the growth of the platform as a relevant phenomenon in the contemporary media universe.

The sense of community is another element with much presence in discussions around livestreaming on Twitch and was unanimously addressed by all participants in the focus group. This study observed that, despite being very relevant, the intensity of the sense of community was classified as medium by the group, since in certain communities it is possible to obtain the same level of access for free.

The concepts of needs and reasons were analytical dimensions that allow the systematization of the interpretation. With regard to the needs of Blackwell, Miniard and Engel (2005), there was a large predominance of the utilitarian type, with less ambiguity between utilitarian and hedonistic. In the dimension of reasons of Solomon and Bamossy (2006), personal reasons were more emphasized, while social reasons were weaker. The difference between the sense of community, broadly understood, and the social reason access to the community, which has medium intensity, is highlighted.

Finally, restricting the analysis dimension to the strongest motivations, the highlights were the intention to support the creator and intolerance to ads. Participants showed an interest in valuing streamer activities as a professional, and the decision is taken by the quality of service, an explanatory variable. The absence of advertisements was another element of very strong intensity in the discussion, expressing the view that consuming Twitch channels is part of an experience. Finally, some elements present in the advertising of the platform itself, such as emotes and subscriber badges, were not shown to be intense during the debate.

Finally, the results obtained give rise to a reflection on how the consumption of such entertainment services is influenced by the identification of gamers with

content creators and the sense of community that comes from such interaction, both strongly associated with the growth of new media and its uses in contemporary times.

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Conflict of interests: nothing to declare – **Financial support:** none.
Authors' contributions: Benazzi, J. R. S. C.: Concepualization, Investigation, Mehtodology, Project administration, Supervision, Validation, Writing – review & editing. Barbosa, L. F. M.: Conceptualization, Investigation, Data curation, Formal analysis, Investigation, Methodology, Project administration, Visualization, Writing – original draft.

Article

https://doi.org/10.22398/2525-2828.823184-201

Creative economy in the face of the complexity paradigm

A economia criativa diante do paradigma de complexidade

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ABSTRACT

Objective: To discuss Creative Economy based on the complexity paradigm. Therefore, thinking about creative economy, based on this paradigm, is part of the search to establish convenient principles of intelligibility in order to apprehend the complexity of the way ideas are organized. **Provocations:** However, it would be possible that, at the end of this journey, something like dissent on the part of conservatives could be seen. Conservatives not because they are concerned about preserving traditions, but above all because they are concerned about refuting any possibility of the emergence of a new tradition. **Conclusion:** The complexity paradigm, thus, shows the emergence of deviant creativity in its possibilities of autonomy. In such autonomy, a dialogical game of pluralisms, of the multiplication of gaps and ruptures is intrinsic in the existing creative determinations. Therefore, deviant creativity can point out the emergence of new creative paradigms, which can destabilize institutionalized creativity.

Keywords: Creative economy. Creative industries. Complexity. Cultural management. Deviant creativity.

RESUMO

Objetivo: *Discutir a economia criativa com base no paradigma de complexidade. Pensar a economia criativa por esse paradigma se insere na busca por se estabelecer princípios de inteligibilidade convenientes a fim de apreender a complexidade do modo de organização das ideias.* ***Provocações:*** *Poderia ser, todavia, que, ao termo desse percurso, se deixasse entrever algo como uma dissidência por parte dos conservadores. Conservadores não por estarem preocupados em preservar as tradições, mas, sobretudo, por estarem preocupados em refutar qualquer possibilidade da emergência de uma nova tradição.* ***Conclusão:*** *O paradigma de complexidade, assim, evidencia a emergência de uma criatividade desviante nas suas possibilidades de autonomia. Nessa autonomia está intrínseco um jogo dialógico dos pluralismos, da multiplicação de brechas e rupturas nas determinações criativas existentes. Logo, a criatividade desviante é capaz de apontar a emergência de novos paradigmas criativos, os quais podem desestabilizar a criatividade institucionalizada.*

Palavras-chave: *Economia criativa. Indústrias criativas. Complexidade. Gestão cultural. Criatividade desviante.*

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Received on: 02/01/2023. **Accepted on:** 05/08/2023.

INTRODUCTION

A displacement from an industrial society to a post-industrial society is foreseen. Therefore, existing management models, work theories and methodologies collapse, considering certain aspects, due to this new paradigm. However, it is not a surprise that it also brings about transformation in the mode of production, circulation and consumption of symbolic goods. "Indeed, the passage from Fordism to post-Fordism can be seen as the passage from a logic of reproduction to a logic of innovation; from a regime of repetition to a regime of invention" (CORSANI, 2003, p. 15). Therefore, the valorization of innovation rescues the importance of creativity, and, consequently, the creative intellectual capital.

It is important to mention, in effect, the complete transformation in the way of communicating and *creating* in this atmosphere. According to Van Dijck (2016), with the arrival of the internet, and especially the 2.0 web platforms, the industrial logic of mass reproduced cultural goods went through a dramatic transformation. The ecosystem of connective media does not consist of a mere sum of microsystems, but instead, of a dynamic infrastructure that is able to influence the culture and be influenced by it. This shows that this path is opened to a new way of thinking culture, creativity itself and, above all, creative economy.

> Connectivity, Velocity and Intangibility — products deriving from time, space and mass — are making the rules indistinct and redefining our companies and our lives. They are destroying what used to be standardized work solutions, which were efficient in a relatively slow and unconnected industrial world (DAVIS; MEYER, 1999, p. 6).

It is observed that this scenario is established based on uncertainty and unpredictability. In this sense, it requires new management models, work theories and methodologies. Such a perspective leads to other theoretical explorations, as well as new investigative instruments that are able to insert creative economy in complex management and creativity, being incorporated to what can be called complexity of the contemporary society. It is important to mention the impacts of this complexity on traditional cultural industries, which are part of the creative economy framework. How can we think about theater, cinema, television, design, publicity, fashion, publishing companies, games, software, music, and culture based on such complexity?

Therefore, this theoretical essay aims at discussing creative economy based on the complexity paradigm. Such a perspective is seen as critical in a transitional culture.

> In the moment we are living in, we barely see the emerging modes involved in the turmoil of change. If the limit of the intellectual operation to which we are capable of is the refusal of paradigms and ideology, then we are left with the role of critics of transition, or critics of the transitional culture (ABRANCHES, 2017, p. 17).

So, the objective is to encourage the discussion, despite a preliminary examination that is able to show that the "change which we are going through is not linear, nor is the amplified continuity of what we have. It is disruptive. Chaotic. We are at the threshold of chaos, between the order that fades away and what appears as random. We are in the borders of maximum complexity (ABRANCHES, 2017, p. 25).

From the perspective of this study, this focus shows the discovery of concepts that make us change our view of what is accepted. That is, the question is up to what point the traditional culture industry requires a movement towards creative industries. In other words, there is a need to revise management models, the concept of creativity itself, the processes of production, circulation and consumption of symbolic goods, in order to integrate that complexity. In this sense, would traditional culture industries leave an economy of culture to be inserted in creative economy? The goal here is not to conclude the matter. Nonetheless, it is observed that this path would lead to other theoretical explorations, able to think about new investigative tools. These investigations involve three stages in the critical practice of a transitional culture, according to Halévy (2010):

> First of all, the *deconstruction* of the structures that have become obsolete, such as the nation-state, the speculative capitalism, the rationalist and laic education, the Cartesian methodologies etc. Secondly, the *refoundation* of the new paradigm pillars; these bases, for us, are the cognitive, the creative and the qualitative (all three in the broader and richer sense of the word). Thirdly, *construction* of structures that are radically different from the previous ones, both in nature and in architecture and level of complexity, which will be much superior in relation to the fairly simpleton and simplistic world where we live in today (HALÉVY, 2010, p. 245, emphasis in the original).

It is worth to notice that this essay fits the *deconstruction* stage. That is, it aims at analyzing the need for an effective deconstruction of the framework that composes creative economy. Therefore, in terms of methodology, the work is divided as follows:

- The complexity paradigm;
- Creative economy;
- The traditional culture industry facing the complexity;
- The emergence of creative economies;
- Final considerations.

COMPLEXITY PARADIGM

The pandemic has shown the complexity that is intrinsic to society. By revealing the illusion of an orderly, predictable, linear world, it collapsed to its effective configuration, the complexity paradigm. According to Waldrop (1992), complexity refers to a type of dynamic behavior that is eternally surprising and unpredictable. "To understand what happens and what will happen in the world, it is necessary to be sensitive to ambiguity" (MORIN, 2013, p. 9). Therefore, this topic aims at discussing what the complexity paradigm is and the urgency of creative economy adjusting to it.

In fact, its apprehension shows that it can determine a complete revision of management models, creative processes and work activities. Therefore, it is possible to observe the need for a principle that can explain the world, society, culture, the ordinary social practice not so much of a principle of simplification, but mostly of a complexity paradigm.

> It is clear there is no "complexity paradigm" in the market. But what appears here and there, in the science field, is a problematic of complexity, based on the consciousness of non-eliminability of what was eliminated in the classic conception of intelligibility; this problematic should encourage a search for the adequate modes of intelligibility for this conjuncture (MORIN, 2005, p. 331).

Therefore, one evidence of this complexity problematic can be explained by the consequences of modernity. One of the consequences is "the clear rhythm of change that the modernity era sets in motion [...] the speed of change in modern conditions is extreme" (GIDDENS, 1991, p. 15). Another evidence is "*the scope of change*. When different areas of the globe are interconnected, waves of social transformation virtually penetrate through the surface of the Earth" (GIDDENS, 1991, p. 15-16, emphasis in the original). According to Appadurai (2003), it only takes a first contact with the facts of the modern world to notice that it is now an interactive system in a surprisingly new sense. Yes, the world today involves interactions of new order and intensity.

> It is an urgent task for cultural philosophy to develop a conceptual model that allows to comprehend the current cultural dynamic. The hybrid "in-between" concept of Bhabha in fact liquefies the essentialist concept of culture to a certain level. But it is still excessively motionless, dialectic, for the description of the cultural, hyper cultural process of today (HAN, 2019, p. 51).

This perspective becomes clear, especially as a result of the influence of reflections about disruption, in which hyper culture includes the entire society. Hyper culture, in the condition of deinteriorized, rootless and relocated culture, is related in multiple rhizomatic senses. There are rhizomatic passages between subcultural and cultural structures, between margins and centers, between temporary concentrations and renewed dispersions (HAN, 2019, p. 54-55). This is how the concept of complexity emerges — "the challenge of globality is a challenge for complexity" (MORIN, 2013, p. 13). It is observed that this rise is given by extreme and fast changes that are not only local, but especially global. Therefore, "complexity, that is, multiplicity, confusion, disorder mixed with order, the increase of singularities, all that is just appearance" (MORIN, 2005, p. 211).

Therefore, the complexity paradigm investigates what is involved in that appearance and its consequences. "I call complexity paradigm the set of principles of intelligibility that, connected with each other, could determine the conditions of a complex vision of the universe (physical, biological, anthroposocial)" (MORIN, 2005, p. 330). Then, inside it new data stand out and make us change our vision. Because

of that, we will be led to finding new restructuring principles about how to think and act. "I believe complexity favors the action, since it provides the measure of true risks and real opportunities" (MORIN, 2013, p. 26). In this paradigm, the combinations are somehow multiple. So, being established in it requires configurations of management, which are gathered so they do not assimilate themselves as anachronic. "The great transition marks an era of uncertainty and vertiginous change, without a defined direction. It can at most capture incipient virtual trends, which will or will not become concrete in the future" (ABRANCHES, 2017, p. 29).

The word *complexity* comes from "*complexus* — what is 'composed' together. The universe of phenomena is inseparably composed of order, disorder and organization" (MORIN, 2005, p. 215). Therefore, it is not a surprise that these elements are part of an inevitable game of the context which we live in. So, the pandemic should have been thought as part of that game; however, the difficulty of a complex view in an industrial society is a fact. "With it [complexity], the society of knowledge and creation will replace the old industrial, capitalist society, now dying. It is not about an ideological aspiration, but radical overcoming" (HALÉVY, 2010, p. 20).

In fact, in this industrial society the frontiers and demarcation of existence are constantly learned as being accurate and organized, thus obstructing the perception of companies, professionals and governments for the idea of complexity itself.

> Therefore, we see the idea of complexity emerge more. It does not reside in the replacement of ambiguity, uncertainty and contradiction with clarity, certainty, determination and coherence. It resides in its need for coexistence, interaction and mutual work. (MORIN, 2015, p. 430).

In this sense, previous learning succumbs to that era. "Nowadays the door opens to a new field, which asks for new tools, new methods, new concepts so that men can fully take over this real and native complexity of the world which they know, today, they are a part of" (HALÉVY, 2010, p. 54-55). And, so to speak, to the need for eco-organization.

> Thus, the supreme virtue of eco-organization appears: it is not stability, but the aptitude to build new stabilities; it is not the return to balance, but the aptitude of reorganization to reorganize itself in new ways, under the effect of new disorganization. In other words, eco-organization is able to evolve under the disturbing irruption of the new, and this evolutionary aptitude is what allows life not only to survive, but also develop itself, or develop itself for survival (MORIN, 2015, p. 51).

According to Morin (2015), the context of this complexity paradigm contemplates: freedoms, great autonomy of individuals, doubts, questions, multiple communications, tolerance to disorder, detours, major evolutionary possibilities and decentralization. In this context, it is necessary to acknowledge, however, the disturbing irruption of the new and the diversity. "Let's remember that diversity, which causes horror to all homogenizing rationalizations, is a source of evolution, development and complexity" (MORIN, 2015, p. 454).

In fact, the obligatoriness of now thinking based on the consequences of order and disorder stands out. According to Morin (2005), the consequence of order is stability, regularity, repetition, coherence, predictability. By the way, this is how industrial society was established. The author assumes, however, that when the consequences of disorder are apprehended, new management models come up and are obligated to them, joining the complexity paradigm, since disorder, according to Morin (2005), involves: irregularities, inconstancy, instability, agitation, dispersion, collision, accidents, possibility and chance. In this sense, order and disorder structure the configuration of an organization, in which one does not rule out the other. On the contrary, one is promoted by the existence of the other.

Creative economy, according to the complexity paradigm, aims at apprehending, therefore, that the world of ideas does not only bear the orderly and linear organizational nucleus, which rules and controls its production modes. The world of ideas needs to be thought taking complexity into account.

> I mean, above all, that the simplest idea also needs a formidable bioanthropological complexity and sociocultural hypercomplexity. Talking about complexity is, as we have observed, talking about simultaneously complementary, concurrent, antagonistic, recursive and hologrammatic relationship between these instances that are co-generators of knowledge (MORIN, 2011, p. 23).

The democratization of access to modes of production, encouraged by the web 2.0, prescribes the dialogic of opinions and individual creativities. So, the axiomatic domination of traditional culture industries is retracted. The dialogic of individual creativities introduces the anarchic and the unpredictability of plurality. "The conjunction of plurality, trade, conflict, dialogue, heat, constitutes high cultural complexity (MORIN, 2011, p. 35). This causes agitation and disorder to traditional industries. Therefore, it disrupts its functioning, weakening and changing the modes of production and the consumption of symbolic goods, even if in an incipient manner.

> In this transitional world, as if the increase of economic, social and political complexity were not enough, with its profound destabilizing effect, we are also at the first stage of a long and transformative scientific and technological revolution. This revolution will cause several disruptive effects, but with unpredictable direction, in our entire economic, social and political life (ABRANCHES, 2017, p. 39).

So, breaches and detours in that industrial production mode begin. "There are situations in which detours are recognized [greeted] as 'originality, and then, despite being an exception to the rule, they benefit from an elitist statute that rises it above the rules" (MORIN, 2011, p. 38). Then, it would be as if individual creativity, of the ordinary social practice, could take on the role of a recognized and greeted *creative detour*, thus reaching the *status* of a new creative paradigm. Therefore, creatives that are extrinsic to that traditional

cultural industry assume as much (or more) influence as those creatives in traditional culture. So, individual creativity would be able to use the validity of these new technologies as a potency for autonomy, beyond its ordinary social practice. "More and more, the possibilities of motion for collective attention are diversified and more fluid. [...] The negative, the rest, the disgust, the forbidden, all we did not want leaves the shadows [...]. Everything ends up being expressed" (LÉVY, 2000, p. 117).

Therefore, it is not a surprise that such a fact encourages ruptures and detours that may evolve to radical contestation, capable of resulting in the engendering of new modes of production, circulation and consumption of symbolic goods.

> The onset of concepts of complexity and cosmic evolution, conjugated with the development of [technologies of information and communication] TICs, causes the germination of the noosphere, this new "layer" that covers the Earth with knowledge and spirit. This germination, then, promotes the noetics revolution, which is the passage from the "modern" era to the noetic era, from the industrial society to the knowledge society. This revolution leads to deep questioning in all areas of human intellectuality (HALÉVY, 2010, p. 318).

It is important to mention, in effect, a new symbolic creative order. "Sometimes, a small breach in determinism is enough, allowing the emergence of an innovative detour, or caused by a crisis abscess, to create the initial conditions of a transformation that may, eventually, become deep" (MORIN, 2011, p. 39).

Then, it is necessary to assume that the complexity paradigm manifests itself in the imminence of disruptive innovation. So, a creative economy that can integrate a management model that also promotes such innovation is necessary. The complexity paradigm is established as an *atmosphere of rising differences*, therefore, of potential deviant creativities, which rebel themselves in their creative ways.

The permissiveness of cyberspace empowers the exchange of ideas while refuting institutionalized ideas. "The softening of the norm enables the expression of spirits that were already secretly autonomous and allows the potential detours to be updated" (MORIN, 2011, p. 36).

Therefore, it is an atmosphere according to which instability and mutation prevail. So, the rigid creative determinism collapses to such detours, instabilities and mutations. Therefore, it is observed that complexity enables experimentation of several insertions. "The exchange of ideas leads to the weakening of dogmatisms and intolerance, which results in their own growth" (MORIN, 2011, p. 34). In fact, the diversity of points of view inhibits a creative pattern of establishment and institutionalization. The complexity paradigm, therefore, shows the emergence of a *deviant creativity* in its possibilities of autonomy. In this autonomy, a dialogical game of pluralisms, of the multiplication of breaches and ruptures in the existing creative determinations is intrinsic. So, the deviating creativity is capable of pointing out to the emergence of new creative paradigms, which can weaken the institutionalized creativity.

> Our human world has reached such a size, volume and complexity that we are faced with a terrible threshold effect: either we change our way of living and overcome it, or we do not change enough and disappear into a random cataclysm. It is no longer about reform, progress, improvements or corrections. It is about radical rupture, deep mutation, metamorphosis (HALÉVY, 2010, p. 163-164).

In this context, creative economy must be reflected upon. That is, new ways of thinking are involved, as well as new work models, new languages and the engendering of unprecedented formats. "It is no surprise that current human languages have so much difficulty translating the complexity of real!" (HALÉVY, 2010, p. 195). Therefore, the framework that composes creative economy is inserted in a pressing *deconstruction*.

> We live in a period in which events take place in a non-linear manner and growing acceleration. The occurrences are mostly unpredictable. The examination of these mutations informs us that society from the XXI century, in all aspects, will not only be an update of the society in the XX century, a linear evolution from it. It will be a radical rupture with history from the XX century. Nothing will stay the same (ABRANCHES, 2017, p. 342).

Therefore, we rescued the first stage of criticism towards a transitional culture, listed in the introduction, this being the stage of *deconstruction*. In it, the objective is to analyze the need for an effective deconstruction of the creative economy framework in order to check the existence of traces of obsolescence. Despite its prelude character, it shows that such a perspective will embrace further studies.

CREATIVE ECONOMY

The research and encouragement of creative economy are seen as power to the nations, whose goal is to promote social, economic and cultural development in the local, regional, national and international scopes. "The object of creative economy ends up including elements that are connected to creativity in its broader sense, going through publicity, technologies of information and communication (TICs), and even some areas of scientific evolution" (VILIATI; CORAZZA; FLORISSI, 2022, p. 141). Therefore, this conception proposes a privileged articulation between the principles of creativity, innovation, and complexity.

> Knowing that complexity generates a dense and inextricable mesh of interactions that are often imperceptible, which connect everything to everything and found concrete solidarity and fraternity between everything there is. It favors the onset of new complexifications in all layers of life. To dare working with every combination, miscegenation, all possible harmonic arrangements, to generate the new, the unprecedented, the unheard-of (HALÉVY, 2010, p. 167).

As stated by Hartley (2005), creativity will be the vector of social and economic change in the next century. However, it is important to mention that "when we talk about creative economy, we do not mean the economy that suddenly becomes creative, but that original forms of creativity take over an important place and could

ensure future development" (GREFFE, 2015, p. 17). Such creativity behaves as strategy, which is better integrated with the complexity of society.

> In *Culture, Economy and Politics: the case of New Labour* (2015), the group of researchers emphatically wrote about the importance of relationships established between the identification of a sector assigned as "creative economy" and the ambitions of economic growth within the policies of the "New" Labor Party after the late 1990s. The association between the investment in creative industries and economic growth proved its resilience in the following years, so the development of industrial strategy, after 2017, was explicitly based on much evidence and many arguments developed in the late 1990s and early 2000s. (SHIACH, 2023, p. 15).

Therefore, this conception proposes an articulation between creativity, innovation and complexity, which allowed companies and governments to give fast responses to contemporary uncertainties.

> So, creative economy appears as a new way to face the sources of economic development, displaying a unifying problematic that surpasses the purely sectoral interpretations and points out the role of a cross-sectional value: the aptitude for creativity (GREFFE, 2015, p. 15).

To complement this definition, the Creative Economy Report from the **United Nations** Educational, Scientific and Cultural Organization (Unesco) determines creative economy as

> a concept in evolution based on creative assets that are potentially generators of economic development. It stimulates income generation, the creation of jobs and revenues of exportation, while promoting social inclusion, cultural diversity and human development (*apud* VILIATI; CORAZZA; FLORISSI, 2022, p. 140).

Therefore, the artistic activity imposes itself as a management model for economy. It is important to mention, in effect, that the symbolic modes of production, circulation and consumption start being managed with the support of art, technology and innovation. "The artistic activity is, by excellence, an activity of creation, a laboratory in which the artist can identify challenges, looking for ways to respond to them considering their cultural heritage, proposing a solution and trying to legitimize it" (GREFFE, 2015, p. 34).

It is observed that this scenario puts the market of symbolic goods in a management model that is open to apprehending the chaos and the disorder as a creative emergence. With that in mind, "in 2016, there was the publication *A Strategy for Creative Scotland*, which represented a distinct involvement with nature and the potential of creative industries in Scotland" (SHIACH, 2023, p. 19). In it, they expressively changed the taxonomy about what the creative industries are. They argued that creative industries have the ability to create value for other entrepreneurial sectors. It is worth mentioning the claim of generating broader forms of cultural and social value while increasing the reach of creative economy itself.

> The classic means of communication and cultural industries prior to cyberculture already structured, in their own manner, a dynamic organization of ideas, images, emotions and indicators of group attention. But this was a gross, worn-out organization, with too much circularity, closure and sterile self-reference (LÉVY, 2000, p. 116).

In fact, digital economy, evoked by post-industrial society, leads to new dynamics in the process of production, circulation and consumption of symbolic goods. According to Zuboff (2021), the belief of digital innovation soon became the language of disruption and an obsession with speed, with campaigns conducted with the thematic of "creative destruction". This famous and fateful expression, coined by the evolutionary economist Joseph Schumpeter, was appropriated as a way to legitimize what the Silicon Valley calls, as an euphemism, "innovation without permission". It is observed that such a *creative destruction* guides us to that critical stage of *deconstruction*, in a transitional culture, evoked by the complexity paradigm. The objective is criticism regarding the necessary transition towards the complexity paradigm of the industry models, which compose the creative economy framework.

TRADITIONAL CULTURAL INDUSTRIES

These preliminaries sketch the framework of traditional cultural industries:

> The definition of the [Department for Digital, Culture, Media & Sport] DCMS distinguishes thirteen industries that constitute creative functions: 1. publicity; 2. architecture; 3. arts and antiques; 4. craftwork; 5. *design*; 6. *fashion design*; 7. film production; 8. *leisure software* engineering; 9. music; 10. *performing arts*; 11. editing; 12. *Software engineering*; 13. Radio and television. It is important to mention that this definition uses an industrial classification, and not by professions. This approach was widely resumed and enabled the support for recent reflections about the role of cultural industries (GREFFE, 2015, p. 19).

It is possible to observe that such a scenario is configured based on a management model of an industrial society. Apparently, its characteristics present themselves as follows: standardization and rationalization of cultural forms; work/product as an exchange value; pre-established formulas; stereotyped themes; exclusion of the new to prevent risks. The observation is that these traditional culture industries are much more inserted in a cultural economy. "Currently, Unesco, in its 'Creative Economy Report', defines culture economy as: […] the application of economic analysis to all creative and performing arts, heritage, cultural, public or private industries" (VILIATI; CORAZZA; FLORISSI, 2022, p. 140). It is worth mentioning, therefore, the establishment based on already consolidated formats, besides an industrial organization, which implies protection against disorder and chaos. It is indispensable to consider that such a configuration justifies itself so that it can be contemplated with cultural policies and governmental and private investments.

> In other words, organization and order result in a principle of selection that reduces the possible occurrences of disorder, increase in space and time their possibilities of survival and/or development and allow to build, under the form of diffuse and abstract general improbability, a local, temporary, concrete and concentrated probability (MORIN, 2016, p. 107).

The description of the scenario in which work methodologies are managed by organization and order fits a perspective of annulling any possibility of disorganization and chaos. Therefore, such a perspective completely ignores the complexity paradigm. In fact, it is observed that the industrial management model is configured by predictability, linearity and repetition of its activities. "The prevalence of repetitive order smothers any possibility of internal diversity and translates itself in the poorly organized and poorly emerging systems" (MORIN, 2016, p. 147). In this sense, creative processes enter an innovative ostracism. "Whereas emergencies make the phenomenal qualities of systems blossom, organizational constrictions immerse the inhibited, repressed and compressed characters in the level of parts in a world of silence" (MORIN, 2016, p. 159).

This perspective becomes clear especially because of the influence of reflections around products, which are engendered for consumption. In fact, when audiovisual is observed, the products that arouse surround the same genres, shapes and themes. In television, new products are rarely shown. "Simplification reifies, that is, hides the relativity of system, subsystem, suprasystem notions etc. Simplification dissolves the organization and the system" (MORIN, 2016, p. 179-180). Therefore, the regulation, functionality, rigid control, internal programming and the production of copies follow pre-established models. It is necessary to assume, then, that such a simplification establishes itself as a requirement of the industrial model.

> These aspects refer to what, in biological or social organization, is founded in the division and specialization of work, in the regulation, functionality etc., excluding and hiding everything that is "noise", disorders, "freedoms", all that is non-functional and excludes any type of creativity (MORIN, 2016, p. 220).

As opposed to the belief that any organization and order engenders a status of progress, thinking about complexity requires to meddle in the disorder and chaos, and mostly, in contingent events. Therefore:

> The mass production of professional content, which is laborious and expensive in the case of the Hollywood model, requires high and planned investment considering excessive uncertainty. Nowadays, creative contents are more diversified and often produced by amateurs: they are freely available, sometimes at no cost, and define a new productive model that can be described as Hollyweb (Greffe and Sonnac, 2008) (GREFFE, 2015, p. 56-57).

Therefore, here we see the Hollywood model as one of an industrial society, and Hollyweb as one of a post-industrial society. It is important to mention, in effect, that this quote shows the Hollywood model slowly collapsing in the complexity paradigm.

> While the Hollywood model mostly depends on the attempted and tested organic approach, the Hollyweb model depends on an ecological and multimodal approach. While Hollywood spectators consist mostly of consumers, Hollyweb viewers consist mostly of artists, designers, game crea-

> tors, trend makers and spectators in general. While the Hollywood model tends to present a concrete and unified product, the Hollyweb prefers "leaner", "disentangled" contents that can be customized or adapted by the user himself. While it is difficult to develop diversity from the perspective of Hollywood, it is an intrinsic trace of the Hollyweb model. Besides, while the Hollywood model is subjected to the tyranny of best-sellers and blockbusters, the Hollyweb model stimulates the distillation and dissemination of microcultures, originating a cybereconomy that will enable anyone to be a consumer, if not systematically a producer, of anything they want (GREFFE, 2015, p. 57).

The complexity paradigm leads the traditional culture industry to overcome the industrial management model to assume a displacement towards a management model that is more integrated with the contingencies of complexity. By circumscribing in its bulge, in an ever more intense manner, it is possible to see that the traditional culture industry needs to rethink its mode of production, circulation and consumption of symbolic goods.

> The post-pandemic world will be deeply challenging in this sense: to understand how short-term changes caused by the crisis will be transferred as socioeconomic changes for life, defining the new normal. It is a fact that the winning parties of cultural and creative industries that compose the environment of cultural economy and belong to the "old normal" will resist any change. [...] Would this be the time when arts and culture can take a central position in the strategies to develop the "new normal"? (VALIATI, 2022, p. 16-17).

The complexity paradigm shows that the industrial model provokes a managerial anachronism facing the contemporary uncertainties. "All of that can lead to specific ways to manage, as emphasizes the usual expression, *new business models*" (GREFFE, 2015, p. 85, emphasis in the original). Well, it is clear that the warning for such a traditional cultural industry has been consolidated with the pandemic. It is worth mentioning that the field that concentrated more creatives was the most affected one by the uncertainties of the pandemic. This perspective becomes clear when management itself must be creative. "Creativity is clear in the invention of an institution or innovative reorganization with its own emergencies" (MORIN, 2020, p. 59).

It is worth noting that we are not at all questioning the quality of the products created by those industries. It is important to acknowledge, however, the consequences caused by the pandemic in that same industry. That is, up to what point does the configuration of production, circulation and consumption of the symbolic goods of these industries subsist to the consequences coming from complexity? It would mean, then, to be aware that we are inserted in a new social, economic and cultural configuration.

CREATIVE INDUSTRIES AND COMPLEXITY

From the perspective of this paper, there is the need for an evolutionary process from traditional cultural industries to creative industries, so that creative economy can be established through the complexity paradigm. The industrial management

model has succumbed to the uncertainties caused by the pandemic. When society dislocated from an industrial to a post-industrial paradigm, the need for this industry to start its transformation also seems to be important.

In this topic, we aim at apprehending the configuration of creative industries and outlining up to what point they coadunate with the complexity paradigm. Therefore, we start with the origin of the expression *creative industries.*

> The term creative industries came with the arrival and victory of the New Labour Party in the United Kingdom, in 1997. To reactivate British economy, the Blair administration points out to the strategic importance of these industries, which, at first, are pretty close to cultural industries, but will be rapidly defined by its capacity of producing intellectual property, considered as the new motto of global economy (GREFFE, 2015, p. 18).

Then, it is necessary to assume that creative industries are different from cultural industries in the sense that they no longer just produce culture, but begin to *create culture*. In practice, they start to engender inedited formats. "'Creative industries' is a new analytical definition of the industrial components of economy in which creativity is an input, and the content or intellectual property is the result" (POTTS; CUNNINGHAM, 2023, p. 109). The trigger of creative industries is the innovation in the field of arts and culture, and, therefore, in other segments.

> The economic value of creative industries can go beyond the manifest production of cultural goods or the employment of creative people, thus playing a more general role by boosting and facilitating the process of change in the entire economy, as shown by its dynamic parameters and level of incorporation in the broader economy (POTTS; CUNNINGHAM, 2023, p. 109).

In fact, when inserting innovation, the possibility of dilating the field of comprehension of culture and art itself, but especially of creative economy itself, is established. Therefore, "in the beginning, it was the mobilization of cultural talents. Then, it was the acknowledgement of intellectual property, because all of these activities had the common characteristics of producing copyrights, or, in rarer cases, patents" (GREFFE, 2015, p. 18).

It is imperative to clarify the ongoing evolutionary process of cultural industries towards creative industries.

> It is essentially about cultural industries that mostly knew how to make progress in any conjuncture, and to which the almost cultural industries can be added, that is, industries in which the cultural goods are not mobilized to produce cultural goods per se, but products whose cultural dimension is beside its traditional, functional or utility dimension, such as fashion, architecture, games, publicity etc. And finally, to that we add software production, which then broadly surpasses the previous field of reality and provides essential amplitude to this movement (GREFFE, 2015, p. 17).

It is important to highlight that this movement can be ratified by the emergence of creative industries such as YouTube, Facebook, Instagram, TikTok, WhatsApp and

Netflix. In this sense, they amplify the very own range of creative economy, thus inserting creativity in an economic perspective. Then the expression *creative economy*.

> The economic perspective of creativity is deeply marked by the vision of Schumpeter. For him, innovation is the central concept, that is, the ability to put new ideas, products or processes in the market. This discussion about innovation has emphasized the role of a strategic party – the entrepreneur – as someone who simultaneously take risks and organizes (GREFFE, 2015, p. 43).

Then, it is no surprise that the challenge of traditional cultural industries, of turning into creative industries, is in their ability to innovate. In other words, up to what point can the theater, the television, the cinema etc. create innovative and disruptive formats? How can publicity create patents for new publicity formats, which escapes the formats offered by means of communication?

> If it is important to highlight the development potential of industries who directly produce intellectual property – because their payment will increase with the use of goods who are incorporated to it, and not only its first sale –, it is hard to tell that these are the only creative industries (GREFFE, 2015, p. 20).

So, creativity in creative industries is not only about content production, but especially about intellectual property and patents. In this sense, the very concept of creativity is resignified. This transformation not only adjusts to a post-industrial society, but also establishes itself as a strategy that fits the complexity paradigm, whereas new creative explorations are shown, which are capable of dealing with contingence events of such a complexity.

> Therefore, creative industries can be understood as a type of industrial entrepreneurship which operates on the consumer side of economy. And, in that case, we are dealing with an evolutionary model of creative industries. [...] Specifically, this is the same model proposed for the effect of science, education, and technology in the approach of national innovation systems. Creative industries, according to this view, originate and coordinate changes in the base of knowledge of the economy (POTTS; CUNNINGHAM, 2023, p. 117-118).

Well, these changes would not take place only based on the knowledge of economy, especially transmutations in the base of cultural knowledge and creativity itself. Then, it would be the case of creative industries configuring themselves through the trace of disruption. However, it could be possible that, at the end of that path, something like dissidence from conservatives would be observed. Conservatives not for being concerned about preserving traditions, but mostly for being worried about refuting any possibility of the emergence of a new cultural tradition.

> The nature of major transitions is undetermined and non-deterministic. There is margin for society to fail and for structural collapse. The possibility of conservative reactions, which prevent the emergence or the conso-

> lidation of more creative and innovative options for the crisis-crisis cycle of transition, is real and may constitute one of the greatest risks of this structural transformation process (ABRANCHES, 2017, p. 375).

It is really not only about acknowledging the challenge that complexity brings to creative economy. It is also necessary to try and establish *principles of intelligibility* that are convenient for this complexity. From the perspective of this study, therefore, creative industries, based on the complexity paradigm, require *complex thinking* as a *principle of intelligibility*. In the immediate context, complex thinking apprehends the *ecology of action*. "It means that every human action, when initiated, escapes from the hands of its initiator and enters the game of multiple interactions that is part of society, which deviates it from its objective and, sometimes, gives it an opposite destination in relation to was expected" (MORIN, 2005, p. 128). So, attentive thinking for deviations not as a flaw, but as this deviating creative autonomy can create innovation for creative economy itself.

This is how complex thinking requires *assimilating plurality*, which is established as essential context for such an objective of complex thinking. It is observed that plurality promotes disorder and chaos, which compose a field of possibilities for creative detours. "The richer the organizational complexity, the more possibilities, so, there is the danger of crisis, and the system becomes more capable of overcoming its crisis, and even of taking advantage of them for its development" (MORIN, 2016, p. 154). In a complex and extremely diversified ecosystem, as established in contemporary society, a management of creative industries configured by this complexity and diversity is required. Well, such a complex and diversified ecosystem is lacking in traditional culture industries, especially in the scope of management. In fact, this configuration potentializes uncertainty. At the same time, "uncertainty is stimulating because it summons chance and strategy" (MORIN, 2013, p. 27).

> Uncertainties and risks are not only gaps and void in knowledge; they are their stimulators; they stimulate attention, surveillance, curiosity, restlessness, which stimulate the fundament of cognitive strategies, that is, ways of knowing through the uncertain, the imprecision, the risk. They are exactly the uncertainty and ambiguity, and not the certainty and univocity, which favor the development of intelligence (MORIN, 2015, p. 81).

Therefore, creative industries cannot be apart from uncertainties nor from the risks of the multiplicities of society, culture and ordinary social practice. A space for dichotomy, ambivalence, heterogeneity, which is configured by decentration, with deterritorialized flows. An open, connectable and mutable territory. A territory of detours.

The *deviant anarchy* also composes the framework of such a *complex thinking*. "Anarchy is not non-organization, but the organization that is made based on synergic associations-interactions between computing beings, without the need for command or control to come from a superior level" (MORIN, 2015, p. 352-353). Therefore, complex thinking does not reject diversity, autonomy, freedom, ambiguity nor uncertainty, under penalty of becoming anachronic thinking. Sennett (1996)

states that we need to apprehend a new context of disorder and diversity because excessive order paralyzes individuals. The incorporation of anarchy, diversity and disorder causes a response for that individual to deal with changes and the complexity of life.

Then it is important to understand that rationalization prevents the flow of creative detours, and, therefore, the emergence of the new. "The innovative individual is, inevitably, a lawbreaker, willing to break barriers and frontiers, to be placed at the margin of what is established, of hegemonic thinking" (ABRANCHES, 2017, p. 95). For the same reason, normalization obstructs the strange, the chaos and the disorder from being investigated, preventing them from revealing the news that is intrinsic to its configuration. "For that, we need to understand that the revolution of today happens not so much in the field of good or real ideas, which are opposite in a fight of life or death against bad and fake ideas, but in the field of complexity in the way of organizing ideas" (MORIN, 2011, p. 292). Therefore, thinking about creative economy based on the complexity paradigm means to establish convenient principles of intelligibility for that complexity, in order to apprehend complexity in the way of organizing ideas.

FINAL CONSIDERATIONS

The study shows that creative economy, by the complexity paradigm, starts with the criticism towards a transitional culture. For that, our analysis is in accordance with the three stages proposed by Halévy (2010), which are *deconstruction, refoundation* and *construction*. Such an incorporation reflects the ratification of a promising path concerning the perception of creative economy through the complexity paradigm. The *deconstruction*, focus of this essay, tries to become apart from anachronic practices.

These preliminaries outlined some points to be deconstructed, without covering everything about the matter. Among them, the industrial management model and the understanding about creativity and the creative process. So, it could verify if the very understanding about creativity, from industries and traditional culture, has become obsolete in face of such a complexity; or if it is urgent to revise what a creative process means. Then, generalities through which the deconstruction of traces of obsolescence may appear were searched for. So, while creativity lets go of the ties and oppression from an analogical communication ecosystem and inserts itself in unpredictable mechanisms, insubordinate to a digital communication ecosystem, the very concept of creativity is reconfigured. Then, it is important to understand the need to go deeper and the extension of the *deconstructing* process of the framework that composes creative economy.

By circumscribing in its bulge, in an ever more intense manner, it is possible to observe the passage to the stage of refoundation in cognitive, creative and qualitative pillars, in a character of complexity. The search for new theoretical explorations around the creation of a creativity in complexity and a cultural and creative management in complexity is noted. In effect, we reach the stage of construction, which will

engender creative economy by being integrated with a complexity paradigm, with the *construction* of structures that are radically different from the existing ones.

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Conflict of interests: nothing to declare – **Funding:** none.