

Luciane Maria Fadel
José Guilherme Santa Rosa
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SELECTED READINGS OF THE 8TH
INFORMATION DESIGN
INTERNATIONAL CONFERENCE
INFORMATION DESIGN:
MEMORIES



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Blucher

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Information Design International
Conference
Information Design: Memories

*Luciane Maria Fadel,
José Guilherme Santa Rosa and
Cristina Portugal (Eds)*

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Jury procedure for selecting the papers

The selection procedure for this publication was conducted by a jury composed of the editors of this book, with the mission of ensuring the quality of the publication. The process started with the designation of the papers that gained the highest scores from the referees of the 8th Information Design International Conference. Then the editors who were to make the final choice of papers reviewed the material. As a result, 13 out of 123 papers approved for presentation at the conference were selected for this publication, together with the four keynote speakers, Carla Galvão Spinillo, Priscila Lena Farias, Solange Coutinho and Francisco Providência.

Editorial acknowledgments

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Special thanks to CNPq for sponsoring this book.

Foreword

This book starts with Spinillos's provocation: to compare medicines and industrialized food/beverage products. This provocation is based on the fact that poor legibility and readability of informative texts, the use of technical jargons and small typographic font size are problems common to medicines inserts, nutrition facts, and lists of ingredients of food/beverage products. Spinillo argues that critical information about food composition should be presented as clearly as possible to consumers.

This information is designed to support a narrative. The importance of narratives in design has been central to many studies (Bizzocchi, 2014; Forlizzi and Ford; Grimaldi, Fokkinga, and Ocnareescu, 2013). Although its importance is well accepted, a more precise concept and typology of narratives in design are still being constructed.

Another design artifact that is based on narratives is the infographic that uses pictures and text to express temporality creatively. Vieira, Cunha, and Rolim explored the relationship between narratives and infographics to bring a broad view of what are the main issues being discussed in Brazil.

One of these issues is the balance between form and content to deliver clear information to a broad range of users. In order to reach that goal, both parts need to be meaningful. The content becomes meaningful to the user when the form is read as intended. Medina, Machado, Jacob, and Domiciano discuss the infographics that highlight the interplay between form and content focusing on the four groups of design principles, communication, cognition, aesthetics, and usability. The content can also be discussed as discourse.

A discourse consists of several voices, even when disguised in a monologic discourse (Bakhtin, 1981). These voices establish dialogical relations, which are extralinguistic, revealed in discursive particularities that point to broader contexts. As for example, "the forces that serve to unify and centralize the verbal-ideological world" (Bakhtin, 1981, p. 270). A unitary language is an expression of centripetal forces of language, which would be the Portuguese in all the Brazilian territory. In Amazon, heteroglossia was still resisting and Pereira and Medeiros explored the printed expressions of Nheengatu as the last manifestation of the many indigenous voices.

This manifestation is also a memory that reveals a narrative structure. Human beings are natural storytellers and every time we recount a memory, we place it in time and space in the form of a story, with characters, actions, and consequences, in such a way that it becomes meaningful (Polkinghorne, 1988). Therefore, "graphic memory" could also be conceived as dependent on some of the elements of narrative, one of which is space.

Farias argues that “graphic memory,” understood as a strategy for graphic design history, depends on data that is mainly visual or material in nature, and, being material, is also spatially situated and geographically located. Thus, the author discusses the possibilities of visualizing data in digital environments, using the development of a website in São Paulo city early print culture.

In addition, the research on archives would benefit from standardization and optimization of data collection. Moreira and Fonseca propose the creation of a digital datasheet for the analysis of archives that allows researchers to outline a graphic profile of an archive by observing the several variables that can be adapted according to the output of the desired information, allowing results of isolated or compared analyses of one or more archives. Similarly, research done outside the boundaries of a laboratory can benefit on the establishment of methods and procedures, including ways for organizing and presenting results. Following an information design approach, Queiroga and Farias sought to contribute for the discovery of general principles of Brazilian truck art.

Memories are also presented as new information about the role of João Francisco Madureira in Pará’s history of typography. Madureira dedicated himself to building a typography workshop in the early 1820s. Martins, Lima e Lima argue that Madureira assembled the press, cast types, which may be the first type design ever created by a Brazilian and printed commercial ephemera before the arrival of the typography bought in Lisbon, traditionally considered the first of the Province.

Memories take the form of relics that represent the time and the public that produced and consumed the magazine Chanaan during the years of 1936 and 1939. Azerêdo and Fonseca discuss these relics that take form as experimentation and graphic personality, the use of typography, lettering, photographs, photo compositions, and ads. The patterns that emerge using datasheets to systematize the results and graphic analysis reveal a range of graphics resource contributing to the study of the graphic memory of Espírito Santo.

Memories have a narrative structure to support the construction of meaning, which takes a broad perspective when Romani and Mazzilli embrace the comprehension of tactile images by blind readers.

The construction of meaning can also benefit from the information design through the organization, codification, and presentation of information. Thus, Moraes, Gonçalves, and Velloso discuss the LIBRAS Glossary as an example of a multimedia tool for users with disabilities, which considers enables reading, interaction and collaboration in cyberspace, regardless of the dominant linguistic perspective.

But memory can also benefit from the construction of meaning when visual clues activate memory. Construction of meaning is a complex task for the elderly especially when it assumes the form of taking-medication strategies. Silva and Spinillo discuss the information

artifacts as external memory aids and conclude that visual elements are essential in the recall process for taking medications.

Construction of meaning reaches all spectrum of human development, which can profit from information design. Thus, Coutinho, Lopes, Barbosa, and Cadena describe the creation of an educational environment conducive to stimulating and developing the cognitive potentialities that a visual channel incites. The authors explore the action of design, to encourage the relationship that it produces with graphic expressions of language, either image, texts or schemas, and the various levels of associated visual perception.

Memories, construction of meaning and narratives are intertwined and serve as poetics to design a story-telling game. Mota, Campello, and Souza created a game board and a set of cards for fictional writing and used it to produce children's books written and illustrated by the students.

The interaction between the students and the artifacts may encourage them to embrace the reading and writing experience. Hennes and Coutinho sought to provoke reflections on the role of Design/Education proposing an investigation of educational practices that encourage learners to do more than just read words.

This book ends with another provocation: Drawing or Design? Is Design a subject or a science? Providência contributes to the definition of designology arguing that through its historical process, design has been sacrificing its drawing cultural origin for other strategic and functional performances, by renouncing to the existential reflection translated into the interpreter language of its time.

Natal, 2019

The Editors

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Challenging Titans

proposing the triangle as a front of packaging warning nutrition labeling for Brazil¹

Carla Galvão Spinillo

INTRODUCTION

I would like to begin this chapter with a provocation: to compare medicines and industrialized food/beverage products. Medicines and industrialized food/beverage products seem to share the goal of promoting the health and well-being of the population. They are both presented in packages that comply with regulations and provide information on their composition (medicine information leaflets/list of ingredients and nutritional facts). The pharmaceutical and the food/beverage industries heavily invest in marketing and advertising their products (e.g., television ads, sales/free samples) which are sold through points of sale (e.g., pharmacies / supermarkets) and virtual/online shops. And finally, in Brazil the pharmaceutical and the food/beverage industries are regulated by the same agency of the Ministry of Health: the Anvisa (National Agency of Sanitary Surveillance).

From the point of view of information design, medicines and industrialized food/beverage products also ‘share’ problems in communicating information to their users/consumers. Poor legibility and readability of informative texts, the use of technical jargons and small typographic font size are problems common to medicines inserts, nutrition facts and lists of ingredients of food/beverage products.

Thus, information design solutions are needed to overcome the deficiencies in the representation of information about medicines and food/beverage products addressed to their users/consumers. The solutions should be part of the legislations for medicines and food/beverage products to ensure the quality of information for the population. True and useful information empowers users/consumers

¹ This chapter is a transcription of my keynote speech at the 2017 Information Design International Conference in Natal, Brazil. Thus, the content presented herein reflects my personal view on the subject.

to make conscious decisions about the consumption of medicines and industrialized food/beverage products.

Despite the similarities abovementioned, in Brazil the legislation for medicine information differs from those for industrialized food/beverage products. The regulation for medicine information obliges the pharmaceutical industry to inform users/patients about the undesirable effects of medications, warning on the possible risks to their health such as over dosage, adverse reactions and side effects. Also, the Brazilian legislation determines that medicine leaflets should differentiate the content for health professionals (technical content) and for patients, acknowledging their distinct information needs (RDC No 47, of 08/09/2009). Unlike medicine information regulation, the legislation in Brazil obliges the food and beverage industries to provide information to consumers through the ingredient list and nutritional facts table only (RDC 259/03 and 360/03). In case of products with ingredients that produce allergic reactions (e.g., gluten, nuts), producers should warn consumers on the product packaging. Nevertheless, the Brazilian legislation is silent about reporting nutrients in excess in food/beverage products that are harmful to people's health. Regular consumption of products that have nutrients in excess, such as sugar and sodium, can contribute to the development of diseases such as diabetes and hypertension.

In face of the need to review the Brazilian legislation on nutrition labeling for food and beverage products, I present in this chapter the proposal of a front of packaging (FOP) warning label aimed at alerting Brazilian consumers about unhealthy products. The proposal was developed by LabDSI-Laboratory of Design of Information Systems at the UFPR-Federal University of Paraná and IDEC (Brazilian Institute for Consumer's Defense). To set the ground, I initially put forward arguments for improving the actual Brazilian nutrition labeling, and then, I present the theoretical foundations of the proposed FOP warning label.

NUTRITION LABELING: INFORMATION IS A CONSUMER RIGHT

The concern about the population health and their eating habits are part of the agenda of governments and civil society worldwide. In Brazil, the overweight of the population has produced alarming data. Only in 2016, more than half of the Brazilian adult population (N=54%) were overweight, being 19% of them obese (Ministério da Saúde/Vigitel Brasil, 2016). As a possible result, from 2006 to 2016 there was an increase of 14% of cases of hypertension and 62% of cases of diabetes in Brazil. The increase of 18% in regular consumption of sweets by Brazilians in this period may be one of the factors associated with this national picture (Ministério da Saúde/Vigitel Brasil, 2016).

Despite this, the actual Brazilian legislation (RDC 259/03 and 360/03) restricts the aims of nutrition labeling to merely inform consumers about the nutritional properties of food/beverage products through list of ingredients and nutrition facts. On the other hand, the Pan American Health Organization (PAHO-WHO) advocates that adequate food labeling may lead to a decrease in the consumption of unhealthy foods, leading to improve eating habits, thus preventing diseases. In line with this, the Brazilian Consumer's Defense Code claims that people have the basic right to "adequate and clear information about different products and services, with a correct specification of quantity, characteristics, composition, quality and price, as well as the risks they may pose to consumers (Article 6 - III Código de Defesa do Consumidor). In this sense, we can assume that the information on the package of industrialized food/beverage products in Brazil does not support consumers' decision making for purchasing healthy products.

The current nutritional labeling in Brazil have deficiencies in typography and in graphic presentation of information. In a survey conducted by IDEC with 2,651 Internet users (IDEC, 2016), 40% considered the nutrition facts' table difficult to understand. Participants highlighted problems such as reduced font size (61% of responses), use of technical terms and numbers (51% of responses) and visual pollution (46.4% of responses). Another factor mentioned was that consumers have to perform calculations (e.g., percentage of nutrients in the portion) out of the nutrition facts' table to make sense of the data provided in the packages (41.6% of responses). The survey also pointed out that the majority of participants (93%) felt that front of packaging labeling would help understanding nutritional information and making healthier choices of consumption.

It is important to highlight that the mere inclusion of front of packaging nutrition labeling does not guarantee adequate information about the nutrients of processed food and beverage products. The front of packaging labels adopted in the USA (GDA: Guide Daily Amount system) and UK (Traffic Light system) are example of this. Both labels present nutrients (fat, saturate fat, sugar and salt) and calories (energy) displayed in numbers (e.g., Energy 1601 kJ, 383 kcal; Fat 22g, 31%). The Traffic Light system allude to traffic signs by employing the colors red, yellow and green to the nutrient information. They indicate the nutrient in excess (red), 'almost' in excess (yellow), and not in excess (green), in relation to a person's reference intake. Figure 1 shows examples of the GDA and Traffic Light systems.

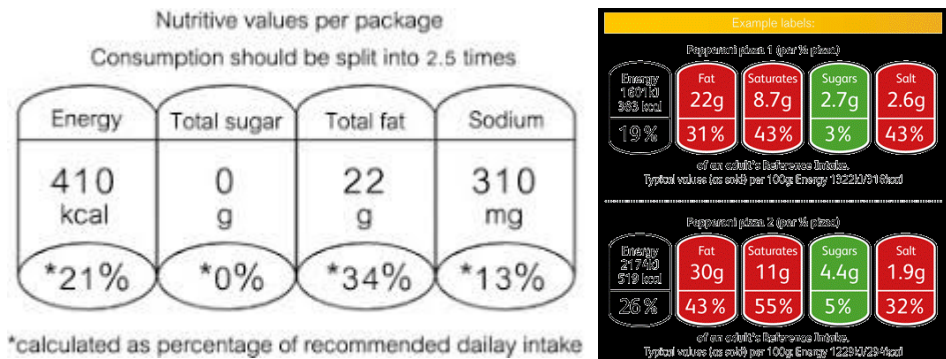


Figure 1: Examples of the GDA and Traffic Light systems of front of packaging nutrition labels.

The Traffic Light System seems to be a simple, informative and easy to understand system. However, it leads to doubts and confusion in the choice of healthy food/beverage products. For example, what would be the healthiest choice between products of the same category (e.g., bread, tomato sauce): the product with two 'greens' and two 'yellows', or the product with three 'greens' and one 'red'?

Thus, to be helpful, front of packaging labels should objectively alert consumers about nutrients present in excess that can harm their health. To this end, the Pan American Health Organization (PAHO/WHO) recommends the inclusion of warnings as front of packaging labels of food and beverage industrialized products.

FRONT OF PACKAGING NUTRITION WARNING LABELS

The use of warnings aims to effectively communicate information about potential risks and to reduce/avoid behaviors that compromise the safety of individuals (Wogalter, 1999, 2006). In the context of health and food safety, warnings are employed to alert consumers to the presence of high content of critical nutrients that may negatively affect their health.

In order to reduce the amount and extent of the risks to which the individual or population is exposed, warning messages concerning food/beverage products should therefore: attract the person's attention; be visible at a glance; and provide understandable and useful nutritional information about the product to be purchased. In addition to providing an awareness of the risks of excess critical nutrients at the time of purchase of the food/beverage product, the use of warning on the packaging also serves to enhance memory. It reminds the individual of

these risks at the time of use/consumption of the product. This may lead to a shift from a risk-eating behavior to a healthy-eating behavior in the future purchase of food products (INTA, 2012).

Alerting consumers about the excess of critical nutrients may lead them to prefer healthier or less harmful products to their health. Thus, the consumption of unhealthy products is discouraged. Considering that individuals are more motivated to avoid losses than to achieve gains (Levin et al, 1998), the warning approach to nutrition labeling becomes more convincing than a purely informative approach. Evidence shows that warnings with simple messages and symbols complement the nutritional information in packages and are observed more promptly. Also, when located on the front of packaging the warnings influence, and even change, the intent to purchase (Visschers, 2010; Chen et al, 2012).

Communicative function of warnings

For a warning to fulfill its communicative function, it is necessary to employ graphic resources to promote attention and facilitate the understanding of the message (Wogalter, 1999, 2006; Lesch, 2003). Contrast between figure-ground of the warning elements, use of white space surrounding the warning to isolate it from the visual environment, emphasis in scale, and color are graphic resources widely employed in warning messages. Some of them follow conventions for their use in warnings, such as color and shape (e.g., ISO 3864-2: 2016, ANSI/NEMA Z535.1 Safety Colors).

Color are used to inform the degree of danger and of expected obedience to comply with the warning (Wogalter, 1999, 2006), as for example, black and red colors. Black color is used in warnings to inform about high risk to which individuals or population are exposed, and whose obedience to the warning should be observed. In Brazil, the Ministry of Health/Anvisa determines the use of black color in the packaging labels of controlled medicines, which retention of their prescriptions by pharmacies is compulsory (RDC No. 333-2003). On the other hand, the red color informs about severe risks, but without need of obedience to the warning. It is worth mentioning that, in the context of food packaging, vibrant and warm colors, such as red, are widely used for being considered to stimulate appetite (Guimarães, 2001; Pedrosa, 2003). Thus, the red color in warning labels would not stand out from food packaging, therefore, not fulfilling the attention function.

Another convention for warnings regards the use of particular shapes. The most widespread conventional shape of warning is the triangle. It is found in warnings of product and service manuals, signs of built environments, computer systems, medicine information leaflets, among others. It is worth noting that in

the context of food safety in Brazil, the triangle with the letter “T” inside was used as a front of packaging warning label to alert consumers about transgenic food products. Therefore, the triangle is a familiar warning shape in food packaging to the Brazilian population, being part of their visual repertoire.

By considering the relevance of warning approach to front of packaging labeling to promote healthy eating behavior, our proposal employed the conventions of color and shape which are known to Brazilians and are aligned to international standards for warnings.

THE BLACK TRIANGLE PROPOSAL FOR THE FOP (FRONT OF PACKAGING) WARNING LABEL TO BRAZIL²

The proposal for the FOP (front of packaging) nutrition label to Brazil was developed based upon the literature on information design (Schriver, 1997; Lupton et al, 2008; Pettersson, 2010; Bringhurst, 2013), visual perception (Gordon, 2004; Kofka, 2013; Brown, 2017) and warning design (Lesch, 2003; Wogalter, 2006).

For the written information of the proposed nutrition label, we took into account aspects of legibility, readability and textual articulation (Schriver, 1997; Bringhurst, 2013), following typographic values of clarity, text-background contrast and emphasis.

As for the graphic representation of the warning symbol, the proposed label was grounded on the following principles of the Gestalt Theory of visual perception (Kofka, 2013; Gordon, 2004; Brown, 2017): the principle of contiguity (tendency to perceive elements encircled as forming a unity); the principle of continuity (tendency to perceive aligned elements as being grouped); and the principle of simplicity (facility in perceiving simple shapes than complex shapes). Moreover, the nutrition label for Brazil complied with the warning requirements of attention, visibility and indication of danger, together with the graphic requisites of:

1. Having a simple graphic shape
2. Using legible typographic font for the textual message
3. Presenting nutritional information clearly and comprehensible to the public
4. Being noticeable, standing out from the packaging visual environment
5. Belonging to the consumers’ visual repertoire.

² This proposal was co-designed with the information designer MA. Carlos U. Rojas.

Accordingly, we designed the warning symbol for the FOP nutrition labeling to Brazil as: a black triangle to indicate a mandatory/governmental warning, displayed within a white box to isolate the symbol from the elements of the food/beverage packages. Each warning text is presented in a single triangle to signal the nutrients in excess (sodium, sugar, total fats and saturated fats) and/or those that may harm the population health (trans fat and sweeteners). Thus, a food/beverage package may display up to six FOP warning triangles.

Regarding the warning messages, the term “HIGH IN” (ALTO EM in Portuguese language) is used to indicate the nutrients in excess on the food/beverage packages. In addition, whether there is sweeteners and/or trans-fats in a product, the triangle warning symbol presents the claim: ‘CONTAINS SWEETENERS’ (CONTÉM ADOÇANTE in Portuguese language) and/or ‘CONTAINS TRANS-FAT’ (CONTÉM GORDURAS TRANS in Portuguese language). The warning messages are set in sanserif typeface, upper case and centered alignment. The abbreviation of the Ministry of Health: ‘MIN. HEALTH’ (MIN. SAÚDE in Portuguese language) is displayed at the bottom of the triangle to indicate the governmental source of the nutrition warning. This is intended to increase the credibility of the warning message, and therefore, its acceptance by consumers, as evidenced in studies on similar initiatives (MINSAL, 2009). Figure 2 shows the triangle warnings for the FOP labeling designed to Brazil, and Figure 3 shows examples of the triangle warnings on fake food packages.

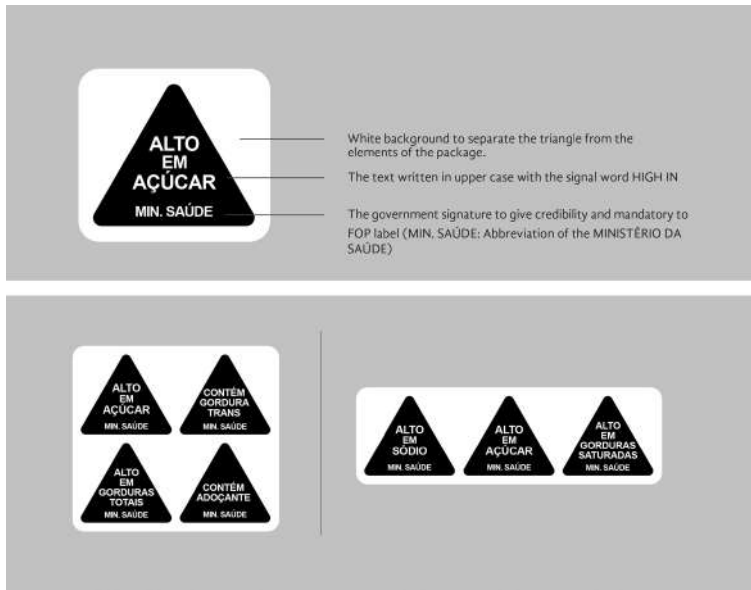


Figure 2. The triangle warnings for the FOP labeling designed to Brazil.



Figure 3: Examples of the triangle warnings on fake food packages.

EVALUATION OF THE PROPOSED WARNING LABEL: THE TRIANGLE IN CHECK³

Proposals for FOP labeling should be based on scientific evidence of their communication value. Therefore, qualitative and quantitative studies were conducted to evaluate the communication efficacy of the proposed FOP triangle warning label to Brazil. An interdisciplinary team of researchers (nutritionists and information designers) developed the studies' material/protocols. In the scope of nutritional information, among other aspects, the studies considered the comprehension of the nutrition warning messages and their effect on consumers' purchase intention of food/beverage products. Visibility, attention grasp, legibility and perception of risk conveyed by the warning symbol (black triangle) were the aspects verified in the scope of information design. For the purpose of this chapter, I briefly present here the overall method and results regarding the information design aspects of the qualitative and quantitative studies.

An integrated research approach integrating qualitative and quantitative studies was adopted to the evaluation of the warning triangle proposal for the Brazilian FOP labeling. The qualitative study was conducted through focus groups, followed by an expert panel. Next, the quantitative study was conducted through randomized controlled trials (Khandpur et al, 2018). Figure 4 shows a summary diagram of the integrated approach.

³ The qualitative and quantitative studies to evaluate the FOPL proposed were designed by the researchers of the IDEC, NUPENS and LabDSI/UFPR (Brazil) and funded by the Bloomberg Institute (USA)



Figure 4: Summary diagram of the integrated approach adopted in the evaluation of the proposal

In the qualitative study, 13 focus groups were conducted with a total of 101 participants varying in socio-economic status (ABCD classes) divided across the groups. The focus groups' sessions were carried out in the Brazilian regions: Southeast (São Paulo), Midwest (Goiania), South (Porto Alegre) and Northeast (Recife). The sessions were recorded in video and examined through content analysis technique. The results showed that the triangle FOP warning label performed satisfactorily in both nutritional and information design aspects. Participants of all focus groups were very receptive to the triangle as a symbol to alert them of the nutrients in excess in the food/beverage products. Following the focus groups, the expert panel was carried out with 10 professionals in the fields of psychology, pharmacology, medicine, nutrition, communication, education, law and information design. They discussed the results of the 13 focus groups and, then, determined adjustments in the proposed FOP labeling.

The adjusted version of the triangle FOP label was assessed in the quantitative study through two consecutive online surveys (randomized controlled trials) conducted with a total of 3,422 respondents. They also varied in socio-economic profiles (ABCD classes) and were residents in different regions of Brazil. The results ratified the outputs of the qualitative study, showing that the proposed triangle FOP label performed satisfactorily, receiving positive responses from the participants.

The results of the qualitative and quantitative studies provide evidence to support the proposal of the black triangle for the warning FOP label to Brazil.

The triangle FOP label has proved to effectively inform on nutrients in excess in food/beverage products, alerting Brazilians about the consumption of these products. These findings ratify the communicative efficacy of warning FOP nutrition labeling and are in alignment with PAHO/WHO recommendations on food safety.

FINAL THOUGHTS: CHALLENGING TITANS

In Brazil - like in any country - submitting proposals to regulate industrialized products (whether food/beverage or pharmaceutical products) is to face the Titans of the industry and of the government. With the triangle FOP warning labeling proposal was no different. The food and beverage industries have strongly reacted against the adoption of FOP warning nutrition labeling in Brazil, using their political influence in the various sectors of the society and government, as well as in the mass media and social media.

However, improving the quality of information on food and beverage products in Brazil is a longing for society. Hence, the Brazilian society organized through community leaders and non-governmental organizations has stood in opposition to the food and beverage industries, supporting the front of packaging nutrition warning labels. In this sense, IDEC led a national campaign (e.g., television shows/news, newspapers, social media, billboards) to support the triangle warning proposal for FOP labeling to Brazil. As part of the campaign, a petition was launched, receiving more than 50,000 signatures in favor of the triangle FOP warning label (Figure 5).



Figure 5: IDEC webpage announcing the signatures of the national petition to support the Triangle FOP warning label (<https://idec.org.br/rotulagem>)

Finally, I would like to conclude this chapter highlighting that the development of the proposal of a FOP warning label to Brazil was an enriching experience. Working in a multidisciplinary team, I had clearly seen the relevance of evidence-based information design and of information design for advocacy.

Information design plays a key-role in nutrition, bringing theoretical frameworks new to this field, thus, contributing to effective health communication.

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Infographics and narrative: exploring concepts

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INTRODUCTION

Our study had as a starting point the inquiry into the state of the art of infographics within the Information Design field. Our purpose was to determine what research on the topic is being carried out in Brazil, since it has been, with the purpose of determining what is being researched about this topic, in Brazil, since it has presented itself in the field with some recurrence. Subsequently, it was broadened in order to analyse the existing relation between infographics and narrative, once the word ‘Narrative’ cannot be treated as one of easy comprehension, as states Bal (1997), in other words, it cannot be used under the assumption that every person will understand it in the same way, requiring closer attention to the way it should be used.

To observe the relation between the infographics and the narrative, 28 articles were selected, among those published in the Infodesign Journal between the years of 2011 and 2017; and in the CIDI Proceedings of 2011, 2013 and 2015. Within this group, 12 did not make any mention to the word narrative and 16 cited the term but did not present any definition or concept, in order to give the reader an understanding of which line of thought was being approached in the text when the it was mentioned.

When it comes to figures, considering the two means of publication within the field of Information Design, it was noted that in 2011, out of 4 articles, only 1 used the term narrative. In 2012 there was only 1 publication that made mention to the word time-space narrative graphic. Five articles were published in 2013, 2 of which cited the expression; whilst in 2014, of the 4 articles present, 3 of them used the term narrative. In 2015, out of the 7 articles published, 6 mentioned it; in 2016 the word narrative occurs in only one quotation; and in 2017, out of 7 articles about infographics, 3 mentioned the term narrative. It is curious

to notice that the 7 articles from 2017 correspond to v.4, No 13¹ of *Revista Info-design*, an issue entirely dedicated to the theme of Complex information and Infographics.

These results suggest that there is a certain interest about the subject of infographics and narrative within the Information Design field. It can also be said that the term narrative was not used with a clear definition, which is unsettling, if we consider that “although everyone has a general idea of what narrative texts are, it is certainly not always easy to decide whether or not a given text should be considered narrative, partly or wholly” (Bal, 1997, p. 3).

This observation becomes intriguing when we raise questions such as: Which meaning does the term narrative incorporate? When used alongside the word infographics, which relation can we establish? As we detected this gap, we chose to tackle this issue, by bringing into the discussion the authors who, in some way, could contribute to the understanding of what an infographic is; as well as authors who would collaborate on the comprehension of what narrative is, so that we can then create a correlation between the two.

To that effect, the objective of this article is to contribute to the discussions within the field of design, pertinent to the theme of narrative, having as its object of study the infographic. The choice of infographics was influenced as much for their quality of presenting complex information in a clearer way, drawing near Information Design, as for the hope that the debate over the object of study does not become limited solely to the graphic aspects, as we often see.

The results gathered in this article reveal that there is no consensus as to what a narrative applied to the infographic is, making the understanding of it within the field of Information Design more difficult. Considering the diversity of existing terms and definitions, from several authors and their trends, it becomes crucial to create a parameter to generate more unambiguous discussions.

Thus, for a better comprehension of the concepts, some definitions about the infographics will be presented, to allow better understanding of the object of study, followed by the concept of narrative taken from different areas. Based on these definitions, we will examine how the terms were used in the articles selected within the field of Information Design.

¹ This volume can be accessed through the URL <https://www.infodesign.org.br/infodesign/issue/view/39>

BRIEF DEFINITIONS FOR AN UNDERSTANDING OF THE INFOGRAPHICS

In order to know better the object of study and have a few parameters to understand the breadth of this word, we present here some definitions of what an infographic is, since it is possible to find a great variety of descriptions for the term in the literature about the theme.

Many are the authors that attempt to explain the meaning of infographic. As the aim of this text is not to discuss whether the concept is right or wrong, but merely to display to the reader a few definitions that may aid them in the understanding of the relations which we intend to create here. Hence, we elected the interpretation proposed by Lima (2009), seeing that he stands out in the references found in the chosen articles; by (2005) and Lucas (2011), because they presented a definition for the concept considering the perspective of various authors; as well as Lankow, Ritchie and Crooks (2012), for posing the term “editorial infographics” and Rajamanickam (2005), for bringing a view of the object that goes beyond its graphics aspects.

Having said that, we noted that some of the articles analysed used as reference the definition proposed by Lima (2009), who in his master’s degree thesis defines the term infographics as “uma peça gráfica que utiliza simultaneamente a linguagem verbal gráfica, esquemática e pictórica voltada prioritariamente à explicação de algum fenômeno” (Lima, 2009, p. 23)². In addition to that, encompassing a bit more, the author presents a definition for journalistic infographics, from the viewpoint of journalistic design, in an attempt to make it clear that the infographic differs from traditional illustration in the way it relates to the text, for it would not be subordinated to a subject, but acting as an autonomous source of information, as he defines:

Um tipo de matéria jornalística onde o texto e a iconografia são interdependentes e a estratégia de leitura pode se desenvolver de forma não-linear, que se diferencia da iconografia tradicional pela possibilidade de se comportar como a fonte principal de informação na página (Lima, 2009, p. 26).³

² “A graphic piece that simultaneously uses the verbal graphic, schematic and pictorial language primarily meant to the explanation of some event.”

³ “A type of journalistic piece where the text and the iconography are interdependent, and the reading strategy may develop in a non-linear way, which differs from traditional iconography through the possibility of performing as the main source of information on the page.”

On the other hand, Ribas (2005) and Lucas (2011) agree that there is no consensus for the term infographics. In his article, Ribas (2005) tries to delimit the concept of infographics from authors belonging to the field of journalism, to establish differences and to allow for a clearer comprehension of the term. The definition posed by her states:

A infografia tem a função de facilitar a comunicação, ampliar o potencial de compreensão pelos leitores, permitir uma visão geral dos acontecimentos e detalhar informações menos familiares ao público, tendo como conteúdo explicações em diversos níveis de complexidade, apresentações de fatos ou acontecimentos, informações de funcionamento, descrições de processos. Esta definição, que consideramos a essência do conceito, apesar das diferenças, está contida no discurso de diversos autores do campo do jornalismo (RIBAS, 2005, p. 16)⁴.

Lucas (2011) suggests defining infographics being based on criteria from schematic language and in graphic-visual considerations. In his thesis, the author defines infographics trying to understand the term stemming from authors that explain it not only in the Portuguese language but also in English, Spanish, and French. Moreover, he establishes criteria that both define what an infographic is and also differentiates it from other graphic visual representations (RGV). Thus, his definition says:

A infografia é um tipo de RGV mista que tende a utilizar hibridamente outros recursos visuais (os infogramas) tendo por base visual um diagrama preparado a partir do esboço de um jornalista, pelo fato de ela ser o produto da combinação desenhada a posteriori entre o esquema (lógico-relacional) e a esquematização (visual-referencial), e totalmente suscetível de mudança de conteúdo, significação e sentido em casos de alteração nos níveis dos sintagmas e da forma da expressão (Lucas, 2011, p. 249).⁵

⁴ “Infographics have the role of facilitating communication, broadening the potential for comprehension by the readers, allowing a general view of the events and detailing information which are less familiar to the public, having as content explanations in several levels of complexity, presentation of facts or events, operating instructions, description of processes. This definition, which we regard as the essence of the concept, despite the differences, appears in the discourse of several authors from the journalism field.”

⁵ “Infographics is a type of mixed RGV which tends to utilize in a hybrid way other visual resources (infographics) having as its visual basis a diagram prepared from the outline by a journalist, due to the fact that it is the product of the combination (designed after the event) between the logical relational schema and the layout (visual referential), and completely susceptible to change in content, signification and meaning

What stands out in Lucas's (2011) proposition is his concern in setting infographics apart from other types of graphic visual representations (RGV), which would be interesting to investigate more appropriately in another research, to confirm whether these differentiations, and even the RGV configurations, can bring (or not) some contribution to the field of design.

For Lankow, Ritchie and Crooks (2012) the term infographics is an abbreviation for "information graphic." Besides, they claim that some use the term to refer to the type of format that has been widely adopted by this application, which is characterized for the use of illustration, wide and long typography, and vertical orientation to display a variety of facts. This characterization is referred to by the authors as "editorial infographics." The authors also explain that the infographic uses visual clues to communicate information and that they do not need to hold a certain amount of data, possess a certain complexity or present certain levels of analysis; but they can be as simple as a street sign that can provide you an indication or have a higher level of complexity.

According to Rajamanickam (2005, p. 2) "infographic" is the same as "information graphic," in agreement to what he quotes, "In the attention scarce world of today, information graphics (or infographics) have taken the media and communications industries by storm." For the author, building a visual representation of a piece of information means to filter the information in order to establish connections between them, observe if there are patterns, and then represent them in such a way that the recipient is able to construct an understanding with meaning, in other words, it goes beyond the issues on the graphics aspects of composition, striving to give the reader clear understanding of the content it intends to convey. The author deems that "information graphic reveals the hidden, explain the complex and illuminate the obscure" (Rajamanickam, 2005, p. 2).

Faced with the definitions presented, it can be noted that they emerge in diverse ways, coming from the perspective of each author. Ribas (2005) approaches his concept based on the authors from the field of journalism; Lucas (2011) proposes the definition of infographics as a graphic visual representation which has as support a diagram posed by a journalist; Rajamanickam (2005), who while in agreement with Lankow, Ritchie e Crooks (2012) that "infographic" is the same as "information graphic", grants that an infographic goes beyond the graphic aspects and must offer the reader clear understanding of the message; and Lima (2009), who constructed his concept taking in consideration the different resources of graphic language.

when there is alteration in the syntagma levels and in the expression form."

Therefore, in consonance to what was presented, it is possible to conclude that in the literature, not only there is no consensus over the term *infographics*, but also there is no accordance as for the definition of *infographics* since the concepts – at least the ones presented here – diverge. Furthermore, there are the problems in the translation from English to Portuguese and from Portuguese to English, which widen this ambiguity. According to Ribas (2005, p. 5):

No inglês, *graphics* é *diagram*, mas *diagram*, não é o mesmo que *chart* ou *graph*, as traduções corretas para ‘gráfico’, em português. Por outro lado, *chart* e *graph* podem ser *diagrams*, porém, o contrário não ocorre, ou seja, *diagram* não é o mesmo que *chart* ou *graph*. Se fizermos, portanto, a tradução correta do inglês para o português identificaremos que ‘*diagrama*’ não é sinônimo de ‘gráfico’, embora em nossa língua o seja. Isto nos permite sugerir que a tradução mais correta para a origem do conceito de ‘*info-gráfico*’ ou ‘*infografia*’, *infographics*, seja ‘*diagrama informativo*’.⁶

Additionally, it is necessary to remember that there are authors who consider *infographics* as a technique, a tool, a language, or yet, a format, according to Lankow, Ritchie and Crooks (2012). Taking this lack of boundaries for the term, it is natural, therefore, that designers also make use of the variety of definitions, as a reflection of the literature itself, which hinders the understanding of what an *infographic* is within the field of design.

NARRATIVE – A FEW CONCEPTS

In the introduction of *Routledge Encyclopedia of Narrative Theory*, the authors Herman, Jahn and Ryan (2005, p. ix) comment that “The past several decades have seen an explosion of interest in narrative, with this multifaceted object of inquiry becoming a central concern in a wide range of disciplinary fields and research contexts.” According to them, the studies regarding narrative gained strength in France, in the mid-sixties, with the development of the structuring theories of narrative, and since then, they have been attracting the interest of

⁶ “In English, *graphics* is *diagram*, but *diagram* is not the same as *chart* or *graph*, the proper translations for ‘gráfico’ into Portuguese. In contrast, *chart* and *graph* can be *diagrams*, and yet the opposite is not true. In other words, the *diagram* is not the same as *chart* or *graph*. Hence, if we accurately translate from English into Portuguese, we will notice that ‘*diagrama*’ is not a synonym of ‘gráfico,’ even know in our language it is so. This enables us to suggest that the most accurate translation for the origin of the concept of ‘*infographic*’ or ‘*infographics*’ (*infographics*) is ‘*informative diagram*.’”

many subjects, such as sociolinguistics, discourse analysis, communication studies, literary theory and philosophy, cognitive and social psychology, ethnography, sociology, media studies, artificial intelligence, amongst others.

Thus, given the vast diversity of the concepts about narrative, coming from distinct areas, and the contexts of each field, we will present some definitions intending to aid the comprehension of the meanings in the usage of the term narrative in the articles analyzed. Consequently, the goal here is only to bring the reader some definitions so that they can understand this amplitude.

Starting with the field of Semiotics, Greimas and Courtés (2013, p. 327) in their *Semiotics Dictionary*, define the term narrative “as that used to designate a narrative discourse of figurative nature, with characters that perform actions.” This concept has some basis in Vladimir Propp, author of the book *Morphology of the folktale* (1928), who defines the function as “the act of a character” (Herman, Jahn and Ryan, 2005), that is, actions that a character fulfills in the story.

According to Reis and Lopes, in their *Dicionário de Teoria da Narrativa*, the term can be understood in several ways:

Narrativa enquanto enunciado, narrativa como conjunto de conteúdos representados por esse enunciado, narrativa como ato de os relatar (cf. Genette, 1972, p. 71-2) e ainda narrativa como modo, termo de uma tríade de “universais” (lírica, narrativa e drama) que, desde a Antiguidade e não sem hesitações e oscilações, tem sido adotada por diversos teorizadores (...) (REIS and LOPES, 1988, p. 66).⁷

For the authors, the last definition will be of interest, the one which considers narrative as a literary form, once the other definitions can be contemplated by other terms such as narrations and story, or by concepts such as discourse. As Mieke Bal (1997, p.5) writes:

“A narrative text is a text in which an agent relates (‘tells’) a story in a particular medium, such as language, imagery, sound, buildings, or a combination thereof. A story is a fabula that is presented in a particular manner. A fabula is a series of logically and chronologically related events that are

⁷ “Narrative as wording, narrative as a set of contents represented by this wording, narrative as act of reporting them (cf. Genette, 1972, p.71-2) and even narrative as manner, term which belongs to a triad of “universals” (lyrical, epical and dramatic) which, since Ancient times and not without hesitations and oscillations, has been adopted by several theoreticians (...)”.

caused or experienced by actors. An event is a transition from one state to another state. Actors are agents that perform actions. They are not necessarily human. To act is defined here as to cause or to experience an event.”

Bal furthermore comments that to state that narrative text is one in which a story is told, implies that the text is not identical to the story since different texts can tell the same story, some being more literary than others. She exemplifies declaring that “Everyone in Europe is familiar with the story of Tom Thumb. However, not everyone has read that story in the same text. Where are different versions; in other words, there are different texts in which that same story is related” (BAL, 1997, p. 5).

In *Narratology: the form and functioning of narrative*, Prince (1982, p. 4), puts that “narrative is the representation of at least two real or fictive events or situations in a time sequence, neither of which, presupposes or entails the other”. Nonetheless, it is necessary to indicate that for Prince, even though the representation may be connected to time dimension, not all of them constitute a narrative. In addition to that, though many things can take time, its representations do not necessarily comprise a narrative. The author quotes the following example:

A fight can take a few minutes, and a trip can take a few hours yet neither

(5) There was a fight yesterday

nor

(6) It was a beautiful trip

constitute narratives: they do not represent the fight or the trip as a series of events but as one event. (PRINCE, 1982, p. 2)

In the field of Narrative Film, Aumont (2012, p. 106) defines that “a narrativa é o enunciado em sua materialidade, o texto narrativo que se encarrega da história a ser contada. (...) No cinema, compreende as imagens, palavras, menções escritas, ruídos e música...”⁸. As stated by the author, these elements increase even more the complexity of the film narrative, since elements without narrative value, such as the music, becomes a narrative element of the text through its presence alongside the image and dialogues.

Alternatively, in the *Dicionário Teórico e Crítico de Cinema*, Aumont and Marie (2003, p. 209) present the definition of narrative proposed by the French structuralist Gerard Genette, who points out three possible meanings for the word narrative:

⁸ “the narrative is the wording in its materiality, the narrative text is in charge of the story to be told. (...) In film, it encompasses the images, words, written mentions, noises, and music...”

(...) “O enunciado narrativo que assegura a relação de um acontecimento ou de uma série de acontecimentos”; “a sucessão de acontecimentos reais ou fictícios que são objetos desse discurso, e suas diversas relações de encadeamento, de oposição, de repetição etc.”; enfim, “não mais [o acontecimento] que se conta, e sim aquele que consiste no fato de alguém contar alguma coisa”. Genette e a maioria de seus sucessores concordam em restringir o emprego da palavra à primeira dessas significações (o segundo sentido corresponde então à história; o terceiro, à narração).⁹

Herewith, the author poses that in the works of film narratology, the idea of narrative acquired a few characteristics that define it, which are, in short: a narrative is closed, having a beginning, a middle and an end; it tells a story; someone or a semi abstract institution produce it; and its narrative unit is the event.

In the field of literature, Gancho (2006, p. 67) defines the narrative as a text in prose in which a story is told. It, in turn, does not exist without the facts, which are experienced by the characters, in a specific time and place. The author highlights that to be prose fiction it is required the presence of a narrator, who will be the organizing element of all the components and the middlemen between the story (the what is narrated) and the author, and between what is narrated and the reader.

In Linguistics, we underscore the contribution by Trask (2004, p. 204) towards the definition of the term as:

Narrativa é um texto que conta uma história. Uma narrativa difere da maioria dos outros tipos de textos pelo fato de narrar uma série conexa de eventos, reais ou fictícios, de maneira mais ou menos ordenada. Além dos tipos conhecidos de narrativas escritas, tais como os livros de histórias e os romances, existem narrativas orais, isto é, histórias que se contam falando.¹⁰

⁹ “(...) “The narrative wording which assures the relationship of an event or a series of events”; “the succession of real or fictitious events which are object of this discourse, and its diverse relationships of enchainment, of opposition, of repetition etc.”, once “no longer [the event] is told, but that in which consists the fact of someone telling something.” Genette and the majority of his successors agree about restricting the usage of the word to the first of these significations (the second meaning corresponds then to the story; the third, to the narration).”

¹⁰ “Narrative is a text which tells a story. A narrative differs from most other types of text for the fact it narrates a related series of events, real or fictitious, in a mostly orderly manner. Besides the well-known written narratives, such as storybooks and novels, there are oral narratives, that is, stories that are told through speech.”

The definition presented by Trask resembles the definition proposed by Gancho in the sense that it tells a story. Taking the later as a basis, when comparing the concepts as mentioned earlier, we can find some points in common. For instance, Gancho states that the narrative is a text that tells a story (similarly to Bal, Trask e Aumont and Marie), where the facts, which we may call events or happenings (as proposed by Prince e Aumont and Marie), are experienced by characters (as put by Greimas and Courtés), in a specific time (according to Prince) and place.

Evidently, this is not an attempt to create a general definition for the term narrative, but merely to show that despite the distinct areas, we are able to find points that intersect and permeate the authors' definitions and that, in some way, it is interesting to observe how they treat the terms which appear to have singular definitions in their areas.

Therefore, to use the word narrative without having a clear idea of what the word is representing within the text is to provide the reader the possibility of diverse interpretations, which hinder its understanding, seeing that if there are different definitions depending on the field of study, which of them is being used by the designer when they relate it to infographics? Also, if we consider that there is no difficulty in the comprehension of the term, would it be possible to declare that the definition of narrative has met accordance among designers?

METHODOLOGY

The methodology procedures adopted in the research took on the division in two phases. Phase 1 aimed at identifying what were the articles in the field of Information Design in Brazil discussing regarding infographics. With the results of this first phase, we were able to notice that there was a gap in the studies about the topic which approached it in a more specific way the area of narrative.

Thus, a need to investigate the selected articles emerged, to understand how the topic of the narrative was being discussed alongside infographics. This moment comprised the objective of phase 2.

Research question and topic

In phase 1, the initial research question was steered from the question 'What does recent research in Brazil discuss regarding infographics in Information Design?'. From this starting point, the search in the research bases was lead by the topic INFOGRAPHICS.

The choice for analyzing Infographics, which make use of images, illustrations, and icons, in addition to texts, animations, interactivity, happened because

they have the objective of presenting complex information in a more precise way, coming closer to Information Design.

In phase 2 the guiding question was ‘How do the articles about Infographics, in the field of Information Design, treat the term narrative?’. Based on this question, the topic used for the search was the word NARRATIVE.

Research Bases

Since the purpose of the investigation was to examine the panorama of recent research carried out and published in the field of Information Design in Brazil, the eye was directed towards the selected articles, starting from 2011 in the Revista InfoDesign – Revista Brasileira de Design da Informação (Brazilian Journal of Information Design) and the CIDI - Congresso Internacional de Design da Informação (Information Design International Conference) Proceedings. Even though the 8th CIDI took place in the year of 2017, it was not included in the research bases (Table 1), for the Proceedings of the conference had not been published at the time this text was written.

It is important to mark that the research bases were the same for both phase 1 and phase 2.

Research Bases		
Year	Revista Infodesign	CIDI Annals
2011	v. 8 Nº.1; Nº.2; Nº.3	5 th CIDI Annals
2012	v. 9 Nº.1; Nº.2; Nº.3	---
2013	v. 10 Nº.1; Nº.2; Nº.3	6 th CIDI Annals
2014	v. 11 Nº.1; Nº.2; Nº.3	---
2015	v. 12 Nº.1; Nº.2; Nº.3	7 th CIDI Annals
2016	v. 13 Nº.1; Nº.2 (<i>Histories and Theories of Information Design</i>); Nº.3 (<i>Edição Especial - P&D 2016</i>)	---
2017	v. 14 Nº.1; Nº.2 (<i>Edição Especial - CIDI/CONGIC - 2017</i>); Nº.3 (<i>Informações complexas & Infográficos</i>)	---

Table 1: Research bases used for phases 1 and 2.

Inclusion and exclusion criteria

During phase 1 the inclusion criteria admitted for the choice of the articles took in consideration those published in its full versions or presented as posters in the stipulated research bases, as well as those that displayed the word INFOGRAPHICS. The exclusion criteria considered the articles that were outside the

research bases, articles where only the summary had been published, and articles published in languages other than English, Portuguese, Spanish or French.

Over phase 2, having the articles already selected in phase 1 as a starting point, the inclusion criteria admitted considered the articles that presented the word NARRATIVE. The articles that did not contain this term were excluded from the analysis.

Selection of Material

In accordance to the inclusion and exclusion criteria aforementioned, the result of the selection of material in Phase 1 produced 28 articles compiled, 14 of them from the Revista InfoDesign (Table 2), 4 from the 5th CIDI Proceedings (Table 3), 4 from the 6th CIDI Proceedings (Table 4) and 6 from the 7th CIDI Proceedings (Table 5).

Revista InfoDesign		
Year	Authors	Title
2011	--	--
2012	Juliana Carvalho, Isabella Aragão	<i>Infographics: Concept and Practice</i>
2013	Milena Quattrer, Anna Paula Silva Gouveia	<i>Color and Infographic: The Information Design in schoolbook</i>
2014	Mariana Lapolli, Tarcísio Vanzin, Vania R. Ulbricht	<i>Organization of information in infographics storytelling on the web focused on the process of teaching and learning</i>
	Paula Couto Lopes de Araujo Faria, Virginia Tiradentes Souto	<i>Graphic language of online infographics of Brazilian government – A case study of Portal Brasil</i>
	Júlia Rabetti Giannella, Sandra Souza	<i>Design and journalistic mediation in the production of infovis: presentation of an analysis model for online infographics</i>
	Nadia M. Laschko, Vera M. M. Damazio, Edna L. O. Cunha Lima, Joaquim M. F. Andrade	<i>Graphic repercussion of the passage of the Graf Zeppelin by Brazil: infographics published in newspapers</i>
2015	Ricardo Cunha Lima	<i>What are infographics in journalism?</i>
2016	Bolívar Teston de Escobar, Carla Galvão Spinillo	<i>Visual rhetoric in health infographics</i>
2017	Hanna França Menezes, Carla Patricia de Araujo Pereira	<i>Functions of color in infographic: a categorization proposal applied to the analysis journalistic infographics</i>
	Ana Carolina de Araujo Silva, Eduardo Fernando Uliana Barboza	<i>Multimedia infographics: interactive possibilities of a new online journalistic genre</i>
	Mariana Lapolli	<i>Infographics beyond objectivity</i>
	Íkaro Santiago Câmara Silva Oliveira, Angélica Porto Cavalcanti de Souza, Solange Galvão Coutinho, Eva Rolim Miranda	<i>Exploring concepts - bibliographic research and elaboration of an infographic about the Information Design field definitions</i>
	Fabiano de Miranda, Rafael de Castro Andrade	<i>Pensar Infográfico (Thinking Infographics): a proposal of introductory teaching of infographics from the perspective of graphic language</i>
	Andresa Richetti, Liane Roldo	<i>Conceptual maps and glossary based on terminology for informational system: case of cast iron</i>

Table 2: Articles selected from the Revista InfoDesign (2011- 2017) for Phase 1.

5 th CIDI Annals		
Year	Authors	Title
2011	Milena Quattrer, Anna Paula Silva Gouveia	<i>The use of colors in scientific divulgation infographics</i>
	Uriá Fassina	<i>Infographics contributions to the content assimilation process on typography</i>
	Helder A. T G Cardoso, Luciano Adorno, Richard Perassi Luiz de Sousa	<i>Infographics in the era of digital information: interactivity applied in e-readers.</i>
	Tânia L.K. da Silva, Eduardo Cardoso, Fabiano V. Scherer, Ricardo M. Costa	<i>The infographics as a teaching resource on Design of Information Systems and Communication</i>

Table 3: Articles selected from the 5th CIDI Proceedings for Phase 1.

6 th CIDI Annals		
Year	Authors	Title
2013	Rafael de Castro Andrade, Carla Galvão Spinillo	<i>Interactive and animated journalistic infographics: analytic study about infographics health</i>
	Glenda Gomes Cabral, João Paulo Soares da Silva	<i>Infographics: A complementary way and fun to teach scientific methodology for designers.</i>
	Marcos Antonio de Lima Filho, Hans da Nóbrega Waechter	<i>The design of an interactive infographic for tablet and the need for new models of design</i>
	Ary Moraes	<i>The visible and invisible in journalistic infographics: A reflection from the Gombrich notion of schema and representation</i>

Table 4: Articles selected from the 6th CIDI Proceedings for Phase 1.

7 th CIDI Annals		
Year	Authors	Title
2015	Bruna Ciafrei Rinaldi, Cassia Leticia Carrara Domiciano	<i>Infographics: Trends in editorial design from the magazine Superinteressante</i>
	Gabriele M. S. Santos, Silvio B. Campello, Solange G. Coutinho	<i>Variables for analyzing interactive infographics: a descriptive study of educational artefacts for secondary school</i>
	Carla Cristina da Costa	<i>A teaching method to develop infographics based on visual thinking and design thinking</i>
	Rafael de Castro Andrade, Carla Galvão Spinillo	<i>Understanding in animated and interactive journalistic health infographics</i>
	Ricardo Cunha Lima, Rafael de Castro Andrade, André Monat, Carla Galvão Spinillo	<i>The adaptation of journalistic infographics: the relationship between on-line and printed versions</i>
	Daniel Nogueira, Vera Lúcia Nojima, Frederico Braida	<i>Rethoric of design: visual discourse and persuasion in the production of infographics</i>

Table 5: Articles selected from the 7th CIDI Proceedings for Phase 1.

On Phase 2, starting from the articles previously selected on the first phase, the adopted cut considered solely the articles which contained the word NARRATIVE, reducing the corpus for analysis to 15 articles, 7 of them from Revista InfoDesign (Table 6), 1 from the 5th CIDI Proceedings, 2 from the 6th CIDI Proceedings and 5 from the 7th CIDI Proceedings, as seen in Table 7.

Content Analysis

On Phase 1 the analysis of content considered three aspects:

- The objective – in order to verify what is being studied;
- The methodology – we sought to map the approaches used and/or examine how the authors carried out the research;
- The results found – observe if the research succeeded in achieving the proposed objectives or if the theme demands further research.

The analysis of content during Phase 2 considered how the authors made use of the term narrative in the articles.

Revista Infodesign		
Year	Authors	Title
2014	Mariana Lapolli, Tarcísio Vanzin, Vania R. Ulbricht	<i>Organization of information in infographics storytelling on the web focused on the process of teaching and learning</i>
	Júlia Rabetti Giannella, Sandra Souza	<i>Design and journalistic mediation in the production of infovis: presentation of an analysis model for online infographics</i>
	Nadia M. Leschko, Vera M. M. Damazio, Edna L. O. Cunha Lima, Joaquim M. F. Andrade	<i>Graphic repercussion of the passage of the Graf Zeppelin by Brazil: infographics published in newspapers</i>
2015	Ricardo Cunha Lima	<i>What are infographics in journalism?</i>
2017	Hanna França Menezes, Carla Patrícia de Araújo Pereira	<i>Functions of color in infographic: a categorization proposal applied to the analysis journalistic infographics</i>
	Ana Carolina de Araújo Silva, Eduardo Fernando Uliana Barboza	<i>Multimedia infographics: interactive possibilities of a new online journalistic genre</i>
	Mariana Lapolli	<i>Infographics beyond objectivity</i>

Table 6: Articles selected from Revista InfoDesign for Phase 2.

5 th CIDI Annals		
Year	Authors	Title
2011	Helder A. T G Cardoso, Luciano Adorno, Richard Perassi Luiz de Sousa	<i>Infographics in the era of digital information: interactivity applied in e-readers.</i>
6 th CIDI Annals		
Year	Authors	Title
2013	Rafael de Castro Andrade, Carla Galvão Spinillo	<i>Interactive and animated journalistic infographics: analytic study about infographics health</i>
	Ary Moraes	<i>The visible and invisible in journalistic infographics: A reflection from the Gombrich notion of schema and representation</i>
7 th CIDI Annals		
Year	Authors	Title
2015	Bruna Ciafrei Rinaldi, Cassia Leticia Carrara Domiciano	<i>Infographics: Trends in editorial design from the magazine Superinteressante</i>
	Carla Cristina da Costa	<i>A teaching method to develop infographics based on visual thinking and design thinking</i>
	Rafael de Castro Andrade, Carla Galvão Spinillo	<i>Understanding in animated and interactive journalistic health infographics</i>
	Ricardo Cunha Lima, Rafael de Castro Andrade, André Monat, Carla Galvão Spinillo	<i>The adaptation of journalistic infographics: the relationship between on-line and printed versions</i>
	Daniel Nogueira, Vera Lúcia Nojima, Frederico Braida	<i>Rethoric of design: visual discourse and persuasion in the production of infographics</i>

Table 7: Articles selected from the CIDI Proceedings for Phase 2.

RESULTS

Concerning the use of the word Infographic, we noted a multitude of terms used, among which we can cite: Infographics, digital infographics, multimedia Infographics, journalistic Infographics, Animated and interactive journalistic Infographics, Infographic narratives, Infovis, Infographic and multimedia Infographic. This diversity found in the articles is aligned with the thinking of Ribas (2005) and Lucas (2011) regarding the issue of there being a lack of consensus in the use of the word infographic. We can see, therefore, that this variety may be a reflex of what the literature shows.

The extensive amount of terms available causes the reader to assume that there are different definitions. However, as we examined the articles, we noticed that of the 15 studies analyzed, 4 of them used as its parameter to define infographic what Lima (2009) proposes, 1 author presents its definition stemming from

another article, which uses Lima as a reference. In addition to these, 3 articles did not define the term infographic, 3 put forward definitions but did not mention the author and 4 provided a definition based on several authors, amongst which, Lima (2009).

As we identified that many articles use Lima (2009) as a basis, we were able to notice an indicator that the authors of the articles made an attempt at using a definition which was closer to their area, since Lima proposes his concept having as a starting point authors from the field of Design, or even that there is a specific channelling regarding the choice and use of the term. In addition to this, noticing that a few authors did not define what an infographic is, or that they did not present the reference for the definition, reveals that there may be some difficulty regarding the theme.

What is more, we detected that the term journalistic infographics occur in 5 articles, which can be an indicator of converge with the area of Communication, since it is possible for this field to be already taking steps towards the construction or definition of the term for its area, if we take into consideration the references in the article by Ribas (2005) and the doctorate thesis by Lucas(2011), in which, among other things, the concept of Infographics is discussed.

It is also noted the use of the terms digital infographics and multimedia infographics, as seen in distinct articles, where digital infographics is defined as “uma forma de comunicação visual informativa, que usa de meios audiovisuais para a otimização da transmissão da informação, de modo que a mensagem seja facilmente entendida pelo usuário” (Cardoso, Adorno and Sousa, 2011, p. 1)¹¹ and multimedia infographics, which according to Silva and Barboza (2017, p. 345), would be an informative cyber journalistic genre, but that “também proporciona a interpretação dos fatos e, em muitos casos, de forma dialógica, por ser essencialmente interativo”¹².

Faced with the absence of a consensus for the term infographics, what can we say about the terms cited above? Would they be the same type of infographics? The conceptual questions do not seem to have such simple answers since, according to Abreu (2013, p.12) digital or multimedia infographics would be the same

¹¹ “A type of informative visual communication, which makes use of audio-visual means to optimize the conveying of information, in such a way that the user easily understands the message.”

¹² “It also fosters the interpretation of the facts and, often, in a dialogic manner, since it is essentially interactive.”

thing, differing from “su hermana pequeña, la infografía tradicional”¹³ through the incorporation of audio-visual resources, or even photographs, maps, graphs, moving images, sounds, in a single product.

It can be observed, therefore, that even before such diversity (of terms and definitions) it is necessary to find parameters for the use of the word and its meaning, so that it is possible to create some uniformity when the topic is dealt within the realm of Design, since the absence of a common definition only hinders, even more, the understanding of an object of study, in addition to allowing for a wide range of interpretations, since the Infographic comes very close to other forms of representation that make use of text and image.

On the use of the term narrative, before we begin our remarks, we would like to clarify that we believe that the objective of the analyzed articles was not to discuss narrative. We do not intend to criticize any article or author regarding the way they used this word in their texts. Our view on them seeks only to understand, within Information Design, how the term narrative is being used in the articles that also deal with infographics.

Having said that, we noticed that the articles presented the use of the word narrative in different ways, among which we have: infographic narratives, visual narratives, non-linear complex graphic narratives, sequential narrative, narrative visualizations, journalistic narratives, digital narrative, interactive narrative and multimedia narrative. We could not find in the articles a definition for these terms, which leaves the reader free to create their understanding, since, in the literature presented here, we could not find such definitions either.

To exemplify, we cut some excerpts from articles that cite the term. They are:

Nas **narrativas infográficas**, caracterizadas pela associação de imagens e textos simples e objetivos, as informações são organizadas de maneira que o intérprete possa visualizar aquilo que é mais importante (Lapolli; Vanzin and Ulbricht, 2014, p. 40, grifo nosso).¹⁴

Juntos, os dois gradientes indicam resultados entre forças que um mesmo dispositivo **infovis** exerce para explicar seqüências de informação, segundo narrativas e discursos jornalístico-editoriais, e propiciar ao usuário a exploração do conteúdo a partir de percursos mais autônomos, sempre, no entan-

¹³ “Its little sister, the traditional infographics.”

¹⁴ “In the **infographic narratives**, characterized by the association of simple and objective images and texts, the information is organized is such way that the reviewer can visualize that which is more important) (Lapolli; Vanzin and Ulbricht, 2014, p. 40, our emphasis).”

to, dentro de limites preestabelecidos pelos produtores da informação (Gianella and Sousa, 2014, p. 314, grifo nosso).¹⁵

Em um contexto de transformação constante das tecnologias e, conseqüentemente, das **narrativas jornalísticas, a infografia multimídia apresenta-se mais que uma possibilidade complementar de informação. Trata-se de uma narrativa e um gênero completamente novo**, independente, com características próprias e com grande potencial para atender as demandas de um novo leitor/consumidor de notícia, menos interessado em ser somente informado e mais propenso a participar da construção da notícia (Siva and Barboza, 2017, p. 351, grifo nosso).¹⁶

In the first two excerpts, it is possible to notice that the term narrative can be interpreted in different ways. In the first example we can consider the narrative as a story, or as Bal (1997) puts it, as a text in which someone tells a story in a specific medium, in this case, using texts and images. In the second example, however, the term narrative can be referring to journalistic narrative (which we did not contemplate in our definitions) or it can also be taken as in agreement with Trask's (2004) concept, which states that the narrative is a text that tells a story, but that it differs from other texts because it narrates a series of connected events, real or fictitious, in a mostly orderly fashion, in this case, following the specificities of the journalistic-editorial discourse. In the third excerpt, the concept of narrative comes close to the one that Reis and Lopes (1988) define for the narrative while wording, as the act of reporting, differing from the meaning ascribed to the previous excerpts. Here, the multimedia infographics would not only be a complement to the information but a new way of describing the events, "independent and with specific characteristics."

In another example, it would also be possible to use the term narrative associated to what Greimas e Courtés (2013) state, since in examples of infographics

¹⁵ "Together, the two gradients indicate results between forces that a single device **infovis** wields to explain sequences of information, according to journalism-editorial narratives and discourse, and to foster for the user the exploring of content from more autonomous paths, always, however, within limits pre-established by the producers of the information (Gianella and Sousa, 2014, p. 314, our emphasis)."

¹⁶ "In a context of constant transformation of the technologies and, consequently, of the **journalistic narratives, multimedia infographics presents itself as more than a complementary alternative of information. It is a brand-new narrative and genre**, independent, with specific characteristics and great potential for meeting the demands of a new reader / consumer of news (Silva and Barboza, 2017, p. 351, our emphasis)."

presented in the article it is possible to see characters in action (Rinaldi and Domiciano, 2015, p. 1067). In the article by Rinaldi and Domiciano (2015) it is striking that the objective is to analyze the editorial design of the infographics, starting from the concept of transmedia narrative, where, however, the narrative itself is not analyzed in the article.

In another case, we could associate the concept of the narrative according to Aumont (2012) who defines his concept within the field of narrative film. As Moraes (2014) does not present an image of the infographic in his article, we assume that they may have been created from film language, since the author comments about the narrative's organization, which in this case, may have followed the rationale of film narrative.

No segundo caso, as representações aparecem combinadas à perspectivas produzidas a partir de técnicas de representação variadas, em escalas distintas e dispostas fora da **lógica sequencial da narrativa**, usando, portanto, sintaxe própria. Neste grupo, cujo caso mais agudo é o do trabalho publicado pelo jornal Daily Mail, estão aqueles publicados pelos jornais Aamulehti, The Independent, New York Post, La Prensa Grafica, Kleine Zeitung, El Universal, El País, Ekstra Bladet, Daily Express, Dagens Nyheter, Aujourd'hui em France e ABC. Este grupo pode ser identificado como o dos infográficos "comprometidos" - aqueles cujo caráter de confiabilidade acaba comprometido pela lógica peculiar que adotam, pela falta e coerência visual (expressa na paleta de cores, proporções etc.) que manifestam, ou ainda pela resistência dos críticos aos clichês oriundos do cinema de ação utilizados na **narrativa visual** que desenvolvem (Moraes, 2014, p. 7, grifo nosso).¹⁷

¹⁷ "In the second case, the representations appear combined to perspectives produced from different representation techniques, in distinct scales and arranged differently from the **sequential logic of the narrative**, using, therefore, its syntax. In this group, whose most poignant case is the one of the works published by the Daily Mail newspaper, are the ones published by the newspapers Aamulehti, The Independent, New York Post, La Prensa Grafica, Kleine Zeitung, El Universal, El País, Ekstra Bladet, Daily Express, Dagens Nyheter, Aujourd'hui en France and ABC. This group can be identified as the one with the "compromised" infographics – those whose reliability is compromised by the peculiar rationale adopted, for the lack of visual coherence (expressed in the color palette, proportions, etc.) that they exhibit, or even by the resistance of the critics to the clichés deriving from action movies used in the **visual narrative** that they develop. (MORAES, 2014, p. 7, our emphasis)."

We also observed that some articles used the term narrative in the sense of story, and that, in this case, very close to the one Trask (2004) defines. Perhaps this proximity is founded in what Lankow, Ritchie and Crooks (2012, p. 21) put:

Narrative an approach to information design that seeks to guide the viewers through a selected set of information that tells a story. This is best used for infographics that communicate value judgments and are designed to leave the viewers with a specific message to take away.

It is possible that this is the general idea concerning narrative that many designers adopt, the one where it tells a story, and despite it not being clear in their texts, there is a consensus that this idea extends when the term is used. However, as the use of the word narrative appears in different contexts, it is difficult to accurately associate all the meanings assigned to it. Hence, it would not be interesting for the reader to look up the definitions in order to be able to understand the meaning of a term within a specific context. Herman, Jahn and Ryan (2005) in their Routledge Encyclopedia of Narrative Theory point out that:

However, the very predominance of narrative as a focus of interest across multiple disciplines makes it imperative for scholars, teachers, and students to have access to a comprehensive reference resource — one that cuts across disciplinary specialisations to provide information about the core concepts, categories, distinctions, and technical nomenclatures that have grown up around the study of narrative in all of its guises.

We can see that the interest for the studies about narrative is on the rise in several subjects, including the field of Design. Moreover, as the subjects try to find their place inside this study, it is necessary for the Design also to define its concepts and nomenclatures so that the researchers in the area can standardize the understanding about the term.

Thus, we can conclude that the results for both the research on narrative and the examination of the term infographics, point towards a struggle to relate the literature with what is being published, since the diversity of terms and concepts found to hinder the comprehension of the term regarding the area and, consequently, the creation of some consistency in the thinking within the field.

CONCLUSIONS

One of the first observations of the scenario examined is that the theme of infographics has been gaining space in the research within the field of Information Design. Progressively, more and more papers have been published, being related to and researched with diverse themes.

With the examination of the theme distribution in which the infographics currently related, it was possible to observe that the articles dealt with the issues of graphic aspects (not that these are not important), but they did not analyze more closely how the narrative is used, in the infographic, to convey information, or even, which issues concerning narrative the designer must observe, know about, think of, when creating an infographic.

If we consider the narrative from the viewpoint of Bal (1997) and Gancho (2006), where the narrative text tells a story, and also, from the perspective of Greimas and Courtés (2013), where the characters perform actions in the story, in a time sequence as proposed by Prince (1982), we could ask: who are the characters? Which do they experience the facts? At what time? In what place? We could even ask: is it possible that when we associate the term narrative to what we consider to be an infographic, we are contemplating telling a story, or just informing the reader in a less complex way? These are questions that still need more profound reflections so that we can reach an agreement about what we should take into consideration as a narrative in the context employed within Information Design.

Apparently the proposal set forward here has no intention to immediately determine an author to use as basis for the definition of the term narrative, but we hope that new reflections emerge concerning the conceptual issues in the field and the breadth of significations that may affect the comprehension of content, since we cannot just use a term expecting that everyone understands it in the same way. If there is a consensus within the area it is because we have already established the parameters for the understanding of this term, but which are they? The same happens when it comes to the use of the word infographics, for, if there are no difficulties to its comprehension within the realm of Design, it is because its definition has already reached an agreement amongst designers.

As we could see, the term narrative is too broad and is part of many subjects, hence, independent of the object, to make use of this term within any area, it is necessary to define parameters that will guide the discussions. What we can see in the field of Design is that there is no consensus concerning what a narrative applied to infographics is. The standardization in the use of the term would make the understanding more comfortable, and maybe, it would facilitate an understanding of the concept of narrative. To clearly understand the medium, how it works, if there are differences between the printed and digital infographic, are issues that directly interfere with the understanding of the narrative.

Thus, we can say that other studies are necessary, to look deeper into the issue of narrative alongside Information Design and infographics because there is no precise definition regarding it. These studies will also help the Design to choose an area to anchor itself or even to establish its parameters when using the terms analyzed here.

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Information Design and Infography

contributions to enhance audiologists through digital educational material

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INTRODUCTION

The Frequency Modulation System (FM) is an educational tool developed for children with hearing impairments, users of hearing aids and/or cochlear implants, which aims to improve the comprehension of the speech signal in noisy environments, reverberating and the distance between the individual and the sound source, mainly in the school environment (Blasaca, Ferrari and Jacob, 2006; Queiroz-Zattoni, 2011; Jacob et al, 2012). It is a feature of assistive technology consisting of two parts: transmitter and receiver. In the school routine, the transmitter captures the teacher's voice through a microphone and leads it to the receiver – device installed next to the student's hearing aid. Its goal is to improve communication among the hearing loss, teachers, colleagues and family members. (Brazil, 2015; Alves, 2016).

It is understood by assistive technology, according to the Technical Aid Committee (CAT, 2009, p. 9), products, resources, methodologies, strategies, practices, and services that promote autonomy, independence, quality of life and social inclusion of people with disabilities or reduced mobility.

For years, the inclusion of the FM System in regular classrooms benefits children with hearing impairment. However, its use became more accessible through the incorporation of the FM System to the Brazilian National Health System (SUS), which occurred from the publication of the Decree 1,274, from 25 June 2013, which includes the FM System in the Table of Procedures, Medicines, Orthotics, Prostheses and Special Materials (OPM) (Brazil, 2013). Since its implantation until December 2017, SUS has made available around 8,914 devices for the population. Because it is a device considered high cost, training actions that favor its proper use and avoid the abandonment or disinterest on the part of

the user in using this tool are essential to avoid problems for public health.

For the proper implementation of a Program of Concession, Adaptation, and Monitoring of the FM System in students with hearing impairment in Brazilian schools it is necessary an intersectoral work, characterized by a careful articulation between the Education and Health Systems. Network actions must integrate the different levels of attention of the person with hearing loss, as the inter-ministerial policy Live Without Limits. (SDH-PR/SNPD, 2013)

The training of the professional active in Auditory Health Services, as to the use of the equipment is of fundamental importance, as well as its constant improvement. Just so all the recommendations proposed by the Ministries of Health and Education can be gradually deployed and the student with hearing loss can have the practical benefit with this type of assistive technology.

In Brazil, because of the sizeable territorial extension and, mainly, due to the differences in vocational training, the need to create educational programs in the area of health becomes increasingly necessary (Ferrari et al., 2010). In this direction, the design can, in different aspects, contribute to a more effective educational action in health, through the development, in multidisciplinary teams, of educational materials and various informative.

Lopes, Coutinho and Barbosa (2012) concluded in his study about the contribution of design methodologies to the Pedagogical Practice that there is a need to broaden and strengthen the research that articulates intervention processes of basic educational design and with non-specialists in the area. The methodological arguments of the Information Design (ID) are the most appropriate for such processes, as they present a “systematic, organizational and prospective vision” (Coutinho and Freire, apud Lopes, Coutinho and Barbosa, 2012). Still, according to the same authors, Information Design’s assignments help with the identification of problems, on evaluation and analysis of usage situations, and on the consequent improvement of information systems in general.

Therefore, actions in design in the organization and information structuring and the process of conception, planning and evaluating of such educational tools, as well as the performance of multidisciplinary team focused on the needs of users are indispensable (Fassina, Cavalcante and Andrade, 2009; Oliveira, Coutinho and Campello, 2013).

It is the area of the Information Design that houses these actions in design and education, guided by the effective communication of varied content to users also diverse. This is why the Information Design is focused on this article, which presents the development of a website, the FM System Portal, available at the electronic address www.portalsistemafm.fob.usp.br. By the use of Interactive Teleeducation and the Internet, it is possible to offer updates on the technology hi-

ghlighted here, reaching professionals distributed throughout the country.

It is noteworthy that this work has originated from a master's research conducted in the Audiology Department Bauru School of Dentistry, University of São Paulo (Alves, 2016). Recently, a translated and transcultural adapted version of English language was incorporated into the portal, with multi-disciplinary validation of six units available at the portal for greater coverage of the content (Guedes, 2017).

The planning and design of this portal were carried out with the help of the Educational and Computer Technology Sectors of the same institution. In this way, this project featured a team composed of professionals from the areas of Audiology, Design and IT.

After development, the material was evaluated by professionals in Audiology area, using a Motivational Research Form (FPM), in order to verify the effectiveness of this virtual environment of transmission of information on FM System using the Interactive Teleducation.

INFORMATION DESIGN AND INFOGRAPHY ON EDUCATIONAL ACTIONS

The Information Design is a projective activity that seeks the conceptual understanding among elements and their meanings and relationships, transposing the structuring and agglutination of information through the relationships among content, visual communication, and language. It acts as a facilitator in the selection, structuring, and organization of information in complex systems. "It is responsible for outlining the way in which the user finds the information, performs its reading, establishes the relationship among its elements, interacts with the interface and understands this experience" (Passos and Moura, 2007, p. 22).

Rodrigues (2016) points out that the Information Design, along with the Web Design, and the Information Sciences, has the ability to "power the enhancement and conception of informational artifacts." There are also the questions related to the architecture of information, usability, and concern with the visualization of the information. The information design, however, encompasses issues not only related to the digital products referred by the author, but to any communication and reading artifacts that measure the relationships between the information and its user.

Pena de Sá (2016)¹ Organized, through a bibliographical survey, the princi-

¹ Adapted from Petterson (2012), O'Grady e O'Grady (2008), Lidwell et al. (2010), Rogers et al. (2013) e Garcia (2012):.

ples of the Information Design in four groups. Below it is categorized some of these factors pertaining to the project in question.

1 Communication: organize, categorize, prioritize, customize, and differentiate information from a publication. Some of the principles are:

- **LATCH:** organization of content according to five topics: Local, Alphabet, Time, Category, Hierarchy;
- **Modularity:** administration of the complexity of systems employing functional grouping by similarity;
- **Minimum Effort:** preference of individuals by familiar tools, accessible, comfortable and easy to use.

2 Cognition: communicating the message in a clear, accessible and easy way to the intended audience, understanding the cognitive sciences in order to substantiate aesthetic decisions in the process of creating the graphics project. Its fundamentals are:

- **Learning Styles:** sensory method of preference of the individual that makes memorize the transmitted information, which can be visual, auditory-verbal or synesthesia-tactile;
- **Principles of Gestalt perception:** unity, segregation, unification, closure, proximity, similarity and pregnancy of form;
- **Memory:** direct it to make it easier for the information to be remembered in its entirety;
- **Wayfinding** (auto-orientation within an environment and cognitive processes used in choosing the route to be followed)
- **- Informational overload** (over-supply of incapacity to be processed, assimilated and understood by individuals).

3 Aesthetics: to provide the ease of perception through the use of design principles in visual presentation. The principles are:

- **Structure:** base where informational elements are organized, hierarchical and positioned;
- **Readability:** Features of text, image or color, which can alter visual perception;
- **Proportion:** Provides dynamics between the different elements in a layout;
- **Harmony:** a Harmonious relationship between the elements in a design.

4 Usability: promote better experience in the use of interactive systems. Its principles are:

- **Visibility:** the functions must be undoubtedly visible as well as the actions to be carried out and their respective consequences);
- **Feedback:** the return of information through an action that allows the user to continue in their task);
- **Restrictions:** reduce the amount and variety of actions that can be performed on a given system);
- **Consistency:** when similar parts are expressed in a similar way
- **Affordance:** how the user interacts with the object or environment and how their properties are perceived to determine the way to be used.

The understanding and application of these principles of Information Design corroborate for the creation of graphics products aimed at the needs of the target audience that can be used in the data visualization in infography.

According to Domiciano (2017), the infography gains every day more space as a communication tool, starting from the traditional use in media, such as newspapers, magazines, and leaflets, for digital formats, also penetrating in previously thoughtless areas. Today the infographics have become strong allies in the area of teaching, both in printed and digital media. They are “visual representations of informational character, with high power of attraction, that combine text and image (photography and/or illustration) to reveal the unknown and explain the complex, in a simple, synthetic and with focus on the receiver of the message” (Fassina, Cavalcante and Andrade, 2009, p. 290). These graphic representations feature the hybridism of languages that aims to provide a more efficient understanding.

In order to be understood in its entirety, the infographics must be designed with the adequate visual presentation, according to the precepts of Graphic Design and Information Design. Moreover, when in the educational context, they illustrate complex information in a compact form, in order to allow better interpretation of concepts and ideas and benefit the retention of information (Bicen and Beheshti, 2017)

Infography operates as a complement of teaching in the context of interactivity and dynamic, modernizing the scientific text in order to make it more didactic and appropriate to the educational context that applies (Pessoa and Maia, 2012).

According to Cairo (2008, p. 16), the infography allows data, transformed into visual information, to become attractive by itself, without the need for arti-

fice, either on a printed page or the web. Infography should act as a real analysis tool in the service of the reader. Its priority is not to generate lighter, dynamic or with impactful design pages - even if it does so many times - but to improve understanding in the first place. Still according to the author, the incorporation of interactive tools in digital publishing propels a paradigm shift in the display of information: the traditional freedom that the reader has in reading the contents of an infography in the order that he thinks best, creating meaning from the data and the digital format, with the construction of interaction made, no longer from the infography itself, but by the navigation design.

THE VIRTUAL LEARNING ENVIRONMENT

The present work was developed in the Department of Speech-Language, Pathology, and Audiology, Bauru School of Dentistry - University of São Paulo, with approval by the Committee of Ethics in Research of that University (CAAE: 38577014.0.0000.5417, Protocol No. 970.760/ 2015).

The development of the contents of the FM System Portal was based on the phases of development of instructional design proposed by Filatro and Piconez (2004), as steps below. It is emphasized that the phases proposed by the authors are produced jointly, and modifications can be made throughout the process.

First Step: Analysis and planning

The first stage involved the identification of learning needs, defining instructional objectives and lifting the restrictions involved. This stage was based on the Protocol of the American Academy of Audiology “Remote Microphone Hearing Assistance Technologies for Children and Youth from Birth to 21 years” (American Academy of Audiology, 2011)

Second Step: Content development and interface design

In this stage, the preparation of the content was carried out. The textual content has been transformed into infographics according to the principles of Graphic Design and the Information Design so that the virtual learning environment meets the wishes and needs of the users.

The main themes that should be addressed in the FM System Portal were selected for the transmission of information about the FM System to the audiologists, and the layout was developed. The site consists of seven modules:

1. **Module 1: NOISY AND SCHOOL**
2. **Module 2: FM SYSTEM**

3. **Module 3: ADAPTATION AND MONITORING OF THE FM SYSTEM**
4. **Module 4: GUIDELINES FOR PARENTS AND TEACHERS**
5. **Module 5: TESTIMONIALS**
6. **Module 6: TROUBLESHOOTING**
7. **Module 7: EVALUATE THE PORTAL**

The design of each module in question was accomplished through methodologies in graphic design by a designer familiar to the subject. A visual identity was developed for the product, beginning with the creation of a brand for the portal, as shown in Figure 1.



Figure 1: Brand of FM System Portal

Each module counted on the application of graphic elements coherent to the visual system created, at the same time allowing identification and differentiation among the modules. Determining a graphical composition implies understanding what type of message should be transmitted to the user by a given form. In this way, “creating a design is much more than simply assembling, formatting, or even editing; It is adding value and meaning “(Samara, 2010, p. 6). The elements were used to value the product were: photographs, illustrations, graphics, and pictograms.

Alesandrini (1984) indicates evidence that the strategy of using pictures facilitates adult learning. The illustrations of a scientific nature value the bidimensionality, and it can represent the depth by resources such as tonal variations, colors

and textures (Trotta and Spinillo apud Domiciano, 2017, p. 45), which corroborates with the graphic language chosen for the illustrations present in the portal.

Regarding the typography, two distinct sources were used – a handwritten used in titles, which refers to the school environment and another without serif, which makes easier to read in a digital environment. The set of fonts employed in a project depends on the functional nature of the content, and not only on its visual effect. Thus, to determine an identity, the choice of two families is sufficient (Samara, 2011).

It is noteworthy that, besides the brand and modules on the FM System, some instructional materials were also developed and others were made available by the companies manufacturers of the devices: video tutorials; videos with testimonials from FM System users; Tutorials for printing, containing both professional procedures, problems and solutions of the FM System; questionnaires/inventories for printing.

The visual identity developed for the portal and for the various graphic materials mentioned reduced and transformed the textual content. The graphics language adopted in this conception was of simple illustrations and several colors that refer to the child and school environment, as shown in Figures 2 a.

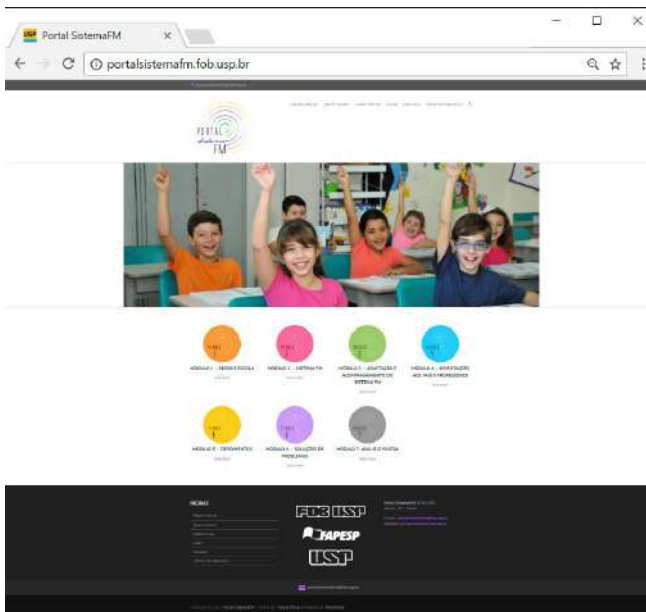
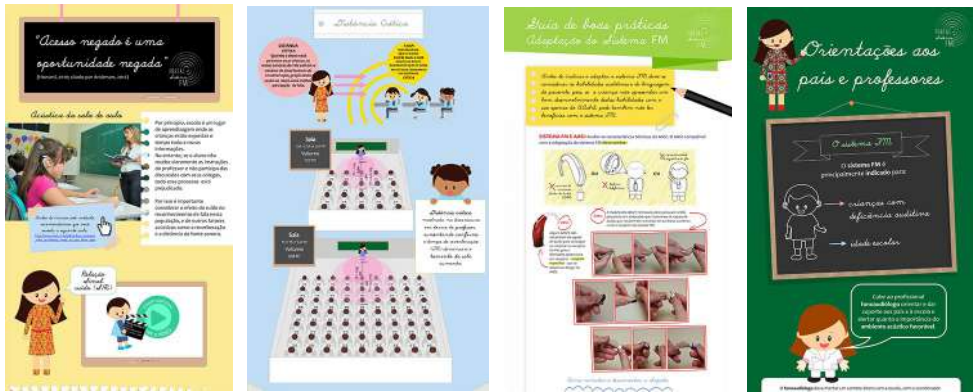


Figure 2: Home screen with the layout of the FM System Portal



Figures 3, 4, 5 and 6: Examples of infographics used in different modules.

Third Step: implementation

It was analyzed which technological resources should be used for the proposed objective to be achieved. In this stage, the adequacy of the virtual learning environment was performed, aiming at the effective transmission of the content elaborated in the previous stages.

In the implemented products, all modules are capable of viewing in online and offline digital support or still printing, as they can be “downloaded” in PDF file by the user of the material. It also involved the monitoring, revision, and maintenance of the proposed system.

MATERIAL EVALUATION

Evaluating the efficiency of the material with the target audience was another strong point of the research presented here.

Methodological Procedures

The methodology for this is presented below, as well as the evaluations carried out.

Participants

It was invited to the research, through e-mail and social network, audiologists who acted in Auditory Health Services accredited by the Brazilian National Health System - SUS (inclusion criterion) in the five regions of the country.

Participated voluntarily in the study, after the signing of the Term of Free and Informed Consent approved by the Ethics Committee on Research in Human Beings of the Institution, 31 audiologists:

- Age: between 23 to 62 years old (average $29,8 \pm 9,08$ years), a participant did not answer;
- Experience time: Three months to 39 years of experience in the audiology area (average 4.29 ± 7.29 years); Two didn't answer.
- Place of Operation: Southeast regions (94%) and South (6%)
- Degrees: Undergraduate (49%), specialization (19%), Master's degree (19%), Master's degree and specialization (3%) and Ph.D. (10%)

Instruments

For the evaluation of the effectiveness of the graphics project of the training program, it was used the instrument of Motivational Research Form (FPM), (Pai-xão, 2008; Blasca, 2012).

When completing access to the modules the form was used to subjectively assess the motivational aspects of the Training Program in fourth domains, as shown in table 1.

QUESTIONS	3 = strongly agree	2 = somewhat agree	1 = somewhat disagree	0 = strongly disagree
1 The screen layout of this course is attractive.				
2 There is a menu or of sitemap the beginning that describes what content is contained within the course.				
3 Audiovisual information included in this course helps to clarify or describe the course content.				
4 Navigating this course does not require any unique skills or experience by me.				
5 There is an eye-catching title and/ or visual on the home page of this course that will attract participants' attention.				

QUESTIONS	3 = strongly agree	2 = somewhat agree	1 = somewhat disagree	0 = strongly disagree
6 This course provides valuable links to other useful references, including Websites.				
7 The purpose of this course is always clear to me.				
8 The course has a help function that I can use at any time.				
9 This course is fun for participants to explore.				
10 The course information is provided by credible sources.				
11 The directions for using this course are simple and clear.				
12 I can control the pace of moving through this course at all times, including the use of the resources.				
13 The content information included in the course is interesting.				
14 The information contained in this course is current and up-to-date.				
15 There is useful information on each topic at the course resources.				
16 The course resources are crisp and clearly visible.				
17 The variety of formats used in all resources helps to maintain attention.				
18 The information in this course is accurate and unbiased.				
19 All the information at this course is presented using clear and consistent language and style.				
20 All of the course resources are active and fully functioning.				

QUESTIONS	3 = strongly agree	2 = somewhat agree	1 = somewhat disagree	0 = strongly disagree
21 This course has novel or unique features that make it more interesting for participants.				
22 There is little or no unimportant or redundant information at this course.				
23 The course content is well-written with no grammatical, spelling, or other errors.				
24 At all times, I can control what information at the course I wish to see.				
25 There are unexpected surprises at this course.				
26 This course provides opportunities for interactivity to engage students.				
27 This course provides the appropriate amount of information on the topic for a lesson or assignment.				
28 All resources and other navigation mechanisms for moving around at this Website work the way they should.				
29 The colors and/or background patterns used in this course are pleasing.				
30 This course provides opportunities to communicate with its authors, participants, and technical support.				
31 No matter where I am in this course, I can access any resources and return to the course page or exit.				

QUESTIONS	3 = strongly agree	2 = somewhat agree	1 = somewhat disagree	0 = strongly disagree
32 There is enough amount of time to learn how to use the resources.				

Table 1 – Motivational Research Form - FPM

Source: Paixão, 2008; Blasca, 2012

The FPM is composed of 32 enunciations. Numerically, each statement is punctuated as follows: (3) strongly agree, (2) somewhat agree, (1) somewhat disagree and (0) strongly disagree.

FPM’s statements are grouped into four domains: “Stimulating”, “Meaningful”, “Organized” and “Easy to use”. The “Stimulating” domain is grouped by the statements 1, 5, 9, 13, 17, 21, 25 and 29. The “Meaningful” domain by the statements 2, 6, 10, 14, 18, 22, 26 and 30. The domain “Organized” by the statements 3, 7, 11, 15, 19, 23, 27 and 31. The “Easy to use” domain by Enunciations 4, 8, 12, 16, 20, 24, 28, and 32.

After the score of each domain is performed individually, they are grouped according to the formula: $V = E + S$; $XS = O + F$. The V score is the sum of the “Stimulating” and “Meaningful” domains and reflects the Value dimension, that is, how valuable this training program is. The XS score is the sum of the “Organized” and “Easy to use” domains and reflects the expectation dimension for success. To finalize the score, the authors of WebMAC (Small and Amone, 1999) recommended the use of a Cartesian projection. The Abscissa (X-axis) is the score corresponding to the value dimension and the Ordinate (Y-axis) is the score corresponding to the Expectation dimension for Success. If the points or a large number of individual points are located within the area (Amazing Course!), it means that the training program is an “Impressive Course”, evaluating it positively (Blasca, 2012).

In a second moment, another reading of the instrument is proposed, where some items pertaining to the principles of Information Design - communication, cognition, aesthetics and usability (Pena de Sá, 2016) – are identified. For this, the issues have been separated according to these items, and some fall into more than one category. However, other issues were not analyzed because they were specific to the context of the audiology or other resources of the portal, oblivious to the scope of this article.

Data Analysis

The data collected by the questionnaires was transferred to a Microsoft Excel spreadsheet, where they were analyzed using descriptive statistics and frequency tables.

The questions that connect to the principles of the Information Design are also analyzed quantitatively and qualitatively.

Evaluation of the Questionnaires

Motivational Research Form – FPM (Q2)

This instrument aims to assess subjectively the motivational aspects of a training program in the fields: “Stimulating”, “Meaningful”, “Organized” and “Easy to use”.

Table 2 presents the descriptive statistical analysis per domain evaluated by the participants in the FPM.

Domain	Average	Minimum	Maximum	Sd
Stimulating	22,32	17	24	1,536
Meaningful	21,97	16	24	2,213
Organized	22,52	17	24	1,568
Easy to Use	21,45	17	24	1,786

Table 2 - Descriptive statistical analysis by domain evaluated by the participants in FPM

Sd= Standard deviation

According to the recommendation of the authors of WebMAC Professional (Small and Amone, 1999) and the other studies that used the FPM (Blasca, 2012; Piccolini and Maximino, 2014) the results are presented by the Cartesian projection (Figure 7), demonstrating the expectation for the success of the elaborate program.

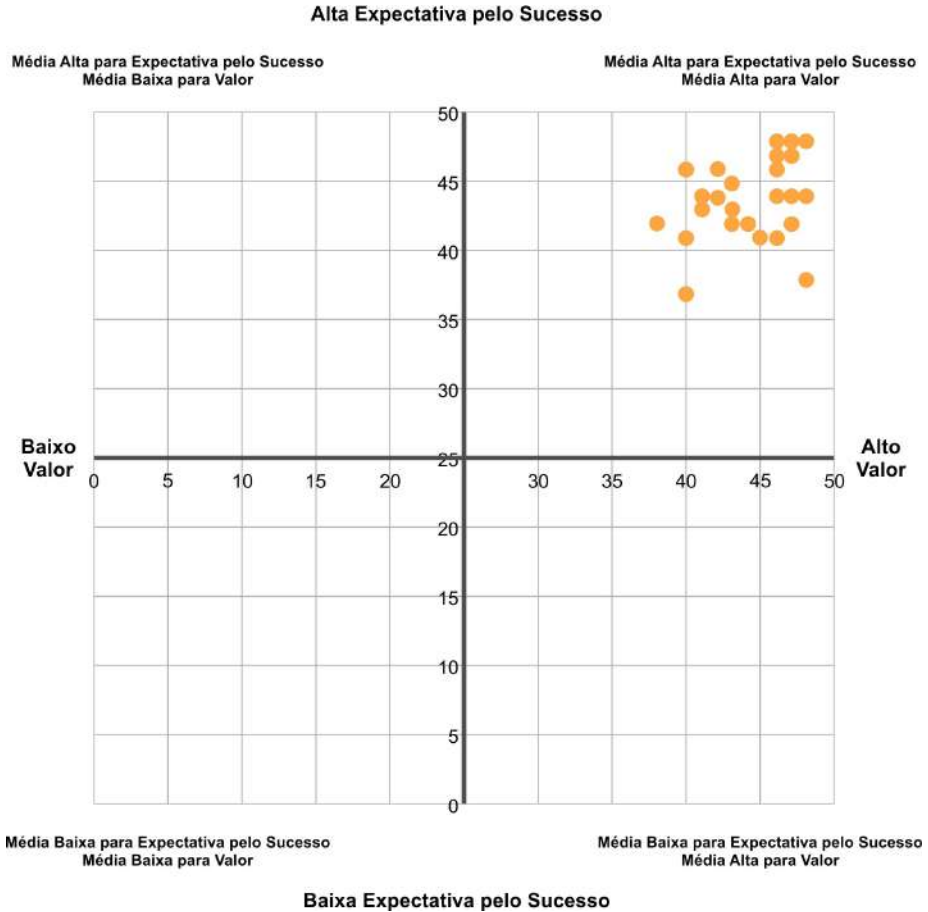


Figure 7- Classification of the training program of the FM System Portal

Evaluation through the principles of Information Design

17 questions were selected for this separate evaluation, at this time, according to analysis based on the principles of the Information Design. Some of the items presented here have been fitted in more than one principle, according to the analysis below.

1. Communication (Questions: 2, 5, 6, 9, 11, 19, 21), average 2,82

Questions pertaining to navigation components were evaluated, which are used for communicating with other parts of the portal, such as menu, homepage title, links or practical references, in addition, points out whether the course offered information of form and with simple, clear and interesting language

2. Cognition: (Questions: 1, 2, 3, 4, 5, 9, 12, 19, 20, 21, 24, 28, 29), average 2,76

From this item emerged questions about the perception of audiovisual information, attraction and attention generated by the content, cognitive mechanisms of navigation (wayfinding), proximity and similarity, and form of presentation of information.

3. Aesthetics: (Questions 1,3, 5, 11, 29), average 2,88

Aspects related to layout, audiovisual information, grid, color pattern and typography that provide greater ease of perception have been evaluated.

4. Usability: (Questions 2, 3, 4, 6, 12, 20, 21, 24, 25, 28), average 2,67

This item relates to the analysis of the items for the available resources, guidance, and ease of navigation and portal interaction.

DISCUSSION AND FINAL CONSIDERATIONS

The development of a website for the training of professionals working in Brazilian Auditory Health Services, in the routine of adaptation and monitoring of the user of FM System, was a strategy adopted to disseminate the knowledge about the process of adaptation of this hearing aid, since SUS began to grant this technology assisted in 2013, without the indication of a protocol to be followed.

The development of the content for the FM System Portal privileged the aspects of the Information Design, based on the methodology of instructional design proposed by Filatro and Piconez (2004) and the infography, which collaborates in the transmission of extensive content and complexes in a more clear and didactic way (Fassina, Cavalcante and Andrade, 2009; Pessoa and Maia, 2012). In a preliminary study with health professionals, most participants prefer the infographic format to general textual summaries to report results of clinical studies in a variety of configurations (Turck et al., 2014).

The objective of this study was to evaluate the efficiency of the use of graphics for the transmission of information in the health area and it is part of an extensive data collection on the theme “FM System”, which generated the portal. For this reason, the analyses demonstrated here sometimes exceed this barrier, evaluating items about the theoretical content and the usability of the system. Thus, the emphasis was given in the face of the results that refer to the aspects of the design, especially focused on the infography, which clarifies the use of the principles of the Design of the Information for the interpretation of the results along with the Motivational Research Form.

The evaluation of this website generated results that demonstrated high motivational satisfaction with the FM System Portal, presented by the Cartesian projection (Figure 4), where the participants considered it impressive, as in the study of Blasca et al. (2014), what points out how effective the use of infography

for training of the use of the FM System for professionals.

The results also indicate that the “Organized” domain, according to the motivational aspects, and the principle of “aesthetics”, pertaining to the principles of the Information Design, were the most punctuated by the participants, corroborating with studies that show the ease of reading that the infographic can provide (Fassina, Cavalcante and Andrade, 2009; Pessoa and Maia, 2012; Turck et al., 2014), in addition to the need to obey the precepts of design in the elaboration of such products (Bicen and Beheshti, 2017).

As for the motivational aspects and the principles of Information Design, respectively, the “easy-to-use” domain and the principle of “usability” have obtained the smallest media. These items refer to the ease of use, navigation, and items related to the general operation of the website. This deficiency occurred due to the lack of tools to design a more interactive and intuitive system. Rodrigues (2016) relates the Information Design to some features of Web Design, such as navigation systems that are user experience elements.

However, it is worth pointing out that the difference between the values attributed to each domain of the motivational aspects and the principle of the Information Design attributed by the notes of the survey participants did not have significant difference between them, so that all the values were considered high, revealing the efficiency and effectiveness of the strategy to provide theoretical content in the form of infographics. This success is confirmed through the improvements generated in the performance of the sample, through a good impact on the professional activities, after the access of the participants to the modules of the FM System Portal (Alves, 2016).

The interface between the areas of Audiology and Design contributed to the success of the training by searching for assertive content on the theme and graphics solutions suitable for its presentation, within the context to which it applies and targeted to the target audience. Lopes et al. (2012) propose intervention in the propositions of Andragógicas directives, based on methodologies of Information Design in design and education areas.

There is a point here for the need to use graphics resources based on the Information Design in training products for the health area for the professional motivation. Studies in Information Design in the elaboration of digital artifacts are necessary for the current context, where there are high flow and supply of information, especially in the digital universe of the Internet (Rodrigues, 2016).

Finally, it is suggested that the FM System Portal is continually updating, and modules are added to the training of student users’ teachers, as well as initiatives for training of FM System users in school environment, so as in the family context or in other activities where it is necessary to use this auxiliary communication device.

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The roaring silence of the Amazonian General Language in printed material from the 19th century: *a design study*

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FIRST AND FOREMOST

The paper presented herein is part of a greater, ongoing study that researches the beginning of the printing activity in the State of Amazonas. By observing further the complex relations that constitute the artifacts printed in the Amazon, we arrived at the Amazonian General Language [LGA]. Alive to this day, and modernly called Nheengatu (good language). Starting from its narrative, we aim to observe the use of graphics technology in a project for dominion and control over a vast territory in order to turn it more legible or less crude, certainly not for everyone. This way, we try to read the printed communication and the design, more extensively, backed up not only by material artifacts but by the history of a location marked by disputes and a world perspective set in the treatment of others. The various peoples that inhabited the region made their own reading of this world, interacted with it and its mysteries using their language, knowledge and technology. Although we insist in perceiving them as an indistinct and gentle mass named the Indian. Maybe not so distant from the perception of the European conquerors, who saw human beings as goods or workforce at their disposal, and so used them, just like those others with black skin from the other side of the Atlantic. Both suffered extreme violence, were enslaved to keep the privileges and wealth of so-called civilized white men.

The methodological set proposed for this research feeds on bibliographic sources, especially on the dissertation of José R. Bessa Freire. On the settlement of landmarks and the contact with players of a narrative ought to be critical. It was also used references from the design field, among others. In the Hemeroteca Digital [Digital Newspaper Library] of Biblioteca Nacional [Brazilian National Library], in Rio de Janeiro, we gathered information from primary sources, in the Exposições, *Fallas e Relatórios* [Expositions, Speeches and Reports] from the Province of Amazonas and in two journals, one from Belém and the other from Manaus, both from the 19th century. Some notes were extracted from the Dicio-

nário Topográfico, Histórico, Descritivo da Comarca do Alto Amazonas [Topographic, Historical and Descriptive Dictionary of the District of Alto Amazonas] of Lourenço Amazonas, an important private publication edited in 1852. The *Exposições* [Expositions] or *Fallas* [Speeches] were publications in which a ruler, or someone at their service, rendered an account of the Province's trades and informed about the taken steps. In all these publications, the majority of the texts had the governor informing the Province's Legislative Assembly about the actions taken in the year, with different data and reports on the general situation. Both fronts, references, and sources, dialogue in exploratory research which aims to reflexively map the uses that an Amazonian language found, its conflicts and printed culture is still little known in the design field.

The critical observations are made in a very distant place in time from the events and characters mentioned, but with remaining notable presence in today's power relations and treatment to indigenous peoples and others. Thus, by covering printed technology in the mid-19th century, we may read more than a civilization project far from being linear and clear:

Starting from this hybrid place in cultural value – transnationalism as the translation – the postcolonial intellectual tries to elaborate on a historical and literary project. I am increasingly convinced that the clashes and negotiations of differential meanings and values in the inside of “colonial” context, their governmental speeches and cultural practices anticipated, “avant la lettre”, several issues on meaning and judgment that have become common in contemporary theory – aporia, ambivalence, uncertainty, discursive ending, agency's threat, intentionality, synthesizing concepts, to name a few examples (Bhabha, 1998, p. 242).

Buchanan (2009, p. 409), while introducing the foundation of research in design, states that: “The common subject matter of design is variously described as the artificial or the human-made or products that support human beings in all of their individual and collective activities.” Hence, when speaking of LGA, we stress that it will not be observed in an isolated form or as a simple index of the increase of Eurocentric artifacts in the untouched nature. We seek, even in a nutshell, perceive the overlapping of territories, including the political and economic, present in deviations, in the practices that led to the flood period, then the containment attempt and the forced drought of a language. Although we draw a comparison with the great river's movement (full and low tide), this process was neither natural nor linear. It was a plan, a project of a European monarchy and of varied interests which played with lives, whether directly or with indifference, of a large human contingent in the distant and vast land of amazons.

Bonsiepe, while speaking of democracy as a space to reduce heteronomy, stresses the utopian aspect of project activity (2011, p. 21), not without noticing its contradictions. Moreover, says that his intention, shared in this paper, is to “form a critical awareness before the enormous imbalance between the power centers and those subjected to them.” We then propose to hear an indigenous language, observe both its printed and invisible marks in order to describe and reflect over the unknown path of this way to give meaning to the world, the language, and its developments in a vast region of Brazil. Burke (1995, p. 40-41) speaks of the deceptive passive appearance of language in society and tells us that “speaking” is:

a way of making, the language is an active force in society, a means through which individuals and groups control other groups or resist this control, a means of changing society or holding back the change, to affirm or suppress cultural identities.

From this arises our interest, from the force vector that a language has to act over the reality of the place we call today the Amazon, before a sizeable disputed area by various European powers. To begin the conquest, a language was elected to be taught compulsorily, and it was one of the most spoken in the coast of brazilwood's land. It was required to be in written form and reproduced by the existing graphics technology in printed forms. With this operation, the record that was oral before becomes fixed on paper, speaking gains a concrete configuration from the conventions of writing and the language loses its fluidity and turns into glyphs, types, syllables, words that seek to represent the world. Asa Briggs and Peter Burke (2006, p. 13-14) recognize an expansion of the concept of communication and suggest that, regardless the space or time from which it is investigated, researchers on communication and cultural studies: “should take into consideration history; and that historians – of any period or tendency – must take seriously into account communication theory and technology.” Even in so-called recent events, it is present a tradition or clear connection with the past.

We propose in this study an investigation where various fields of knowledge are discussed, not very worried in delimiting borders, seeking to encounter and transit with the knowledge of the other. During this journey, we make speculative and critical observations, not for lacking objectiveness, but for it being a form of suspicion of the own scientific speech of natural sciences, often used as the only model of research. The impartiality, or rather the claim of a naked eye of culture or intentions does not accompany us, because we often show curiosity to understand the place of living better and with which one interacts on a daily basis. Therefore this article is also a speech that intends to stimulate qualified exchanges and raise some questions to reach an awareness of the place where we are and how it was constituted.

The speech, as said by Flusser (2007, p. 89), is not produced by “natural sounds, like, for instance, in the singing of birds, and writing is not a natural gesture like the dancing of bees.” That is why communication is not a natural science, leading to a domain of artifice, of common codes and culture. Communication has the essential function of accumulating acquired information (Flusser, 2007, p. 93) by the form of a common code, and of moving us away from the senselessness and death. Now the typography is intimately linked to the ‘solid form of language’ – the writing, as defined by Bringhurst (2005, p. 9), in his precise, poetic style. The author makes an unusual association of languages to liquids or fluids, an analogy used in this text. Holding, or somewhat solidifying this brief form is what seeks the writing and, by extension, the typography. He also reinforces similarities and especially fundamental differences between language, writing and typography: “the manuscript and typography world demands artificial support – an organized training of youngsters, in other words, a school – while spoken languages maintain themselves and blossom in any place where there are human beings” (Bringhurst, 2005, p. 15).

In the vast territory of the Brazilian Amazon, the waves, or rather the *pororoca*¹, a wave of native languages has been smoothed out by the imposition of one based on Old Tupi. Language adapts and flows through various paths; printed communication, in turn, fixes in time a voice, a piece of information according to a plan fit to the technology used to produce artifacts. The process of printing on paper, on the other hand, was forbidden in Brazilian colony at the time LGA was being imposed in the region. The initiative of Antônio Isidoro in Rio de Janeiro, in 1747, was interdicted as soon as the Portuguese Court recognized it. The common language would have taken the same path, the ban, although its simple expulsion was not possible, as occurred to the Portuguese printer. For it is not possible to detain by force or completely dry out a large river, or rather a broadly used language. This continued to flow in veins, memories, names and also in History.

¹ In the *Dicionário de Lourenço Amazonas* (1852, p. 54), when he describes the Amazonas River, he registers the phenomenon that locals call *pororoca*. This happens when, in certain times of the year, the waters of a river encounter the ocean provoking strong waves that bring down trees and marginal land, besides making a great roaring. The phenomenon also occurs with other Amazonas’ affluents in the region. In 2005 it was recorded the extinction of the phenomenon in the Araguari River, in Amapá, probably as a result of human action.

MISMATCH OF WATERS

While writing in the 21st century using a computer keyboard, we may easily stop noticing with clarity this sophisticated system – the language. In Brazil, we use the Portuguese language, which arrived in a vast territory inhabited by other humans, diverse to one another. They were not perceived as equals by travelers, being wrongly identified as inhabitants of the Indies, therefore being tagged as Indians. Many were the misunderstandings, mismatches and mixtures in a conflict that occurred in several stages, including in communication, and on both sides. The native peoples had to name a foreigner with fairer skin and beard, and they made it according to their references. In addition to all the artifacts never seen before, garments, weapons, mirrors and other objects had to be translated and suitable, not without surprise or inaccuracies. Certainly not without interests. Moreover, as it happens in the disputes, the winner imposed charges on the losers.

The Amazonian indigenous people were an unwritten society, their control over the world they inhabited was through the people's speech, myths, knowledge, traditions, technology, and culture, not that fragile or weak as we are prone to believe. This process of inserting a specific meaning into a word and sharing it with a group of people should not be taken lightly. Also, it was made by at least 700 different forms in the Amazon (Freire, 2007, p. 13) and over a thousand in Brazil (Rodrigues, 2005). Among several indigenous languages, the study of Old Tupi was privileged, both by the Portuguese and the French, for many people of the Brazilian coast spoke it. Old Tupi was the origin of the two Brazilian general languages: Paulista or Meridional, and the Amazonian. Similar procedure occurred in Spanish America with the “*lenguas generales*” in Mexico, with Náhuatl; Quechua in Peru and Guaraní in Paraguayan territory. To carry out the conquest and colonization of the discovered lands, to be familiar and to explore indigenous wealth, the bases for a more accurate communication had to be implemented. The project and implementation of a native language was a privileged instrument for this, and its history, such as the Amazon region's, is prodigal of contradictions and violence.

In the 17th century, in addition to Portuguese settlers, many of them being criminals punished and exiled in Brazil, the missionaries, especially Carmelites, Capuchins, and Jesuits, were other major players. These were employees paid by the Portuguese Court (Freire, 1994, p. 32) and while compulsorily converting the natives into the Catholic religion, they also promoted the “conversion” of these to the current economic system, in the form of goods. The missionaries promoted expeditions called “*descimentos*” [downward slope], in which they convinced the Indians to leave their villages and go live in the city villages. After being split up

in villages, they were divided among settlers, missionaries, and services of the Portuguese Court. There were two alternative ways of capturing Indians: the “rescue,” in which the Portuguese exchanged goods for Indians captured by other Indians allies of Europeans. Promoting the so-called “just wars,” in which armed military groups invaded territories of so-called hostile Indians to capture a great amount of them, including women and children (Freire, 1994, p. 29-30). Hence the villages and small towns were formed, where the Indians learned the General Language, along with many other “civilized” customs, a religion that did not welcome them equally, and an inhuman work exploitation system and many other lessons.

The conflict of interest between settlers and missionaries for the control of the indigenous peoples has become continuous during the colonial period in the Amazon, with riots and many turnarounds. For seven decades, starting from 1686, missionaries obtained authority over Indians, being 20% destined to the Court. From then on, any expedition (downfall, rescue or just war) would only be done with the consent of a board and monitoring of religious men (Garcia, 2005, p. 52). Added to this tension, there was the resistance of native peoples, some tribes ended up merging to fight the mighty enemy in ordinary which exterminated them and turned them captive, including their children. Freire (1994, p. 34) questions the idea of the occupation of the Amazon in the Colonial Period. According to him, the most concrete would be to speak of a process of depopulation or a catastrophe. So remember that this narrative was written from the perspective of conquerors, missionaries, and Portuguese settlers:

Silenced the Indians, the Portuguese retakes the floor. The first draft of the history of the Amazon is by Bernardo Berrado, a “horse captain” of Portuguese nationality, and governor of the State of Maranhão and Grão-Pará (1718-1722). With free access to official archives, governor Berredo turned into a historian and wrote a chronology of events. As part of the archives consulted by him was lost, Berredo became a primary source of colonial history (Freire, 1994, p. 36).

Under the title “*Annaes históricos do estado do Maranhão*,” this Berredo’s book was published in Lisbon in 1749, one year after his death. What did not perish was the uncritical vision of the region’s history, written without clearly reporting the genocide that the colonization plan involved, and not trying the least to change the point of view. The defeated, the expatriates in their land that did not have their names or tragedies duly registered, what would they say if they had the opportunity of writing in general language their vision of this story? We will never know. What does not prevent us from questioning or changing the direc-

tion of the axis in which the narratives about the region are produced, and several researchers have conducted this. Speaking, not without some discomfort starting from this purebred son, of the modernity with the industrialization that is the design. For this, we broadened our interest range by electing as an object of study, instead of the artifact/product, its project or production. However, a brief narrative about a language linked to relationships, disputes, and gaming representations and that are, materialized or silenced in many ways in speech and also printed material.

In “Dicionário Topográfico, Histórico, Descritivo da Comarca do Alto Amazonas” by Lourenço Amazonas², published in 1852 in Recife, we find many occurrences of the term “lingoa geral” [general language], also named in the edition as “tupica” [Tupi language]. We do not have as a purpose the analysis of the Amazonas discourse, and we only want to notice the occurrence and treatment given to the LGA in its printed discourse and remove data of interest. His work was produced as an extensive dictionary, a book that gathers definitions and information, constituting an index and also an important source for the study of the region. In addition to the selection of entries described by the author, he gives accounts and makes critical comments about the work. It is important to say that, although Manaus already had a print shop, this dictionary was produced in Recife, surely because the Amazonas print shop was too modest to carry out this project, besides having all the material be at the service of the government. The work’s title brings the term “comarca” [district] of Amazonas because it was produced before the location was turned into a province. The author could have altered the information but decided not to. In the prologue, he explains that he intended to show how a comarca works, as everyone already knows the form of organization of a province (Costa, 2016).

Lourenço Amazonas (1852, p. 142-165), in the entry “Índios” [Indians], after saying that it is an improper term to designate natives, describes them and criticizes the opinions on them. For instance, he regrets that “Europeans, with the discovery of the Americas, only wanted to estimate in the indigenous the ability to serve, considering them more as barbarians than as slaves.” Later he reports that each indigenous nation speaks its dialect, very different from one other. Nevertheless, every nation that relates to Christian institutions speak the General Language or Tupi. He continues to try to find terms and stories that describe what an Indian is, after many different definitions, including ecclesiastical, wor-

² The author served in the Amazon, on behalf of the Imperial Navy and is also the author of the 1857 romance novel *Simá* – a historical romance novel of the upper Amazonas.

ried if these beings had a soul or not. To a certain point, Lourenço Amazonas (1852, p. 154) speaks of work relations in Amazonas as having a tendency: “undoubtedly concerning the services practiced by Indians, what slavery seems to lack is only the name.” He continues some observations on the Indian:

Hence oppressed and demoralized, it is observed in them distrust and animosity. Their somber face instead of joyful, as if natural for them, seldom is expressed satisfactorily, except their work result, which they take seriously; but if someone addressed them kindly, especially if speaking in the General Language (which they see as being on the same level), that clouded face winds up expanding; their cheering expression is more perceptible by the still convulsed movements of their muscles, and their chest is relieved from an afflicting and heartrending oppression. In this expression, it is, like before one’s eyes, the Indian’s heart, in all its naiveness.

The *Dicionário...* by Lourenço da Silva Araújo Amazonas, has an entry for “Lingoa Geral” with a wide array of information divided into three pages, the edition registers various names of indigenous origin. It is proof of the power of native languages that render meaning to the vast Amazonian world, creating a repertoire suitable to allow translation and dialogue with this universe. The second to last word registered in the dictionary by Amazonas (1852, p. 363) was “Yurú-quiá: name with which the Indians gracefully call the Madeira River, alluding to the great amount of floating wood and islands that often block its mouth.”

These Amazon inhabitants acquired the LGA, as they are forced to inhabit the villages. In these places, settlers, missionaries, slaves and mestizos, everybody was drenched by Tupi language. In the 1866 report, discussing the “Directorias de Índios da Província do Amazonas” [Board of Indians of the Province of Amazonas], there is information of them being 38, inhabited by 17.386 Indians, of diverse nations or tribes. Also, it states: “each of them speaks their special dialect; but almost all of them also speak the General Language, which is of the Tupis, or Tupinambás.” Hence, the Portuguese Amazon was led to bilingualism, not without confrontations and mixed feelings. Moreover, we could remember that a language has a fundamental role in the “social construction of reality,” it creates or “constructs” society such as it is constituted by society (Burke, 1995, p. 42).

In the Amazonian region, one of the protagonists in the architectural, social space was, for a long time, a native speaker, although following a plan outlined in Portuguese. The Nheengatu: “while substituting various indigenous languages, broke away from the oral tradition and did not constitute a written means to communicate previous experiences to new generations, despite being equipped

with an alphabet by the Jesuits” (Freire, 1994, p. 35). The adoption of the LGA marked a crack, bending severed ties by compulsorily choosing a single speech, turning it into a burden or prison. Speaking of LGA, everyone affirmed the domination of the foreigner by the imposed artifice, a form of cultural colonization of these people, so different from each other, compelled to carry out orders received in the General Language promptly.

This journey was especially tricky for groups unfamiliar with Tupi, being every day the use of physical punishments in that period. There are accounts of a greater refusal among women in waving their native tongue for the other imposed language. Thus leading them to be “beaten by the missionary, responsible for the school, with a spanking paddle, until their hands were swollen and bleeding” (Daniel apud Freire, 2003, p. 52). We cannot fail to observe the constant presence of this other language, the violence, fluently used in the different relationships established between existing cultures and the other seeking a full domination and control.

After its diffusion and appropriation by a broad native population, the LGA started to be seen exclusively as a language of Indians, as opposed to the Portuguese, less and less spoken, even by the colonizers. There was no equivalent fluency in another type of human origin: the movable types. In the bibliography produced in the General Language, there is a predominance of grammar, vocabulary, dictionaries, catechisms, sermons, and prayers (Freire, 2003, p. 19), although there are also outnumbered, records of narratives, songs, and myths in General Language and other native languages. This predominance of works for utility nor pedagogical purposes may be observed in the long title stamped on work’s cover sheet: “Diccionario portuguez, e brasiliano, obra necessaria aos ministros do altar, Que emprehenderem a conversão de tantos milhares de Almas que ainda de achaõ dispersas pelos vastos certões do Brasil, Sem o lume da Fé, e Baptismo (...)” [Portuguese and Brazilian Dictionary, necessary work for the ministers of the altar, which undertook the conversion of so many thousands of souls that are still dispersed in the vast hinterlands of Brazil, without the light of faith, and baptism (...)]. The work by anonymous authorship, published in Lisbon, in the year 1796. Until the beginning of the 19th century, all these works were printed outside the Brazilian colony, as it was banned by the Portuguese Court the installation of industries within the Brazilian colony, as established in the 1785 Charter.

The LGA expansion occurred with the sponsorship of the Portuguese Court, a strategy, among others, to make the natives kinder before being livid and the vast, mysterious territory clearer. The constant conflict between religious orders settled in the region and the interests of the settlers and the government stays alive. It indeed was not a dispute for souls, but for the principal wealth found in

the region: a massive contingent of people or, in European view, overwhelming native workforce available to cater their interests. This dispute will be solved in the 18th century, when Portugal, under the political command of then the Prime Minister and future Marquis of Pombal, take a series of measures, including the expulsion of the Jesuits of their domain and one that profoundly affected the overview of the region, the Indian Directory. Through this law, the Portuguese Crown diminished the role of the Church by granting power over the Indians to the Directors, also made a series of injunctions, among which banned the use of native languages and General Language. The Indians could not even live collectively, being forced to adopt a lifestyle reputed as decent or superior to theirs. The Directorate oriented the production system to which these 13-to-60-year-old Indians were subjected, which included the payment of tithes on all they produced, duly charged by the Directors, who had all the power to dispose of them (Freire, 1994, p. 58-59). To keep the region on a shorter leash, Pombal also appointed his brother as the Governor of Grão-Pará and Maranhão.

Under the law, the LGA started to be put aside, and a silencing narrative that was noisily present, such as in forced changes of many indigenous names of villages and towns more “decent” ones, that is to say, Christians and Portuguese. This way, with the strength of the name in the Portuguese language, they tried to reinforce a loose structure, and that in the 19th century was indeed tightened, until almost silencing the speech that was imposed before. Thus the other side of this coin was set and began a period when bilingualism no longer mattered, the domains, wealth and exploration were assured:

During the whole colonial period, however, the Portuguese Language, with categories that did not bring intelligibility to the cultural and ecological reality of the region, remained a minority, as an exclusive language of the administration, but not of the population. This situation only changed during the second half of the 19th century, when monolingualism started to prevail in a European language. (Freire, 2003, p. 13).

A GOOD LANGUAGE AND ITS PRINTED MARKS

The beginning of the 19th century watches the disembarking of the Portuguese Court in Rio de Janeiro fleeing from Napoleon, coming with it the first print shop in 1808, and the origin of *Imprensa Régia* [Royal Press]. In the same year, navigation in ports is allowed to friend nations, facilitating commerce, which does not occur in the Amazonas River, which remained closed until 1866. The impediment to industrial activities is also abolished, among other measures, thus the first private typographic office started its activities in 1811 in Bahia, and in Belém of Pará in 1820. The Portuguese elite was unhappy with the departure of

the Portuguese Court, the loss of commercial monopoly of products of the Brazilian colony, leveled to the category of Kingdom in 1815, and by the English domination over Portugal, among others. To some degree, the Portuguese citizens living in the Old Continent felt the bitter taste of being colonized, certainly in far milder than what happened on the other side of the Atlantic, but they did not like the taste at all. They revolted, and in 1820, the Liberal Revolution broke out demanding the return of the court, which indeed happened with the return of the Royal Family and the court.

However, this liberal movement longed for an uncomfortable return: the return of Brazil to the status of a colony, providing them, as before, with the sweet taste of wealth.

Nevertheless, in 1822 Brazil becomes independent, having as emperor Dom Pedro I, son of Dom John VI of Portugal³. Part of the tensions and struggles that took place in different places within the kingdom remained and resulted in a significant conflict in the Amazon region, the elites wanted to maintain their bond with Portugal and fought against the independence, in spite of this they were forced to accept no freedom, but another domain aloof to the interests of the region. Part of the strain remained and led to a massive dispute within the region directly echoing in the weakening of the use of the LGA. The containment and brutal repression of the popular uprising of Cabanagem (1835-40) contributed to the decrease of the LGA speakers. Another war, but in a distant place, in Paraguay (1864), in which soldiers from the Amazon were led to fight, some against their will, against other speakers of a general language similar to the one they had learned.

The process of exclusion followed a sort of banishment imposed on the native, who “did have no more nationality nor own language, taking on the status of generic Indian or *tapuio*” (Freire, 2003, p. 172). They did not lose just their mother tongue, but also their identity and memory, different from the gentle Indian that maintained their connection with a group or community.

The *tapuios* were adrift, drowning in waters that were not theirs, and while they were not dead, they were forced to work so that others navigated calmly. A story that, with different shades and characters, is still repeated today, not only in the Amazon. The entry about the city of Manaus (N. S. da Conceição de Manaus) in the *Dicionário...* describes the capital of Amazonas as having three neighborhoods: São Vicente, of the Matriz (Downtown) and of Remedios, in addition to a square, two churches and 16 streets. Its origin occurred, according to the author, with the “enactment of some families of Barés, Banibas and Passés under

³ However, in order to have its independence recognized by the former colonizers, the Empire of Brazil was forced to pay massive compensation to the Kingdom of Portugal.

the auspices of the Fort of São José do Rio Negro”, along with descendants of other native people.

The text also registers the distribution of its inhabitants: 900 white people, 2.500 *mamelucos* [sons of Indian women and Portuguese men], 4.080 Indians, 640 *mestizos* and 380 slaves; all in “900 fairly disperse dwellings.” It still reports that the city inhabitants dressed seriously and the women with “taste and luxury, enhanced by natural and superior grace.” Moreover, continues: “They speak Portuguese very well, although they also use the General Language a lot. Spending part of the day in baths, which the neatness becomes their an innate quality” (Amazonas, 1852, p. 187-190). Although it was not registered in the entry, the first typographic office in Amazonas started working in 1851, satisfying the diverse demands of local government.

In this small location, it was created the *Estabelecimento dos Educandos Artífices* [Handicraft Apprentices Establishment] in 1856, although it started working two years later as an institution to host orphans, destitute and indigenous children in order to provide them with education in the official language and the learning of trades. In Pará, a similar house was founded in 1840. In practice, there was a concern about preventing these children from “becoming useless or even dangerous to society”, in other words, a form of social control by disciplining and teaching a profession to the children of the working class. We must add that it’s not always the parents choice, as many indigenous youngsters were removed from their homes in the interior of the province so as to receive education in the *Educandos*, and thus create a “common bond between the civilized race and the savages’ tribes” (Rizzini, 2002, p. 2-4). The compulsory education of the first Portuguese letters was another front against the General Language, not always with the expected success.

The report produced by the poet Gonçalves Dias in charge of the government of the Province of Amazonas, in 1861, certifies to the often precarious state of education, especially in communities in the province’s small town. In spite of that, he recommends that mandatory education in Portuguese continue, because: “the advantage of school attendance is mainly, so they become unaccustomed to using the General Language, always spoken at home and on the streets, and everywhere else” (Dias, 2002, p. 16). Eleven years later, in an 1872 report, in the section on public education in Amazonas, we read that education would have as its main purpose “the customs, repression of bad instincts, and the development of noble qualities of the heart...”. These citations are enlightening, reinforcing the idea not of instruction, but of repression to a speech considered inferior, as well as the fight against native customs, seen as unworthy. Although it is curious to guess what these referred noble qualities would be, maybe subservience or gentle ignorance.

We may also observe this attempt to control and marginalize the writing and printed communication, by focusing the complete predominance of the Portuguese Language in these forms, even though the LGA had full control of everyday speech. A perverse and calculated mismatch to not fix on paper the language of the streets, the voice of the exploited and an unwanted presence, all translated in a roaring silence. In this designed muteness of blank spaces, we try to read what has not been expressed in the journals, and official and private editions. This way, we seek in the Hemeroteca Digital of Biblioteca Nacional in Rio de Janeiro the occurrence of the expression of the general language or “lingoa geral” in two journals of the Amazonian region and in Exposições of the government of Amazonas, from 1851 to 1888, in order to empirically verify the use of the LGA in printed format. Even though restricted, this research revealed valuable information, not only numerically due to the low quantity of occurrences observed, but especially for the reading of a place denied to the other, language and human being.

This clipping made of brief speeches in which a language was printed and read in printed artifacts of the region helps us ponder the tortuous path crossed by an imposed language, which later achieved the fluency in oral communication and was pushed, swept to the border of both cities and printed material, and the society that had adopted it. We also observed its difficult disposal, but how do you silence a language? Cutting it off? Certainly maiming and articulating the violence of different and very ‘civilized’ forms, and so it was done.

In the long entry in the Dicionário... about the Negro River, when referring to the government of the Rio Negro Captaincy, in charge of the Brazilian Navy Captain José Joaquim Victório da Costa, in 1806, Lourenço Amazonas (1852, p. 263-264) said that the governor was very much contradicted in his administration by the Captaincy Ombudsman.

Perhaps that is why he “worked very hard on managing his interests.” It is also stated that during his administration, it increased the oppression over indigenous people, some being forced to work in chains and miserable conditions. This ruler, in addition to the use of violence, became famous for the vast command of the General Language: “which he appropriated with so much joy that he corrected even the indigenous people.”

The noble governor must have noticed the need for also having the general language in his possession, thus more accurately have the lands, resources, and souls under his responsibility, his administration ends with the inauguration of the new governor in 1818.

In the section “Public Tranquility,” of *Falla...* of October 1, 1853, published in Manaus, among other news, it is narrated the conflict that happened between

the Araras Indians and other Indians settled near the Sapucaia-oroca village, the interior of Amazonas. An indigenous woman was imprisoned and sent to the capital. The text is signed by the President of the Province – Councilman Herculano Ferreira Penna, who describes the woman: “This poor creature, vivid image of stupidity and imbecility, did not provide any clarification that I wanted to obtain.” Also, continues to describe the lack of communication with the indigenous woman: “for being incapable of understanding any question that was addressed in the General Language, or with gestures.” In the same *Falla*, in the section “Public Education,” it is suggested the creation of a General Language chair, as “a means of facilitating and strengthening our relationships with the indigenous people and promoting catechesis.” Showing an ambiguous position in relations to the LGA, in which even being fought and marginalized, authorities recognized that the domination over the region depended on its mediation. Nevertheless, they did not allow him to be put in a subordinate position, demeaning her as a captive, such as the indigenous woman turned prisoner.

In the journal “Treze de Maio”, published in Belém by Typographia de Santos and Irmãos, we found four occurrences of “lingoa” or general language in digital copies in Hemeroteca Digital, from 1845 to 1861 (Figure 1). In the section “Diverse Notices”, in the October 13, 1855 edition, just below an advertisement of fine chocolates, there is another with a typographic vignette showing a black man holding a cane and looking back. It is an advertisement stating the escape of “a mulatto slave” named Geraldo. His owner José da Silva Castro adds various physical characteristics and says that Geraldo was a “son of Amazonas, speaks General Language and was initially Marcos Cohim’s slave, and later of José Joaquim Ramos Villar of whom the advertiser bought”. In the August 10, 1861 edition of the same newspaper, in the section “Advertising”, there is a reference of the sale of a number of editions by José Maria da Silva’s bookstore, including the *Diccionario da lingua geral dos Indios no Brasil* [Brazilian Indians’ General Language Dictionary], by João Joaquim da Silva Guimarães. Hence an occurrence indicated the domination of General Language by a human being turned slave, and the other showed a printed artifact used for learning/teaching it. The other two occurrences were repetitions of these advertisements, each one just one time.

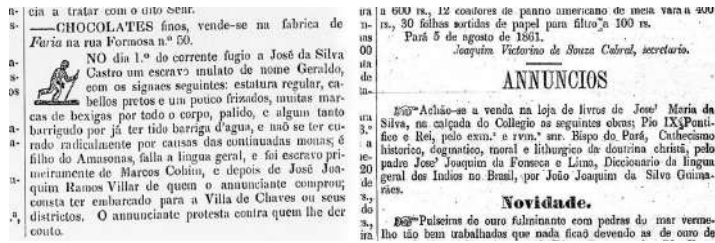


Figure 1: In the newspaper Treze de Maio, edited in Pará, two interesting references to LGA: on the right, a notice of the escape of the slave Geraldo in 1855, fluent in the LGA; on the left, a bookstore advertisement in 1861, with the sale indication of a dictionary of the general language of the Indians in Brazil (used with permission of the Biblioteca Nacional).

The first journal of the capital of the Province of Amazonas was the 5 de Setembro, later renamed Estrella do Amazonas [Amazonas Star]. This was for a long time the only journal printed in this Province. Among almost five hundred digitized copies of Estrella, from 1854 to 1863, we found only three occurrences of general language or “lingoa geral”. One of that described an indigenous woman and an old indigenous man who “spoke something in general language”. The other one referring to a type of turtle that “is called in general language sararacas, which means something that comes apart”. The third, and the most revealing, of April 30, 1856 (Figure 2), in the section “Avizos Diversos” [Diverse Notices]⁴, we see in the fourth paragraph a typographic vignette of a black-skinned man walking holding a bundle, indicating the escape of a slave. Another similar vignette, but in the feminine gender, brings another record of the escape of a woman turned slave. In these notices, as describing João Mulato “(taking more after a tapuio)”, it is said that he is “around 34 years old”, continuing describing João as not having his upper teeth, “except his front teeth, little beard, and gaunt face, bearing the word ‘slave’ written in general language from the time he was a slave of Lieutenant-Colonel Cordeiro from Rio Negro”. Also, it continues: “not too talkative, except when drunk, of medium height, and well-known in the re-

⁴ The text preceding this section is titled “Necrology,” which registers in seven paragraphs the death of a city’s notary public. In the following notices section, we read a note reporting the completion of an inventory of the citizen’s goods. Later on, an advertisement of the store Bazar Amazonense, indicating the sale of fine fabric and others, including locks, blank books, catechisms, booklets, cheese, lard, and chocolate, among others. A little typographic vignette with a vessel advertises the sale of a boat and then the advertisement of the escaped slave.

ferred river.” João had escaped with Alexandrina, of the same owner, Antonio Jozé Pereira Carneiro, from the city of Pará; the second notice refers to her.

cioso seus dias dando provas de bom filho e verdadeiro Christiano, pois dos seus labios só se despendião palavras de lamentações por achar-se aozente de sua Mãe, e rogos ao Todo-Poderoso para que desse a sua alma um dos lugares entre os concritos e arrependidos.
 A morte deshumana pôz termo e acabou com uma vida tão cara, d'ella deixou-nos a penas a lembrança de suas virtudes para arrancar uma lagrima aos seus parentes e amigos, e recommendal-o as orações dos fiéis.
 É eu, que foi uma das testemunhas constantes dos sentimentos d'aquella alma bem faseja e prestante, tambem farei subir á Presença do Altissimo as minhas preces para que o receba no Throno da Eterna Gloria, como premio das virtudes que o acompanhão cá na terra.
 Por não que o esculheia.

AVIZOS DIVERSOS.

—D. Alexandrina Maria das Dores Fleury, cabeça de casal e inventariante dos bens e encarcado por falecimento de seu marido João Fleury da Silva, está procedendo o inventario dos ditos bens pelo Juiz de Offiçios desta Cidade, e a viza os credores do mesmo Casal para que legalizem suas dvidas no prazo de seis dias a fim de serem descriptas no inventario e attendidas como far de Lei. Barra do Rio Negro 17 de Abril de 1856. José Fleury da Silva Brabo, Procurador.
 — Lenô & C.^a em seu BAZAR AMAZONIENSE na rua Brasileira casa n.º 4 tem a venda ricos cortes de vestidos de vareja de tres ordens de fálhos, ditos de cambraia bordados de lan, ditos brancos rendados, camizaliss e pentes da moda para Senhoras, cortes de casemira de bom gos-

Brasileira casa n.º 4. Barra 29 de Abril de 1856.
 Fugio, a Antonio Jozé Pereira Carneiro, da Cidade do Pará na madrugada de 26 de Março p. p., os escravos seguintes:
 João Mulato, (puxando mais a tapuio) de idade de 34 annos pouco mais ou menos, com os seguintes signaes; cabelo pouco crespo, olhos pardos, tendo sobre o esquerdo um lobinho, que já tem sido furado por vezes, falta de dentes da parte de cima, menos os da frente, pouca barba e decarado do rosto, no qual tem escripto em lingua geral e do tempo em que foi escravo do finado Tenente Coronel Cordeiro, do Rio-Negro, a palavra-escravo, sendo comprado a Jozé de Azevedo Palmeira, que tem rezellido no mesmo rio, havendo este comprado a João Cordeiro, filho do dito finado Tenente Coronel; é pouco fallante, menos quando está ebrio, de altura regular, e muito conhecido no dito rio.
 Alexandrina preta, de idade de 28 á 29 annos pouco mais ou menos, alta de boa figura, olhos grandes e pretos, nariz chato, e pés tambem crespidos, anda com passo largo, mas descansado, jugando com o corpo aos lados, e vzeira no fallar, e um tanto fino; forão de companhia, e julga-se subir o Amazonas com destino ao mencionado rio e lugar onde foi criado o referido mulato; quem os capturar ou delles der noticia certa para serem capturados e remettilos ao Pará a set Senhor, ou quem fizer suas vezes, será bem recompensado protestando-se com todo o rigor da Lei, contra quem lhe der cuito. — Barra 9 de Abril de 1856. — Antonio Jozé Pereira Carneiro. — Typ. de M. da S. RAMOS. — 1856. —

Figure 2: Detail of the last page of *Estrella do Amazonas*, of April 30, 1856. On the right, the notice of the escape of the slave João Mulato (used with permission of the Biblioteca Nacional).

The reading of this revealing advertisement also served the researcher Patrícia Sampaio, who, in her article on Slavery in Manaus in the 19th century (2002), tells us how to write the word ‘slave’ in Nheengatu: ‘miaçua’. Six letters carved in the flesh to expose their status to everyone. The slavery of black-skinned people had a reduced economic importance in the Amazon as compared to the Northeastern and Southeastern Brazil; even so, it must be remembered and discussed so as not to become invisible as well. The disappearance process is not exclusive to the LGA. In the Province of Amazonas, since the decade of 1866, it was saved the amount of ten contos de réis per year to conduct the freeing of slaves, especially children (Sampaio, 2002, p. 18). In this province, the abolition of slavery occurred in 1884, therefore, four years before the signature of Lei Áurea [Golden Law], which did the same throughout the Brazilian territory in 1888.

On May 22, 1858 edition of *Estrella do Amazonas* we find the sequel of this story, again published in the *Avizos Diversos*⁵ Section. At first, we have an adver-

⁵ On the left column of the newspaper’s last page where the notices section is comprised, we read the ending of a text entitled “Interessante e Sentimental” [Interesting and Sentimental]. It is described a singer performing in a festivity in France, after chanting

tisement of a store that claims to have a great variety of fabric, some French of “the most modern tastes.” Following in the same section an advertisement for a house rental, and then we see the same image of the previous advertisement: a typographic vignette showing the escape of a slave. We read of a new escape of João, without “Mulato” that before accompanied his name. We read that he had been captured along with Alexandrina in March of 1858. She was doomed to have her life commercialized, was put up for sale, while he returned to his owner, from whom he had escaped once before, but this time, in the company of “a mulatto named José Paulino”. In this new advertisement, the physical characteristics of John are again described, with differences from the previous text, being said that João would have: “a little lump in the left eyelid and some blemishes on the side of the face that, before the escape of March of 1856 along with his partner Alexandrina, bore the word – slave.” There is no reference to this word, which identified his condition, to be written in general language as before. Was it deliberately “erased”? Was it this the origin of such blemishes that he had on his face, did he maim himself to hinder his identification? The advertisement is again published on May 29 1858, and we do not hear of him anymore.



Figure 3: Detail of the last page of May 22, 1858 edition of Estrela do Amazonas, on the right we find the sequel of João’s fight for freedom and in another advertisement the escape of the slave (used with permission of the Biblioteca Nacional).

the last verse of a song: “when will come my last sunrise / I may die in my arms / I may kiss you again... / Yes! but... I would not see”, that would have caused a great commotion in the audience, including the dramatic death of a listener.

As of 1870, migrations of northeasterners to the Amazonian region accelerated the disuse of the LGA, is frequently treated as a mere dialect: “unclear, imperfect, shoddy, poor, inelegant, confusing, incapable of expressing universal ideas” (Freire, 2003, p. 27). Its records in journals and government reports are scarce, although important for revealing this movement from the center to the outskirts. After helping render meaning to the Amazonian world and facilitate the communication among Indians, colonizers, missionaries, mestizos and others, the LGA, such as slaves like João Mulato, Alexandrina, and Geraldo, had to escape to try to survive. Fortunately is still alive and today it may teach us, not in the primitive and violent way that was imposed and later fought, but genuinely as a “good speech.”

CONSIDERATIONS AND FINAL POINTS

Bonsieppe (2001, p. 29) recognizes that the design, or project practice, as being exposed to contradictions, and are frequently used as a domination instrument for political and economic interests. Indeed, it seems to be what happens in many cases of planning and production of printed artifacts and deliberately ignoring the language spoken by the majority of the population. We should not overestimate the potential of social intervention that a graphics project, or the various other forms of visual planning indeed possess. What was aimed to show in this study was what mysteriously is not visible in the printed communication produced in the Amazonian region: another language and also a culture turned invisible. In the 19th century, when printing technology arrives in Brazilian lands, not aimlessly along with the Portuguese Court, the number of typographic enterprises spread all over Brazilian territory would have high dependency on government orders, acting, in many cases, as a spokesperson. The information was the speech rendered in “good” Portuguese, the *Falla*, the *Exposição* or the account of official realizations, printed in types, ink and in time. Through these records, the historical narrative of the region has been told, not without criticism or theoretical apparatus to deconstruct repeated fake certainties.

By crossing the objectively summarized narrative of the *Língua Geral Amazônica*, we aim to reflexively read this history associated to printed culture, so as to be capable of understanding the role of graphics technology, its project, and artifacts in a broader picture. The native people held protagonism, formed the workforce that generated the wealth needed by their colonizer, and were mixed as a minor ingredient in the social blend of the region. The indigenous people were educated to learn customs unrelated to their reality and a language to become part of a more homogeneous system; in this way, many have lost their identity and the belonging of a community. To the civilized, it was enough that their or-

ders were understood and, mainly, carried out, so to maintain control. When the strategy accomplished its purpose and the weak control was at risk, it was the Portuguese language imposed as the only general language. Although it was not sufficient to silence Nheegatu, here we are, writing in Portuguese an article translated into English to speak of another continent language, the one from the Tupis. The typographic technology translated it in the silence that, however, was uncomfortably audible, marked on the flesh of João Mulato. His story printed in the newspaper, a life inaccurately described in only two advertisements of his escape. His surname was a form of characterizing him, a “Mulato”, his age was not clear, he was “around 35 years old”. Information composed at the end of the journal *Estrella do Amazonas*, almost fully taken by the “Official Section”.

The great mesh of Amazonian languages was dammed into an imposed general language that expanded and flooded the whole region, threatening the domination of not only of the Portuguese speech.

The Portuguese crown intensified the control in the 18th century, ordered to silence the LGA, with the use of force and compulsory education in the official language, the same printed in journals and editions. Since it was not possible to silence it for good, it was pushed to a marginal place, visible in official documents, in the advertisements in the journals, in João’s skin and certainly in the lives of many others. For them, the “good speech” or Nheengatu survived and continues to flow, as well as other indigenous languages⁶, and they are even taught and researched in these institutions called universities. With this critical investigation, we sought to describe what was not present or visible before: an encounter with the silenced speech, or even with the knowledge field named design. We thus intended to turn them, speech and knowledge field, a little more “mestizas” by making them bathe in the mixture of knowledge coming from other places, traditions, languages, and eras. We believe that this is a form of enriching the design field of study, by enlarging its contact with each other and thus become smoother its interests and frontiers.

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⁶ The city of São Gabriel da Cachoeira, Northwestern Amazonas, turned tukano, baniwa and nheengatu co-official languages in 2002. The location has indigenous people as the majority of the population, being spoken eighteen languages.

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Visualizing data on graphic memory research

Priscila Lena Farias

*My only point is my method, which I always insist on
in anything in bibliography —
arrange your facts rigorously and get them
plainly before you, and let them speak for themselves,
which they will always do.*

—Henry Bradshaw (*Prothero*, 1888: 349)

INTRODUCTION

This is not a paper about computer parts or about technical aspects of computational systems. Graphic memory is here understood as “a line of studies that intends to review the significance and value of visual artifacts, and in particular of printed ephemera, in the establishment of a sense of local identity through design” (Farias, 2015, p. 201), therefore contributing to the design of local graphic design history. Graphic memory research is always concerned with the visual, material and semantic aspects of graphic artifacts, using those artifacts as primary sources and central documents. The material nature of graphic artifacts allow them to be not only analysed in terms of its visual and physical attributes, but also as spatially situated and geographically located phenomena.

In other occasions, I have discussed the way in which the study of commercial almanachs and type specimens could contribute to graphic memory and design history (Farias, Aragão and Cunha Lima, 2012), and the benefits of historical GIS to research on print culture (Farias, Hanns and Dixon, 2016). Here, I will resume some of the ideas discussed in those earlier works, and put forward considerations on approaches to the visualization of data, having as a case study the development of a website on São Paulo city early print culture.

The “Tipografia Paulistana”¹ website is one of the recent results of a wider line of research on São Paulo city graphic memory, that integrates the Memória Gráfica Brasileira (Brazilian Graphic Memory) research network. The network

¹ Accessible at <<http://labvisual.fau.usp.br/tipografiapaulistana>>.

started as a research project, active from 2008 to 2013, resulting in comparative studies developed between nodes located in Recife, Rio de Janeiro and São Paulo. Some of the main interests of the original *Memória Gráfica Brasileira* research project were printed ephemera and graphic artifacts produced in the early days of Brazilian industrialization, leading to a number of investigations on the microhistory of early print culture and typography in various parts of Brazil.

Derived from the *Memória Gráfica Brasileira* project, the research line *Memória Gráfica Paulistana* (São Paulo city Graphic Memory) started, in 2011, with an exploratory investigation on the visual characteristics presented by typographic artifacts produced in São Paulo city, resulting in a database accessible through a first version of the *Tipografia Paulistana* website. It went on to engage a growing number of students and investigators,² dedicated to studies on printing in São Paulo in the nineteenth and early twentieth century, and to the development of an improved version of the website.

The first letterpress printing shop established in São Paulo, in 1827, was responsible for printing the newspaper *O Farol Paulistano*, and came to be known by the same name. The subsequent expansion and growing relevance of printing in São Paulo city was registered in the early twentieth century by Affonso A. de Freitas (1915), who listed 22 newspapers being published in the city until 1840, 55 new titles between 1851 and 1860, and other 273 between 1881 and 1890 (Freitas 1915, p. 17). Towards the end of the nineteenth century, São Paulo became more and more relevant in terms of economy, education and politics, and this was accompanied by a growing number of printing shops (Hallewell 1985, Deaecto 2002, Cruz 2004). According to Artur Vitorino, the first typesetting machine was installed in São Paulo in 1905 (Vitorino 2000), causing revolt among typesetters afraid of losing their jobs, but gradually becoming the norm for books and newspaper production, leading to an end the golden era of manual typesetting and printing with movable type.

The time frame chosen for the research that resulted in the *Tipografia Paulistana* website (1827-1927), therefore, was defined taking into account the 100 years that go from the establishment of the first printing shop in the city, to the

² The complete team included professors Priscila L. Farias (coordinator), Daniela K. Hanns and Leandro Velloso (FAU USP, Brazil), Catherine Dixon (UAL/CSM, UK), and Isabella Aragão (UFPE, Brazil); undergraduate students Alessandra Fudoli, Aline K. Yoshimatsu, Bianca T. Martins, Clara O. Gastelois, Deu Rim Choi, Heloisa B. Oliveira, Janaina de F. Oliveira, Marina A. Onoda, Olivia L. Cavallari, Paola R. Fernandes, Roberta A. Cunha; postgraduate students Fabio M. C. Pereira and Laura B. Lotufo; programmer Mauricio Galdieri; and research assistant Marcella M. Jyo.

beginning of the period when manual typesetting started to be replaced by mechanic composition.

The main questions set up for the research were:

1. WHO? (who were the first São Paulo letterpress printers, and who provided type for those printers?)
2. WHEN? (when were they printing, and when were the typefaces incorporated to their repertoire?)
3. WHERE? (where the printing shops and type foundries or distributors were located?)
4. WHAT? (what typefaces were they using?)

Differently from almanacs dedicated to culture and entertainment (like the also popular ‘literary’ almanachs), Brazilian nineteenth century ‘commercial’ almanacs were a form of annual publication systematically listing, among other things, main trades and accredited professionals (Farias, Aragão and Cunha Lima, 2012, p. 500). Lists of printing shops, frequently accompanied by their addresses, names of owners and staff, and current publications were provided in each edition. Type specimens, on the other hand, by cataloguing the repertoire of typefaces, ornaments and vignettes of a print office or type foundry, are a rich source of information on the subject (Farias, Aragão and Cunha Lima, 2012: 503). Data for answering questions 1, 2 and 3 were to be found, therefore, in commercial almanachs, and type specimens be the best place to look for answers to question 4.

While data was being gathered, strategies for its visualization started to be conceived. Organizing data is a first step towards analysis, and the tools and methods adopted from this phase on are key for finding trends, counter-trends, coincidences and deviations that base interpretation. Arranging data in spreadsheets, treating and organizing image files are already pathways towards the visualization of data, and finally resulted in the interactive maps, timelines and dynamic typeface specimens that were included in the Tipografia Paulista website.

GATHERING AND VISUALIZING DATA ON EARLY PRINTERS AND TYPE FOUNDERS

The best known Brazilian nineteenth century commercial almanac series — Almanach Laemmert—, published in Rio de Janeiro, is available at the Brazilian National Library, also online. The situation is different for commercial almanacs published in São Paulo in the same period. As noted also by Camargo (1983), no library or archive holds a complete collection of them, and an extensive search in different libraries and archives was necessary in order to come up with a reliable list.

Fourteen issues, from three different commercial almanac series, published in São Paulo city during the nineteenth century, were identified³ — three published by *Typographia Imparcial de Marques and Irmão* (two almanachs for years 1857 and 1858, and a ‘memorial’ for year 1866), one by *Typographia Americana* (for year 1873), eleven by Jorge Seckler and his successors (an ‘indicador’ for 1878, and nine almanachs, for years 1883, 1884, 1885, 1887, 1888, 1890, 1891, 1895 and 1896).

The strategy adopted for gathering data in nineteenth century commercial almanacs included bibliographical and documental research techniques. Each almanac was examined in search for information on printing offices (typographias) and type founders (fundições de tipos), both in the address listings and in the advertising (notabilidades) sections. Data gathered from the nineteenth century commercial almanachs was complemented with data found in almanachs and trade magazines published in the early twentieth century, and information found on secondary sources, such as Affonso A. de Freitas comprehensive list of newspapers published from 1827 to 1914 (Freitas, 1915). Data from 270 letterpress printers, 14 type founders or distributors, and almost 40 related companies (such as book binders and lithographic printers) was found. Documental research techniques were used for gathering data on the typefaces used by the printers of the almanachs, as described in the next topic.

Shared online spreadsheets provided by Google were used for organizing and comparing data. The first versions of those spreadsheets contained only a few columns for basic information such as year, name of the company, address, publications, staff and notes. They went on to contain 19 columns used for registering more complex data such as the first and the last year of activity, of each company, and the different addresses and activities they announced. An interactive map, associated with a timeline, was considered to be the best way to visualize this data.

GATHERING AND VISUALIZING DATA ON TYPOGRAPHIC REPERTOIRES

Research on typeforms and typographic repertoires is frequently done through the examination of printers and type founders catalogues (see, for instance, Gray, 1976 [1938], Annemberg, 1994 [1975], and Vervliet, 2008). Such publications, however, due to their commercial and temporary aspect, have not been

³ Archives consulted were those at Biblioteca Mário de Andrade (BMA), Faculdade de Direito da Universidade de São Paulo (FD USP), Instituto de Estudos Brasileiros (IEB USP) and Biblioteca Brasileira Guita e José Mindlin (BBM USP).

preserved with the same systematicity and care as books in libraries. In fact, although ten type specimens printed in Brazil in the nineteenth century could be found (nine in the Brazilian National Library and one in the Historical and Geographical Institute, Cunha Lima, Aragão and Farias, 2013), none of them were printed in São Paulo.

The strategy for gathering data from type specimens is based mostly on documental research, and requires special methods and procedures (Farias, Aragão and Cunha Lima, 2012). If the volumes that have to be taken into account are held in different archives, images in high resolution of type samples are needed for performing comparisons that will determine, for example, if the same typeface was available from more than one type founder or was present in the repertoire of different printers, or of the same printer through time. The same is true if, instead of working from type specimens one wants or needs (as it was the case in the research described here) to extract and compare samples from other printed matter (like books, almanachs or newspapers).

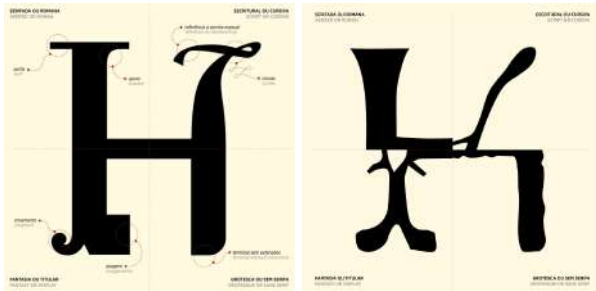
Commercial almanachs were a kind of publication that required a good sense of typographic identity, hierarchy and differentiation from its printers. Those responsible for their design would certainly take into account the need for some level of visual coherence among different volumes of the same collection; a moderate level of visual contrast that would allow readers to browse and find information from different tables and lists; and for an expressive sense of novelty and diversity in the products and services announced in the ‘notabilidades’ pages. The level of typographic expressivity and differentiation found in those last pages is only comparable to that found in nineteenth century posters or title pages, where printers would sometimes use a different typeface for each line —just like in type specimens.

The printers of commercial almanachs were therefore selected to be the first to have their typographic repertoire investigated and inventoried. Pages from the almanachs published by Seckler and Marques and Irmão printing shops were photographed or scanned in high resolution. Letters, numbers and orthographic signs found in those pages were separated and then combined to recreate the fonts (typefaces in specific sizes and styles) and type families (groups of fonts with the same design) found in the publications. This allowed for comparisons between typefaces found in the printers’ repertoires and in type specimens (Farias and Onoda 2015) and also between the repertoires of different printers (Farias and Cunha Lima 2016).

Dynamic type specimens, digitally recreated from the images of typefaces, vignettes and ornaments found in almanachs, books and newspapers, were considered by the research team the best way to visualize the printers’ typographic repertoires.

MAKING IT ALL VISIBLE IN A WEBSITE

Tipografia Paulistana is a website that gives access to a database on the first 100 years of letterpress printing in São Paulo city, developed in PostgreSQL, and hosted in an Apache server at FAU USP. Although an important part of this database is verbal or numerical, it also includes relevant visual and geographical information. The website is divided in three main areas (Typefaces, Companies and People), and navigation within them is done through three main modes (lists, maps and ‘mosaics’).



Figures 1a and 1b: Two moments of the animated diagram in Tipografia Paulistana home page.

In the homepage, an animated diagram (Figure 1a) explains the nomenclature used for the 4 main categories of type in the website (serifed or roman, grotesque or sans serif, script or cursive, fantasy or display). Examples of parts of letters H in those different categories alternate with the explanation (Figure 1b).

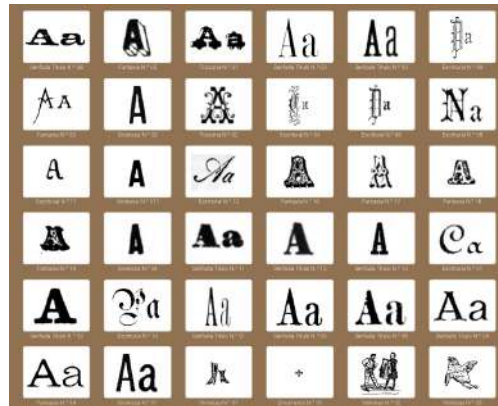


Figure 2: Aspect of the ‘mosaic’ of type and ornament families in the Typefaces area.

In the Typefaces area, the main mode of navigation is a ‘mosaic’: a set of images representing type families or collections of ornaments (Figure 2). Filters, based on Dixon’s (2001) typeform description framework, can be applied to select type or ornament families with certain characteristics. It is also possible to navigate from an interactive map, similar to the one available in the companies area.

Clicking in one of the elements of the mosaic gives access to type family pages. Similar to type specimen pages where samples of different body sizes and styles (for instance, roman and italic, Figure 3a) of the same typeface are composed from characters gathered in almanachs, books and newspapers (Figure 3b). Ornaments and vignettes were also organized in ‘families’ (Figure 4). In order to achieve that, images collected were associated with metadata that describe their formal attributes (such as shape and size), and organized in virtual type racks and type cases in the website content management system.

The type families pages list the publications where the samples were found, and also the printers responsible for those publications. Clicking on a printers’ name gives access to the company page (also accessible from the Companies area, Figure 5). Information on the activity of printers are to be found in these pages, along with a map showing their address (or addresses) and typographic repertoire ‘mosaic’.



Figures 3a and 3b: Type samples in a printed early twentieth century type specimen (Imprensa Oficial de São Paulo, 1931), and in the Tipografia Paulistana website.

Ornamento N.º 10

Impressos [1]

Almanaque Seckler, 1887, Jorge Seckler (Typographia de)

<https://digital.bbm.usp.br/handle/bbm/568>

Empresas [1]

Jorge Seckler (Typographia de)

body	samples
2.5	
6.7	
9.0	
11.4	

Figure 4: Ornament sample in the Tipografia Paulistana website.

Jorge Seckler (Typographia de)

Since: 1865

Until: 1890

Activities: Typography, Lithography, Book binding

The first mention of a printing shop belonging to Jorge Seckler, in São Paulo commercial almanacs, occurs in 1865. Seckler is indicated as the owner of a business by his name, established at 58 São Bento street. Between 1872 and 1878 Seckler presents himself as the owner of Typographia Livro Verde ('green book' letterpress printing shop), an establishment that also offered books, office supplies, bookbinding and ruled paper, located at Direita (straight) street, number 14/15 – the same address where Henrique Schroeder's Typographia Allemã (German printing shop), which by then was transferred to Commercio (commerce) street, previously operated. In 1882, Seckler announces in his new almanach that he now owns five mechanical presses, and an office separated from the printing shop, located at 25 de Março (25 March) street, number 2. From the following year, he announces his company as Typographia a Vapor de Jorge Seckler & C.* (Jorge Seckler & Company Steam Typography). The address changes again, in 1887, passing to numbers 38 and 40 of the same 25 de Março street, maintaining the premises in Direita street. In 1887 he claims to be the owner of the 'first and best-furnished establishment for typography, bookbinding, paper ruling and manufacturing of blank books in the province ... a house founded in 1862', and, in 1889, he informs that the company would have been awarded 'in various national and foreign exhibitions'. In the São Paulo State Almanach for year 1891, the Companhia Industrial de S. Paulo (São Paulo Industrial Company) printing shop, which would publish the ninth and tenth volumes of Seckler's almanacs, is described as 'successor to Jorge Seckler & C. and Baruel & C.', having as their address the 'old Seckler house', located at number 14 Direita street.

Address

Rua São Bento, 58 (1865 a 1865)

Rua Direita, 15 (1873 a 1883)

Primeiro endereço da Allemã.

Rua 25 de Março, 2 (1882 a 1883)

Escritório na Rua Direita, 15.

Rua 25 de Março, 38-40 (1883 a 1890)

Escritório na Rua Direita, 14.



Typefaces



Figure 5: Page dedicated to Jorge Seckler printing shop in the Tipografia Paulistana website.

Interactive maps, based on Google Maps, were customized, associated with time bars (linear graphs controlled by sliders) and check-box filters, and made available as a navigation mode in the Companies and Typefaces areas. Early examples of the use of maps for the visualization of historical data related to print culture include Lucien Febvre and Henri-Jean Martin's maps of European printing offices up to 1500, published in their influential *L'apparition du livre* (1958), and Michael Twyman's study on the location of London lithographic printers (Twyman 1976). In both cases, series of static maps were used as visual evidence for arguments on the spread of printing and its consequences.

More recent efforts towards spatializing print history include interactive maps such as the *History of the Bulgarian Book Between the Liberation and Independence (1878-1908)*,⁴ and the *Atlas of Early Printing*.⁵ Both of them offer the possibility of multiple visualizations of the maps, combining time (control of the years or periods to be considered) and the location of printing shops and related institutions and businesses (like publishers, book binders, universities, paper mills and fairs, for more details see Farias, Hanns and Dixon 2016). In the case of the Bulgarian map, images of title pages of books produced by the printing shops along the years within the time bar are also available.

In the Tipografia Paulistana website Companies area, a time bar on the top of the map (Figure 6) allows the user to restrict the view to a specific time period or to a single year (Figure 7). The customized pins shown in the Companies map differentiate letterpress printers (in red), type foundries and distributors (in blue) and other related business (like bookstores, book binders and lithographic printers, in brown). The total number of companies and counts of each kind of business is provided below the map. Clicking on a pin in the map provides a short description of the business (Figure 7) and a link to the company page.

⁴ Available since 2011 at <<https://bgbookhistory.unibit.bg/en>>.

⁵ Available since 2013 at <<http://atlas.lib.uiowa.edu>>.



Figure 6: A map with all the companies found within the time frame of the research (1827-1927).

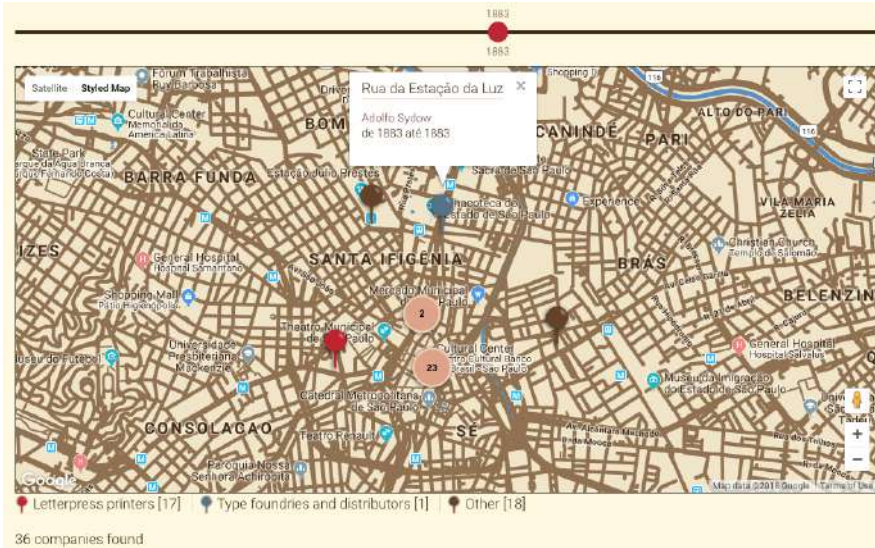


Figure 7: A map showing the companies found to be active in year 1883.

In the Typefaces area, besides selecting a year or a period, it is also possible to apply filters that restrict type family category or formal attributes. The resulting map will show the addresses of the companies known to have used or produced typefaces that comply with the filters within the time span indicated in the time bar. Below the map, a mosaic of the typefaces will be displayed. Figure 8 shows an example of a map for fantasy typefaces, with one of the pins selected.

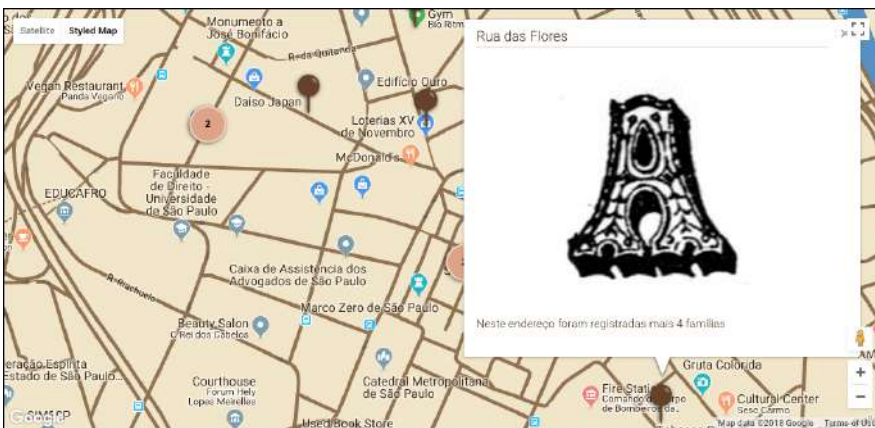


Figure 8: A map showing the location of companies that used fantasy typefaces, with one of the pins selected.

Finally, a timeline of all letterpress printers and type vendors (type foundries, distributors and importers) was developed using Google Spreadsheets (Figure 9). Years were indicated in columns, and the start of every decade, as well as the opening of every decennial, from 1827 to 1927, were highlighted. Companies were accommodated in lines, with boxes extending from the first to the last year of which it was possible to ascertain that the business was active. Eventual successors of the same company were given boxes in the same line. Two shades of gray were used for printing shops, a shade of green for type foundries or vendors, and a shade of blue for companies that were both printing and selling type. This timeline was made accessible from the left hand side menu of the Tipografia Paulista website, and also from the topic Research in its home page.



Figure 9: Timeline of the letterpress printing shops and type vendors active in São Paulo from 1827 to 1927.

ANSWERING THE RESEARCH QUESTIONS

The strategies of visualization adopted all along the research process were key for dealing with the expressive amount of data gathered for answering the four research questions.

Who?

The use of colour coded spreadsheets and maps associated with timelines was key for answering the first question. The lists of letterpress printers and type vendors were organized and checked with the help of spreadsheet tools (such as filters and sorting), and the use of maps helped in the identification of businesses that had slightly different names but occupied the same address in the same time span—an indication that they were in fact the same business.

Until may 2018, a total of 317 companies were identified. Among them, 270 letterpress printers, 11 type vendors (5 of them also active as printers) and 3 type founders (the religious school Liceu Sagrado Coração de Jesus, and the companies owned by immigrants of italian origin A. Ardinghi and R. Cardinale, the last one producing wood type).

When?

As the timeline in Figure 8 dramatically shows, the temporal distribution of those companies in the period studied was not at all uniform. A staggering increment in the number of companies can be identified from around 1880 to 1900. The number of type vendors (foundries or distributors) also grows dramatically, although in a much smaller proportion, and with some delay (see green and purple lines in Figure 9 and table 1).

Because the type samples used to rebuild the printers' typographic repertoires were extracted from dated documents, it was possible to precisely track the use of typefaces along the research time span. This allowed for the configuration of tables highlighting the dates when the typefaces were used (an example is given in Figure 10), that helped in understanding how fast and in what pace the repertoire of a certain printer was created.

Period	Printing offices	Type vendors
1827-1837	3	0
1838-1847	4	0
1848-1857	12	0
1858-1867	12	0
1868-1877	16	0
1878-1887	41	1
1888-1897	135	7
1898-1907	108	8
1908-1917	106	6
1918-1927	20	4
Total	270	11

Table 1: Number of printing offices and type vendors (foundries or distributors) per period

	1884	1885	1887	1888	1890	1891	1895	1896	ocorrências totais
grupo 1 – toscanas góticas									
ALBERTO BÜHLER	1	1	5	8	4	3	1	1	24
JOÃO SCHALCH			1						1
Campanas	3	2							5
grupo 2 – serifa triangular									
PAPELARIA			1	1					2
As Duas Cidades				1	1	1	1		4
grupo 3 – bifurcação angular									
JOSÉ ANTONIO DA SILVA	5								5
Sortimento Completo em Moveis	3	1		1					5
PHOTOGRAPHIA ALEMA		1							1
LITTHAUER BITTER			4					2	6
grupo 4 – bifurcação curva									
E. HEINKE & COMP.	2			1	1	1		1	6
GUINNES STOUT	1	3	9	8	9	8	2	3	43
RUA DIREITA N. 32	9	2	12	9	11	11	1	6	61
	21	10	32	29	26	24	5	13	163

Figure 10: Table showing the use of tuscan typefaces in the almanachs published by Jorge Seckler and his successors, highlighting the period during which those typefaces first appeared.

Where?

The implementation of interactive maps in Tipografia Paulistana website allowed for the combined visualization of geographic and temporal data. Controlling the time track handles it is possible to see, for instance, that, while there is a definite concentration of companies near Sé square (the historical city central point, note the circle with number 113 in Figure 11), the exclusive concentration in this specific site lasted only from 1827 to 1865 (Figure 12). In 1870 companies moved towards Santa Ifigênia and Liberdade districts (Figure 13), and, from 1880 on they spread even further, towards the Easter districts of Mooca and Braz, the Southern district of Bela Vista, and the Northern district of Campos Eliseos (Figure 14).

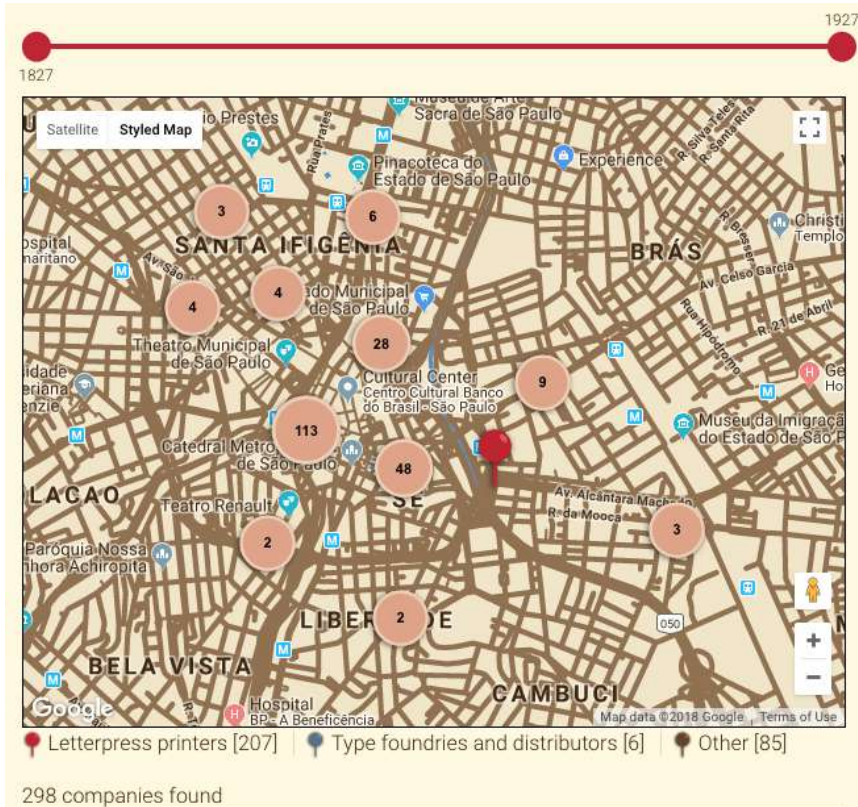


Figure 11: Location of the companies active in São Paulo during the whole time span.

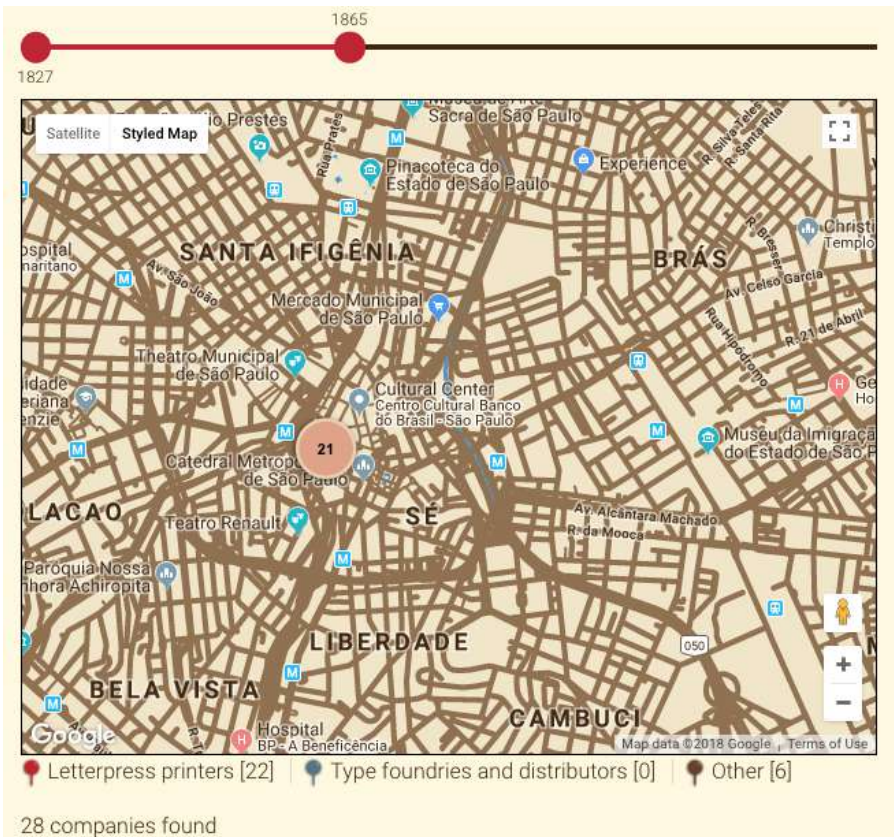


Figure 12: Location of the companies active in São Paulo from 1827 to 1825.

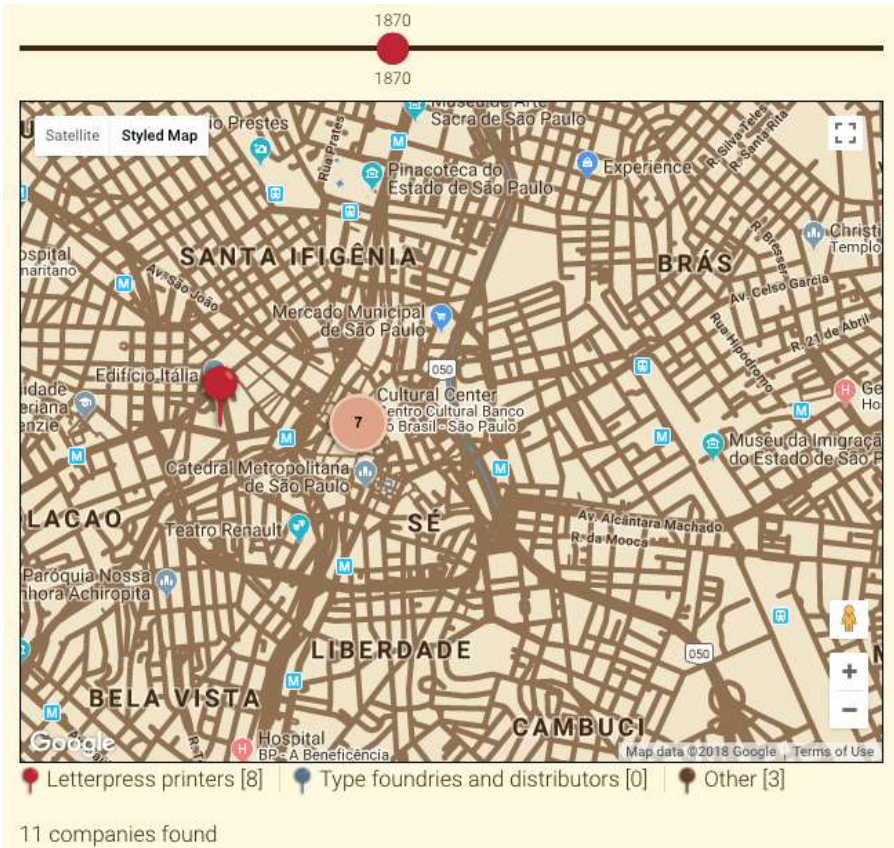


Figure 13: Location of the companies active in São Paulo in 1870.

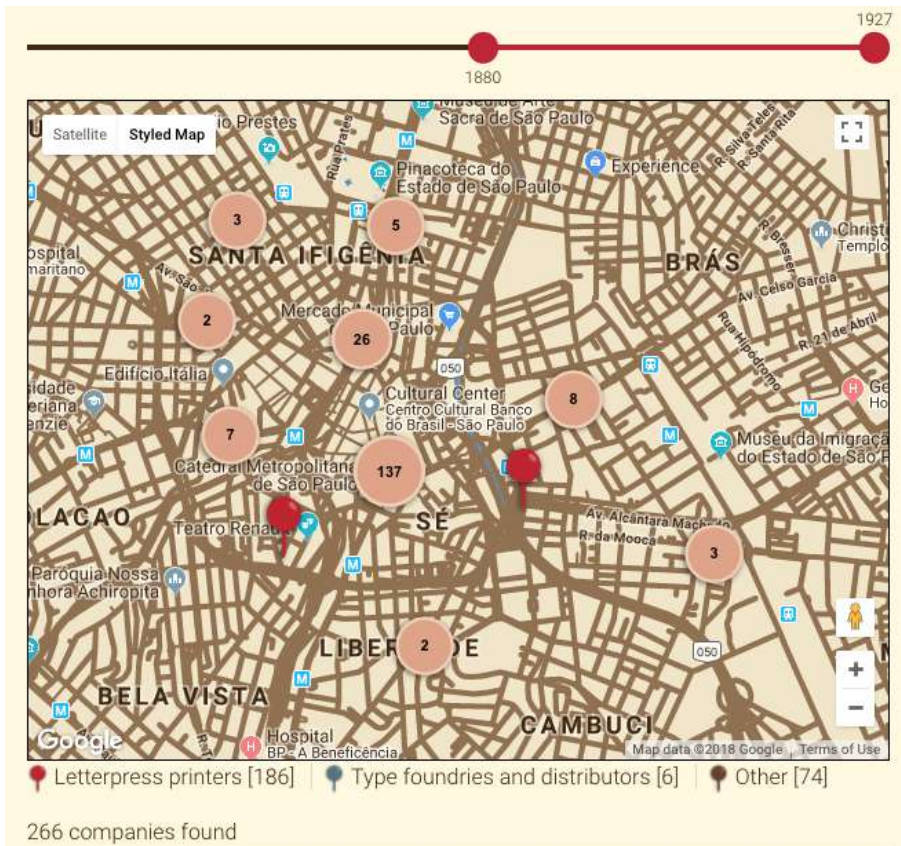


Figure 14: Location of the companies active in São Paulo from 1880 to 1927.

This is coherent with the spread of the city during the same years, and shows that, while some businesses would go on to be established in more periferic and industrial areas, others would stay closer to the city center. Older and bigger companies, like Jorge Seckler’s *Typographia a Vapor* (later to be known as *Companhia Industrial de São Paulo*, and *Duprat and Co.*) would eventually have two addresses: an office located in the city centre, and a workshop or warehouse further away.

What?

The strategy for visualizing data that could answer the last question (“what typefaces were São Paulo printers using?”) consisted, as explained before, in re-building the printers’ type specimens from printed matter issued from their presses (so far, almanachs and newspapers). This has revealed to be the most challenging task faced by the research team, once extreme care must be taken to

guarantee that data collected in different occasions by different researchers can be compared, and complex data interaction must be devised and programmed.

Even if a complete answer for the question cannot be given at this point (the repertoire of just 4 of the more than 200 printers had been retrieved), some trends and coincidences could be noticed. Those early printers would use more extensively serifed typefaces, in particular for text but also for title, but with little variation—a couple of such typefaces, in different sizes, would be used in all publications. Fantasy typefaces are the most varied. Those belonging to families with more variation of size were used more frequently, in particular in almanachs, and in many, if not all, publications by the same printer. Some fantasy typefaces⁶ appear only once or twice, always for the name of the same advertiser, suggesting an strategic repetition that would create a stable visual identity for a product, service or commerce. Script faces were rare, although quite varied. The earliest example—one size in copperplate script style—appears in an almanac published in 1857. Other script typefaces, most of them fraktur variations, in one or two sizes, appear in the repertoire of Jorge Seckler, from 1878 on. Sans serif faces were even more rare, available in just one or only a few sizes, and used sparsely, since 1857.

CONCLUSION

Research on graphic memory deals, essentially, with visual data, and therefore can benefit from the application of old and new visualization strategies and techniques. Through the website *Tipografia Paulistana*, an expandable database on letterpress printing in São Paulo in the nineteenth and early twentieth century was made available. The website development also resulted in the elaboration of new techniques for the visualization of georeferenced historical data and typographic repertoires, which are the most relevant results for the field of information design. Those visualization strategies and techniques helped in the organization and analysis of the data gathered, providing clues and evidences for interpretation.

An important limitation of the research presented here is the relatively small number of typographic repertoires catalogued so far (namely, those of Jorge Seckler and his successors, *Imparcial de Marques e Irmão*, *O Farol Paulistano* and *Typographia Allemã*), and the still partial nature of the cataloguing (not all outputs of their presses has been examined). Another limitation is the still work-in-

⁶ For a more detailed survey on the use of tuscan typefaces, see Farias and Cunha Lima 2016.

-progress nature of the digital platform. Although the UX team worked hard to overcome all technical problems indicated in usability testing and by members of the research team, new issues arise constantly as the platform is feeded and consulted.

The development of other visualization techniques, like automatic timelines and networks, already devised by the research team, but not implemented due to time constraints, is one of the key aspects of further research.

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Digital datasheet for archives of images

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PREAMBLE

Considering the several existing studies on history of design that have primary sources of printed materials as the object of their study, many researchers focus their efforts on the systematization and validation of their investigations through appropriate methodological procedures.

Within this context, over the years, the Laboratory of Design: History and Typography (LadHT) has built a methodological protocol to standardize and support the different types of research on magazines, newspapers and other printed materials, carried out by its team of researchers. The first methodological effort regards to the researcher's approach to the socio-historical context of the printed material, including literature review and additional data collection methods, such as interviews. The second effort of the research focuses on the graphic analysis, divided in 7 steps: identification and mapping of collections, photographic record of the collection, organization of the digital collection, creation of the datasheet for the analysis of the printed material, data analysis and discussion of the results (Fonseca et al, 2016).

The aforementioned methodological set establishes guidelines, but also allows each researcher to make any necessary adjustments in the proposed steps. One step that always requires adjustments is the construction of the datasheet, since the definition of the variables that compose it must meet the particularities of the graphic object being studied.

This paper presents a suggestion for the construction of a datasheet for the analysis of images. Since it is a very specific field within the universe of graphic elements that compose a printed material, it was necessary to perform a literature review in order to format the proposal presented herein. On top of the focus on image analysis, the proposal foresees the digital construction of the tool, since the volume of images to be analysed may be a limiting factor for the research. In this proposal, we will exclusively analyse data on the syntactic construction of the images within the archive, without any kind of semantic analysis. This is because it would be unfeasible to make a qualitative analysis in a collection with such a high number of copies.

To perform the present research, we have used the case study of Chanaan magazine, published between 1936 and 1939 in Vitória, Espírito Santo, Brazil where 2,412 images were published. The main purpose of understanding the typology and characteristics of the images of the magazine has driven the construction of the datasheet to study the published images. The challenge was to develop a tool capable to standardize and optimize the data collection, and to validate the analyses through the systematization of procedures and statistical treatment of the data.

DEVELOPMENT OF THE DATASHEET

After digitalizing and indexing the collection of Chanaan magazine, we began the construction of the image analysis plan. The aim was to identify typologies and characteristics of visual construction, as well as the use of images along with ornamental, typographic and calligraphic elements.

According to Freitas et al (2013), methodology is the science that deals with the study of methods, techniques or tools, and their applications to the definition, organization and solution of theoretical and practical problems that help researchers and designers in their process of constructing a strategy plan to attain a result.

In order to obtain a strategy plan and achieve a valid result, we began developing the datasheet, which will be later reported to point out the analyses variables, their sources and their purposes.

The definition and recording of technical variables of the printed material (whether quantitative or qualitative) is of utmost importance, as they can determine the course of the research. The established variables define the technical parameters of the research, recorded through the datasheet created for this purpose. Therefore, it is possible to reduce complex print characteristics to simplified indexes, as a type of summary. The datasheet can be physical or digital, provided that it presents a structured schedule for data collection (Fonseca et al, 2016, pp. 6-7).

To create the datasheet, we have used some classifications set by the preliminary research on the magazine as a reference. That research approached general information, such as: number of issues and dates, number of pages, type of paper used in printing, number of ads, use of images, price, visual characteristics of the cover, printing area, typography used in texts and titles, types of signatures and captions (Azerêdo et al, 2015; Azerêdo and Fonseca, 2016). As a result, from this first look, we were able to decide which elements should be investigated with greater attention.

Ricardo Cunha Lima's master's degree dissertation creates a methodology for the analysis of journalistic infographics as a part of information design (Lima, 2009). It addresses the elements that create visual and pictorial language. In the present research we have adapted some classifications presented by the literature review of Lima's work, such as Shape, Size, Colour and Orientation, based on the work *Semiologie Graphique*, by Jaques Bertin (1983); as well as Clive Ashwin's Consistency, Range Imaging, Framework and Naturalism (1982), which argues that the graphic syntax unswervingly influences the final interpretation of a message (Ashwin, 1982 apud Lima, 2009). The presented parameters served as a foundation to develop categories that support the interpretation of visual construction of these images. For this reason, the classifications were meticulously tested and adapted to be applied in the FII.

Finally, we have used employed categories to the photographic analysis, considering classifications applied to videos and to photography, starting from the classification of photographic layers (Paste, 2011; Rodriguez, [2010-?]). The first step in the construction of the FII was restructuring the digital archive, which included filtering the images that would be analysed, so they could be identified and cut according to the imagery elements found in their composition. These images were renamed so they would differ from the rest of the collection, now being named "Chanaan Clipping". The folders contain images with the nomenclature ordered by year, issue, page and number of the image in the page (CH_01_1936_02_01). This step was critical for the development of the technical variables used in the FII, for the knowledge of the archive allowed us to visualize and draft a preliminary profile of these images, and to decide on which variables would be applicable to the expected result.

To create the individual image file, the following groups were determined: Illustration, Photography and Photomontage. These categories were chosen after observing the imagery elements found during the organization of the collection. The first essential change in the composition of the datasheet was in the photomontage category, in which images that combine two or more photographs to form only one would be included (Porta, 1958). However, after carefully observing the composition, we concluded that the combination of photographs did not always form one standalone element; quite often its layout on the page was due to a differentiated diagramming, and not to form of a new image. Therefore, we included the Page Composition category in order to deal with the set of images that dealt with the same subject and were diagrammed in compositions that followed the same style, creating a unity effect on the page.

These categories were adapted after several tests, so they were more efficient in the collection of information, also to provide information regarding the aim of research at the end of the tabulation. This allowed us to trace a complete graphic

profile of the images published in the magazine. As mentioned above, different bibliographic sources were used to propose the variables used in the datasheet. All possible variables shall be discussed or considered, since the more detailed the proposed classifications, the greater the possibilities of filtering and number of attained information.

1. Year:

The year the magazine was published. Relevant information to filter and observe different graphic patterns throughout the years (Azerêdo et al, 2015).

2. Issue:

This is a highly relevant category, for it organizes and groups the results gathered per issue (Azerêdo et al, 2015).

3. Typology:

In order to create a classification of typology that was efficient and encompassed all the images, we drafted the elaboration of the categories since the moment we organized the collection. Therefore, while the images were renamed, we completed a list with the possible typologies that would be added to the FII (Azerêdo et al, 2015). The detailing in the description of the typologies during the renaming of the files will aid in the construction of categories by topics and their subdivisions. The captions support the entire data collection, since in the vast majority of cases it would not be possible to identify all individuals in the image, events and locations simply by looking at the image.

After studying the archive, we could identify the following themes and sub-categories:

3.1 People:

Arts/cinema/theatre: People from the arts industry, musicians, actors, artists and any other event involving activities related to these items;

Health sector: Physicians, nurses, dentists and events related to this sector;

Entrepreneurs: Entrepreneurs of the great Vitória or from other places in Brazil, businesses and business events;

Children: Children and babies accompanied or not by their mothers;

Writers/Professors: Writers, poets, and professors in several areas;

Government officials: State and local government officials;
 Journalists: Journalists;
 Fashion: Fashion models, accessories, trends and sketches;
 Politicians: Popular politicians such as governors, presidents, monarchs etc.
 Women: Women in general;
 Body parts: Hands, feet, eyes, etc.

3.2 Events:

Academic: Academic events such as graduation ceremonies, balls, meetings and school commemorative dates;
 Artistic: Art exhibitions, plays and musicals;
 Sports: Sports related events;
 Politics: Government official events, military events, national commemorative dates, meetings and homages;
 Social: Social events such as weddings, balls, parties, birthdays, that is, any strictly social events.

3.3 Places:

Architecture / Decoration: Included images with architectural content and which emphasized the structure and decoration of buildings, cities or physical environments;
 Monuments: Outdoor or indoor monuments;
 Constructions: Private or government constructions;
 Landscapes: Landscapes in general;
 Government buildings/Businesses/Schools/Hospitals: Government buildings such as local councils, public agencies and official residences, shops and factories, schools and their facilities, hospitals and their branches;
 Squares/Gardens: Squares and gardens in general.

3.4 Others:

Opening section: Opening sections next to the title;
 Historical illustrations: Illustrations or photographs portraying historical moments;
 Ludic Illustrations: Illustrations or images that did not fit into a specific ca-

tegory, but accompanied and illustrated texts with ludic and creative references;
 Other: Images that did not fit into any specified category.

4. Format:

This category was divided into rectangular, square, oval, round or irregular, so that in the final analysis it would be possible to state whether the images in the magazine followed a cut format or if they were bolder in their representations (Bertin, 1983 apud Lima, 2009). This category may also define whether the publication followed some aesthetic trend of the time.



Picture 1: 1 Example of Rectangular format (Chanaan, 1938, issues 22 and 23, p. 61); 2 Example of Oval format (Chanaan, 1938, issues 22 and 23, p. 19); 3 Example of Round format (Chanaan, 1936, issue 02, p. 37); 4 Example of Square format (Chanaan, 1936, issue 03, p.12); 5 Example of Irregular format (Chanaan, 1938, issues 22 and 23, p. 41).

5. Approximate size:

The approximate page size: one column, two columns, half page, top, full page, bottom and less than a column (Bertin, 1983 apud Lima, 2009). By studying the size of the images, we were able to understand the relevance of the images as content of the magazine, and the importance of their space for the layout of the pages.



Picture 2: 1 Example of images in one column (Chanaan, 1938, issue 24, p. 04); 2 Example of image in two columns (Chanaan, 1939, issue 29, p. 06); 3 Example of image in three columns (Chanaan, 1937, issue 20, p. 14); 4 Example of image in full page (Chanaan, 1936, issue 04, p. 23); 5 Example of image in half page (Chanaan, 1939, issue 30, p. 09); 6 Example of image on the top (Chanaan, 1937, issue 20, p. 20); 7 Example of image at the bottom (Chanaan, 1937, issue 20, p. 11).

6. Colour:

Black; Black + one colour; One colour other than black; Three Colours and Four Colours. This category was created to collect the colour use frequency and in the magazine issues (Bertin, 1983 apud Lima, 2009). The frequency and amount of colour can provide information on the production financial means, considering that colour printing was more expensive.



Picture 3: 1 Example of a black and White image (Chanaan, 1937, issue 15, p. 45); 2 Example of a black + one colour image (Chanaan, 1937, issue 21, p. 43); 3 Example of an image with a colour other than black (Chanaan, 1937, issue 17, p. 31); 4 Example of an image with three colours (Chanaan, 1936, issue 03, p. 42); 5 Example of an image with four colours (Chanaan, 1936, issue 04, p. 26).

7. Layout:

The layout can be categorised as horizontal, vertical and transversal (Bertin, 1983 apud Lima, 2009). This category helps to understand how the images behave on the page: more traditional, such as horizontal and vertical, or freer form and transverse, which may indicate the attempt of a bolder and more experimental presentation;



Picture 4: 1 Example of Vertical layout (Chanaan, 1936, issue p. 27); 2 Example of Horizontal layout (Chanaan, 1936, issue 09, p. 19); 3 Example of Transversal layout (Chanaan, 1936, issue 08, p. 34).

8. Consistency:

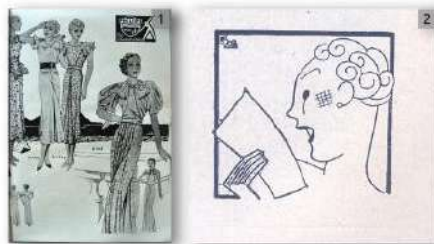
At first, consistency was a category exclusively applied to illustrations, but it was later used for all other categories, as it helped us to observe how the imagery elements can be mixed to form a composition. The types are: (i) homogeneous: images that do not mix other techniques in their composition, such as photography or illustrations; and (ii) heterogeneous: mixes two or more types of techniques, such as photography with lettering (Ashwin, 1982 apud Lima, 2009). The abundant use of heterogeneous images can also indicate the interest of the magazine in experimentation, since the interferences of these techniques transform the original image into a new one, changing its style and original configuration. We could identify the following types of techniques: photography, illustration, lettering, typography and calligraphy.



Picture 5: 1 Example of Homogeneous photography (Chanaan, 1936, issue 10, p. 28); 2 Example of Heterogeneous photography comprising Illustration and Lettering (Chanaan, 1936, issue 10, p. 16).

9. Range imaging:

This category only applies to illustrations that intend to categorise the level of details within an image. The extended type is a composition that uses textures and more detailed and elaborated lines; and retracted type is the one that presents little detail (Ashwin, 1982 apud Lima, 2009);



Picture 6: 1 Example of Extended range (Chanaan, 1936, issue 16, p. 39); 2 Example of image with Retracted range (Chanaan, 1936, issue 24, p. 33).

10. Framework:

This categorisation applies exclusively to illustrations. Images considered conjunctive have a background as a complement to the main illustration, for instance, a couple pictured inside the room of a residence, or a woman portrayed with a landscape in the background. In disjunctive images, the illustration is loose, where most of the pictures are cut up, such as the illustration of a man's bust (Ashwin, 1982 apud Lima, 2009).



Picture 7: 1 Example of image with Disjunctive framework (Chanaan, 1936, issue 02, p. 36); 2 Example of image with a Conjunctive framework (Chanaan, 1937, issue 17, p.11).

11. Naturalism:

This category is exclusive for illustrations. The intention is to check if the image was naturalistic or non-naturalistic. The naturalistic image corresponds to the representation of objects in a realistic way, as found in nature, e.g., illustrations of people that follow the conventional aesthetic and anatomical standards. The non-naturalistic would be a playful or fanciful representation, such as the image of an angel (Ashwin, 1982 apud Lima, 2009);



Picture 8: 1 Example of Non-naturalistic image (Chanaan, 1936, issue 01, p. 34); 2 Example of Naturalistic image (Chanaan, 1938, issue 55, p. 24).

12. Frame:

This category verifies the presence of frames around images. The frames can be (i) simple, considering those traced with a single line; (ii) composite, where the edges are more elaborated with other resources like double lines and adornments; and (iii) absent, when there is no frame around an image;



Picture 9: 1 Example of an image with an Absent frame (Chanaan, 1939, issue 30, p. 28); 2 Example of image with a Simple frame (Chanaan, 1937, issue 21, p. 02); 3 Example of image with a Composite frame (Chanaan, 1938, issues 22 e 23, p. 68).

13. Threads:

The threads were sorted as simple, composite or absent. Simple: threads with a single and continuous line. Composite: presenting more than one line, side-to-side or dotted, or decorated. The threads were used together with the image elements as an embellishment, unlike the frames.



Picture 10: 1 Example of image with Absent threads (Chanaan, 1938, issue 22 e 23, p. 61); 2 Example of image with Simple threads (Chanaan, 1938, issues 22 and 23, p. 03); 3 Example of composition of page with Composite threads (Chanaan, 1938, issues 22 and 23, p. 22).

14. Signature:

Signatures can be calligraphic or typographic. The purpose of this variable is to indicate how often photographs or illustrations displayed their authors, and it helps to recall who were the photographers and illustrators who published in the magazine. For this reason, we only took into consideration the signatures of the creators of the images, excluding signatures of people who were being portrayed.



Picture 11: 1 Example of signatures in page compositions (Chanaan, 1936, issue 02, p. 41).

15. Caption:

Classification of the absence or presence of captions in any type of image. This category shall be completed very attentively, because in many cases the textual content of the page may be confused with a caption.

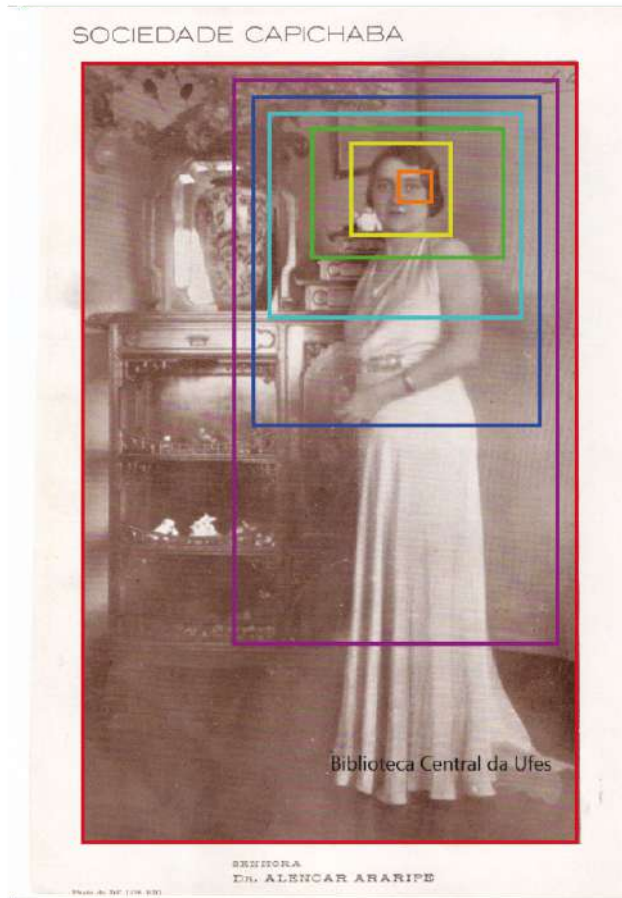


Picture 12: 1 Example of a photograph with caption (Chanaan, 1938, issue 27, p. 68); 2 Example of page composition with captions (Chanaan, 1939, issue 30, p. 16).

16. Photographic layers:

Categorisation applied exclusively to photography. It categorises images according to photographic layers, namely: general layer, American layer, medium, medium short, primer layer, very first primer layer and detail layer (Paste, 2011; Rodriguez, [2010-?]). This grouping can contribute to the definition of the published photographs profile, producing results that can be compared with the photographic styles and techniques that were used and available at the time.

- | | |
|-------------------|------------------------------|
| ■ Plano Geral | ■ Primer Plano |
| ■ Plano americano | ■ Primeiríssimo Primer Plano |
| ■ Médio | ■ Plano Detalhe |
| ■ Médio Curto | |



Picture 13: 1 Example of divisions in photographic layers. (Chanaan, 1936, issue 11 and 12, p. 42).

After deciding on the variables, we carried out tests and adjustments before formatting the datasheet. In a preliminary survey, we concluded that the magazine would have at least 1,133 elements to be analysed. This showed us that completing and tabulating data manually would be an arduous and lengthy task. As a result, we decided to format the datasheet via an online template, to speed up the completion and to transform the data into a digital spreadsheet automatically. The platform of choice was Google Forms, which is a tool used to develop online templates and where results are automatically sent to a spreadsheet linked to Google Drive. The Google tool is recommended because it is free and easy to use, and it also allows simultaneous sharing and use by multiple users, and therefore can be used by several members of the same research group, for example. It is necessary to study and have knowledge on the construction of the questions within the platform, so that we understand the data output. There are several possibilities of asking a question and obtaining answers in several formats. Tests were performed to acknowledge and visualize the results and the spreadsheet generated by the tool, and only after that, we decided which type of question would be used.

Designing data input through several answer methods was critical to create the digital FII, taking into consideration the output format for the spreadsheet, in order to simplify the tabulation. We understand that this method facilitates the creation of charts about each variable or for comparison, as seen below.

1. Open-ended answers.

This option was used only in the name category, so that it would be the first information to appear on the table line, making it possible to identify the image simply by reading the assigned nomenclature. Open-ended answers are recommended solely for classifications that should not be counted at the end, because it is much more difficult to add up and filter data with a high number of variables. The open-ended answers are recommended in cases where it is necessary to identify some kind of data that does not repeat itself or that is repeated only a few times throughout the collection, e.g. the name of the issue (no repetitions).

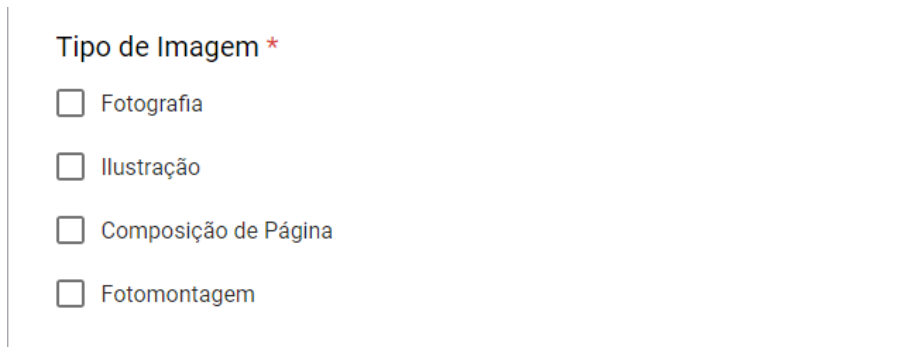


The image shows a vertical line on the left side of a form. To the right of the line, the text 'Nome *' is displayed in a bold, black font. Below this text, the placeholder text 'Sua resposta' is shown in a lighter grey font, followed by a horizontal line indicating the input field.

Picture 14: Example of categorisation using open-ended questions in FII.

2. Multiple-choice.

We created multiple-choice questions to accommodate classifications with only one possible answer, such as Image Type, Total Number of Images, Frameworks, Threads, Signature, Caption, Frames, Naturalism, and Range Imaging categories.



The image shows a screenshot of a digital form titled "Tipo de Imagem *". It contains four radio button options: "Fotografia", "Ilustração", "Composição de Página", and "Fotomontagem". The form is enclosed in a light gray border.

Picture 15: Example of classification using multiple-choice questions in FII.

3. Columns and lines:

This type of response was intended for classifications that involve a large number of variables and needed to be counted in the final tabulation. The final solution was to organize the responses in a column layout, where the first column is the possible classification of the image and the second column is a series of numbers from one to ten, to be marked according to the number of times this variable is present. In the final tabulation, the answers are grouped side by side, and each option has its own column with the results in numbers (therefore easier to add up). In cases where it was necessary to mark a number above ten, the correction was made directly in the spreadsheet (which is editable and can be modified at any time). This modality was applied to the following categories: Typology, Consistency, Form, Approximate Size, Colour, Orientation and Layers.

The image shows a form titled "Consistência" with a grid of radio buttons. The columns are numbered 1 through 8. The rows are labeled with different categories: Fotografia, Fotomontagem, Ilustração, Lettering, Caligrafia, and Tipografia. Each cell in the grid contains a radio button for selection. Below the grid is a horizontal scrollbar.

	1	2	3	4	5	6	7	8
Fotografia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fotomontagem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ilustração	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lettering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caligrafia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tipografia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Picture 16: Example of classification using Columns and Lines on the FII.

4. Dropdown box.

The dropdown box was used exclusively to identify the issue number, saving space in the datasheet layout with its ‘hidden’ elements inside the field.

The image shows a dropdown menu. The label "Edição *" is in red. Below it, the text "Escolher" is displayed with a small downward-pointing triangle to its right, indicating it is the selected option.

Picture 17: Example of classification using a Dropdown box.

The digital datasheet was more responsive in relation to the time spent to fill out the data during the first tests performed with the templates made with the text editor, since each field was designed to receive each type of information. In addition, the information was organized in an appropriate layout, with options that made navigation easier. With the digital FII, it was possible to complete approximately 1,133 datasheets in 31 days, with an average time of 8 minutes each. After completing all the datasheets, the final result of the all the images in Chanaan Magazine was of approximately 2,412, with several images on each page; 16 being the highest number of images per page.

Another relevant topic for the effective completion of the FII is training the team that will be responsible for completing the templates. Ideally, the entire research team shall be familiar with the template, the collection and the particularities that can be found, since questions can often arise regarding to which category a particular variable belongs. The team needs to be trained and in about the classifications, because in ambiguous cases they can be confusing and generate false results. In our case study, when unusual situations occurred, we discussed the classification in question with the research team in the laboratory, so that we could be sure about the best decision to make.

DATA TABULATION

Information design is critical to format charted data and view the results of the analyses of the images, as it shows how to select, organize and present the information for a given audience (Wilbur and Burke, 1998).

For this purpose, we can mention important actions taken during this phase of the research. For instance, the use of colours to label and represent groups of information; the use of filters in the spreadsheet to segment data in different ways; the definition of the best chart for each type of information, such as use of sectors for qualitative variables, chart bars for quantitative variables and line charts to observe the behaviour of the variables over time (Gomes and Fonseca, 2011).

The Google Forms tool provides an editable spreadsheet linked to the Drive of the account responsible for creating the template. The spreadsheet can be shared with other users or be set as accessible exclusively by this account so the person in charge of the spreadsheet holds exclusive editing access, or it is possible to assign this task to other users of choice, according to the research needs and to the team. This spreadsheet only displays the entered data, without any formatting to assist in the identification of the information.

To simplify the identification of each set of responses formed by sequential columns, we applied colours to the spreadsheet headers, thus making the separation clearer and easier to identify. In addition, we renamed the top of the columns, formatted them with bold style and increased the body of the typography to distinguish each cluster of information.

The spreadsheet created from the input data showed each question in column format, allowing statistics output to create results, charts and comparisons.

Picture 18: Picture of the spreadsheet after data tabulation of FII.

The first variable collected by the digital FII was the nomenclature of the archives developed to catalogue the images. We were able to apply an alphabetical order sort filter and to order the information according the date of publication and the number of the image. Next, we can see the year, issue and type of image, because they will be the main variables to be filtered in this case study.

All categories were developed and perceived in a way to provide us with data that would be easily filtered and organized at the end of the tabulation, thus several variables had output numbers responses, that facilitate and streamline Excel's automatic and mechanic counting systems.

Since the variables do not apply to all types of images (illustration, photo, photomontage and page composition), some questions were not mandatory, and could be skipped in the final tabulation of data. This is because making separate datasheets for the exceptions would make the completion task even lengthier, making it difficult to unify and cross all the data at the end.

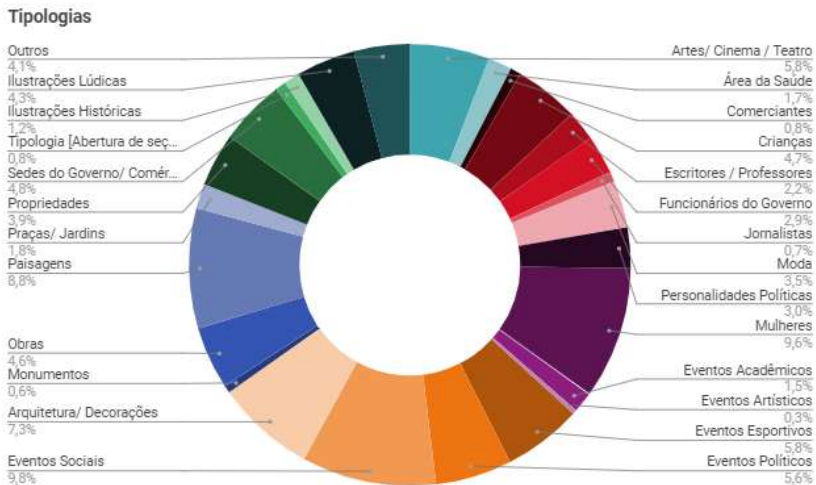
Therefore, we can state that the trial period of the datasheet was of extreme importance for the optimal construction of the FII, since only after its actual use we could be sure that the suggested variables would actually meet the researcher's needs and the particular features of the collection. Even though several tests were performed, some small contingencies and improbable responses appeared in the completion phase, which were corrected directly in the answer sheet. It is of utmost importance to zero the spreadsheet after the tests, so that it is to stop it from being unconfigured and does not bear traces of unsuitable answers which could be mixed with the new results. The option to unlink the form and choose a new path for responses is available in the Google Forms settings.

GENERATION OF RESULTS

All the data was now available, organized, sorted and added up, so we could straightforwardly start generating results. We were able to create charts that allowed us to observe the results in a clear and didactic way.

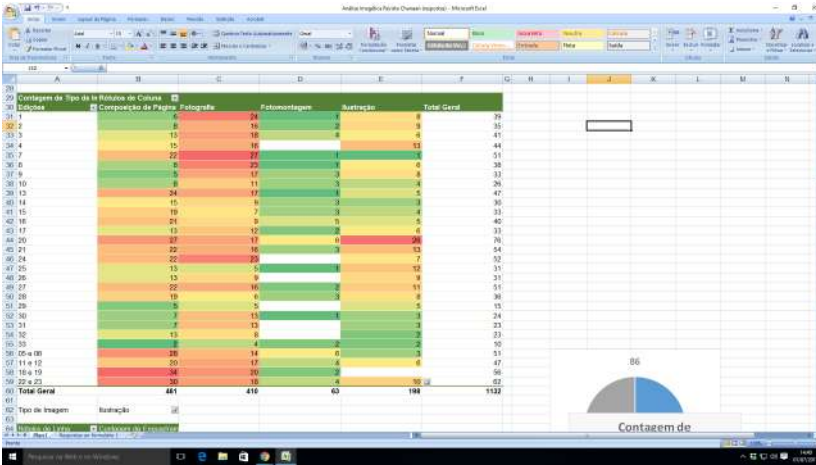
	Ano	Dia	Tipo de Imagem	Tipologia (Artes/Cinema/Teatro)	Tipologia (Área da Saúde)	Tipologia (Comerciantes)	Tipologia (Crianças)	Tipologia (Escritores/Professores)	Tipologia (Funcionários do Governo)	Tipologia (Jornalistas)	Tipologia (Moda)	Tipologia (Personalidades Políticas)	Tipologia (Partes do Corpo)	
1121	CH_33_1909_28_01	1930	32	Fotografia	1								1	
1122	CH_33_1909_29_01	1930	32	Composição de Página			1							
1123	CH_33_1909_30_01	1930	32	Fotografia	2									
1124	CH_33_1909_05_01	1930	33	Ilustração										
1125	CH_33_1909_17_01	1930	33	Ilustração										
1126	CH_33_1909_18_01	1930	33	Fotografia					1					
1127	CH_33_1909_19_01	1930	33	Composição de Página	5									
1128	CH_33_1909_20_01	1930	33	Fotografia									1	
1129	CH_33_1909_21_01	1930	33	Fotografia									1	
1130	CH_33_1909_22_01	1930	33	Fotomontagem			15							
1131	CH_33_1909_23_01	1930	33	Fotomontagem			11							
1132	CH_33_1909_24_01	1930	33	Fotografia							4		4	
1133	CH_33_1909_25_01	1930	33	Composição de Página										
1134	TOTAL				147	44	10	119	55	72	18	87	75	243

Picture 19: Picture of the data tabulation spreadsheet of FII with the adding up line at the end.

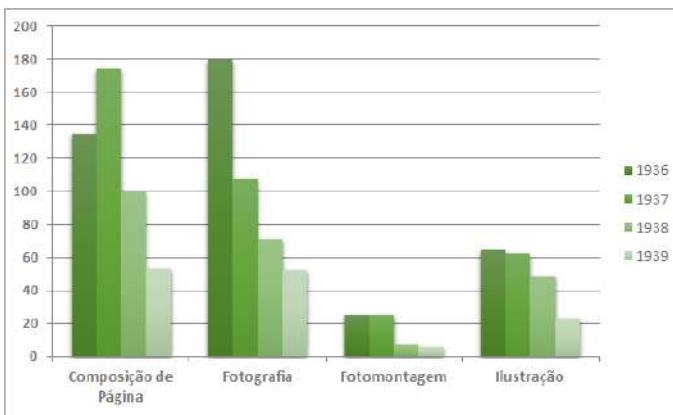


Picture 20: Example of a chart automatically created by Excel in relation to Typologies found in the magazine.

Due to the high number of collected data, the use of filters and the digitalization of the results allows crossing the data in a more agile way, enabling new queries whenever necessary. For data generation, we used Excel features to create pivot tables, thus obtaining subordinate tables to compare specific data. This feature also allows the creation of dynamic charts, which update automatically when necessary to enter or correct information, providing a more simplified view of the results. Charts and pivot tables also provided us with information on different outputs, such as real numbers and percentages, tailoring their results to the requirements of the research.



Picture 21: Example of a dynamic spreadsheet created to compare the most recurring types of images in each issue of the magazine through numbers and conditional formatting (this indicates with visual aids the variation of values, herein using colours).



Picture 22: Example of a dynamic bar chart designed to compare the most common types of images during each year of the magazine.

With the results, it is possible to begin developing infographics that will help displaying the results according to the type of information the researcher intends to provide.

CONCLUSIONS

The elaboration of datasheets, the data analysis and the generation of results turn researchers into information designers, because they select and organize information (Wilbur and Burke, 1998) with the aim of creating records and ensure efficiency in scientific research.

The datasheet for the analysis of printed images was created after a literature review on the possible approaches to this topic. The decisions on choosing the variables that would be included in the analysis were made based on the images of Chanaan magazine, but the collection tool was assembled to be as comprehensive as possible. The researcher has the freedom to shape the variables and their possibilities according to the needs of the studied print. The better the researcher knows the collection he/she is working on and performs tests, the better the FII will work.

The digital FII has proved to be efficient for researches involving a large amount of data, since the digital template can be designed to include data in different ways, according to the needs of each technical variable to be measured. It also accelerated the process through automatic tabulation of the data in an editable spreadsheet, generating results that are more reliable. The automatic counting eliminates the possibility of errors that can occur in a manual tabulation. It also streamlines and allows comparisons between different variables and the possibility of visualizing the behaviour of a certain data throughout the issues of the printed material under study.

The data analysis sheet, the data tabulation spreadsheet and the analyses charts are products developed by the researcher whose purpose is to ensure that all types of information are accessible and usable at a first moment by the research group, and subsequently by the entire scientific community. Some specialists assign such commitment with accessibility and effectiveness of information from a general perspective to information designers (Sless, 1992; Redish, 2000).

The data results allow one to confirm or refute impressions on the construction of images in a certain collection, validating conclusions that will be considered in the analysis of all of its elements, for cutting it can result in biased information that does not correspond with reality. Studying and retrieving graphic tendencies of an era or period through the investigation of its collection can highlight how the aesthetics of the images were established, and to what extent the then available technologies allowed experimentation, enlightening if the graphic

patterns followed a style or simply looked for solutions with the available resources.

We can conclude that the datasheet built to support researches focused on analyses of archives of images present the necessary variables to build an imagery profile of the collection, enabling results of isolated or compared analyses of one or more archives.

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Information on the road: towards a methodology for the study of truck art

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INTRODUCTION

Many cultural manifestations are so common in our daily lives that end up going unnoticed. Hand-painted lettering in commercial establishments, popular crafts products, paintings on street vendors wooden carts, among many others artefacts, are some examples. Some of those artefacts show graphic solutions created by professionals who were not formally trained in design education institutions. The study of Brazilian vernacular design allows us to rescue such traditions, to question our conception of what “good” design is, to reflect about what would be an authentic Brazilian design, and even about what would be the Brazilian society itself, since “the conditions surrounding the emergence of a designed object or a particular kind of designing involve complex social relations” (Margolin, 2009, p. 96). A better understanding of a particular artifact allows us, in a second moment, to understand the society behind its production, creation and consumption.

Regarding definitions of vernacular design, this article relies in the conception proposed by Finizola, Coutinho and Cavalcanti (2012):

[vernacular design is] spontaneous design produced on the edge of mainstream design. In this category it is also possible to include inventions of popular origin, such as utilitarian objects, packaging, signs for itinerant market and homes, as well as artifacts for popular communication (Finizola et al. 2012, p. 552)

Vernacular design responds to spontaneous needs to advertise or increase the value of a particular product or service. The motivations of vernacular design are not so different from the motivations of design in general. The main difference between mainstream and vernacular design can be observed in their forms and language. While in mainstream design, a professional designer is in charge of creation, vernacular design, is made by the individual who has the need to communicate something or by specialized professionals who do not consider themself-

ves and are not considered as designers —this is the case of popular lettering painters, for example. The language of mainstream or formal design is regulated and protected by the design field itself, with the endorsement of established intuitions such as design schools and large design studios, who dictate the rules of what is “good” and “bad” design. The language of vernacular design also has its own rules, but does not have the institutional formality of mainstream or “official” design norms (Cardoso, 2010, p. 12-13).

Within the universe of Brazilian vernacular design are the visual patterns, generally abstract, that adorn wooden truck bodies, popularly known as filetes. Those visual elements are very common, but at the same time hardly ever studied or used as visual reference by Brazilian designers. Finizola and Santana (2014), in their study on Pernambuco’s truck art, also mention the lack of research on the subject:

although the culture of truck ornamentation is widespread in the country, there is still no record of academic research, from a design perspective, that investigates this topic in depth. (Finizola and Santana, 2014, p. 855)

It is important to study Brazilian truck art while there is still time, since there is the risk that it will disappear in a near future:

[Truck art undergo] a process of devaluation due to the replacement of wooden by metal bodies, and the lack of skilled workforce, among other factors. Faced with the imminent risk of extinction, this element of our visual culture still lacks systematized records in the area of graphic design and information design. (Finizola and Santana, 2014, p. 855)

In addition to this, Brazilian Governmental agencies are under pressure, from large truck body manufacturers, who would like to ban the production of wooden bodies. Regulation #552, published by Contran (Brazilian National Traffic Council) in September 2015, aiming to regulate cargo binding in the country, prohibited the fixing any binding device on wooden frames, thus rendering wooden bodies useless. In response to this regulation, Brazilian Wooden Bodies Manufacturers Association was created, and, with an organized claim, succeeded to convince Contran to change this regulation. However, specialists believe that, while “the risk of extinction of wooden bodies no longer exists [,] the cost of a new body should increase due to new requirements” (Duarte, 2016, p. 1).

According to Rapoport (1999), there are four recurring attitudes towards vernacular design artifact, such as truck art:

1. It can be ignored —which is still the most common attitude.
 2. One can admit its existence but deny that it has any useful or worthwhile lessons.
 3. It can be copied —its shapes, details, massing and so on (as it is romanticized)
 4. One can derive more or less general lessons and principles from it, through the use of environment-behavior studies, concepts, models and so on. It is these lessons that are then applied in design.
- (Rapoport, 1999, p. 57)

The fourth attitude would be the most appropriate reaction, but extracting lessons and general principles from vernacular design is not so simple.

If we consider that it is produced within a social field apart from the dominant field, we must expect that the rules of formal design will not necessarily apply to vernacular design. According to Cardoso (2010, p. 20-49), individuals who have similar economic, cultural and social capital would also have similar judgments, values and behaviors; consequently, individuals from very different social fields would have difficulty to understanding each other. Therefore, since truck art is produced and consumed within a social field apart from the academic universe, understanding this kind of artifact through formal design research methods and procedures is problematic.

Aiming at extracting lessons from Brazilian truck art, a vernacular design phenomena that lacks systematic studies and is under the risk of the disappearance, a research model based on an in-depth case study of the work of a specific truck painter (Biriba, Figure 1), for a specific truck body company (Carrocerias Garcia), is proposed. Data gathered and presented with this case study should exemplify the establishment of research methods and procedures, including ways for organizing and presenting results that, following an information design approach, allow for the discovery of general principles of Brazilian truck art. Those methods and procedures should be applied again in future research, serving as comparative basis for the study of other truck body painters and companies, not only in Brazil but also in other parts of the world. This approach to research combined with information design is expected to arouse the interest of other researchers and also to serve as a model to be adapted for the study of other vernacular design artifacts.



Figure 1: The truck body painter Biriba, in his workplace at Carrocerias Garcia, in January 2017 (photo by Jonas Queiroga).

CARROCERIAS GARCIA

In 1930, João Urizzi founded, at Mogi das Cruzes (São Paulo state, Brazil) a wagon workshop named *Oficina de Carroças João Urizzi*.

it was a large workshop, which manufactured series of carriage wheels and also repaired and reformed wagons [...] - says Francisco José Urizzi Garcia, who today share the direction of Carrocerias Garcia with his brother Danilo.” (Michelazzo 2015, p. 38)

Economically, the world was suffering from the effects of the Stock Market Crash of 1929, which in Brazil resulted in the bankruptcy of many farmers and coffee grain producers. As a counterpart, Brazilian government increased the tax on imported products, “forcing the development of national substitutes, favoring small workshops, such as João Urizzi workshop” (Michelazzo, 2015, p. 37).

Eight years later, in 1938, João Garcia dos Santos began to work in the company and gradually rised in position, eventually becoming a manager. In that period, he met Elize Stabile Urizzi, sister of the company’s founder and married her. In 1949, João Urizzi decided to change business, opening a junkyard in São José dos Campos (São Paulo State, Brazil), and selling his company and machinery to his brother-in-law, who changed renamed it *Oficina São João*.

The first truck body by *Oficina São João* was manufactured in 1952, at the request of the municipality of Mogi das Cruzes. This milestone followed the emergence of Brazilian’s first truck factories: the National Motors Factory in 1949 (Duque de Caxias, Rio de Janeiro state, Brazil), followed by Mercedes-Benz

in 1956 (São Bernardo do Campo, São Paulo state, Brazil), Ford in 1957 (São Paulo, São Paulo state, Brazil), as well as other smaller factories (Kapron, 2012).

Due to increased demand and the need to expand its facilities, the Oficina São João changed its address twice, first in 1958 and then in 2013 (Michelazzo, 2015). In January 2017, Carrocerias Garcia was installed in a plant of 6,000 m² (4,500 m² of built area), had 30 employees and produced an average 20 truck bodies per month. Aside from manufacturing and reforming wooden bodies, in three models (super luxury, chrome and flat), in January 2017 the company also presented metal bodies (iron or aluminum) in its catalog, along with specific bodies for a range of uses such as live transport, vans, trailers, truck winch, access planks and hydraulic ladders.

BIRIBA

Best known as Biriba, Vladimir Bertaco Salata was born in 1957 in the city of Colorado, northwest of Paraná state (Brazil). It was the second year of Juscelino Kubitschek's government (1956-1961) and the conditions were extremely optimistic for the truck industry, thanks to the government's 30-goals plan to create new highways, expand asphalt paving and increase from 18,800 to 80,000 the annual production of trucks (BRAZIL, 1958).

At age 12, Biriba moved to Goioerê (Paraná state, Brazil) and began working at Boio Car, a truck body factory. "I started working there to purge sawdust and clean it, but since I liked to paint and stuff, I used to go there and help the painter" (testimony from Vladimir Bertaco Salata (Biriba), recorded on December 12, 2017 at Carrocerias Garcia). At that time, according to Biriba, the body's base was painted with ink spray gun, and the smaller parts such as ironwork, handrail and slat (Figure 7) were painted by brush. The filetes (ornaments) were also painted by brush. When the painter at Boio Car left his job, Biriba had not yet painted a single filete by himself. Even so, his boss asked if he could work as a painter. Biriba said yes, and so his career began. Biriba has always learned to paint in a self-taught way. During his career as a truck body painter, Biriba taught two other painters, Brochinha and Pir, who did not kept in touch with their master (Biriba doesn't know where his former apprentices are and what are their real names).

When he was around 20 years old, Biriba moved from Paraná to São Paulo state to work as a truck body painter at Apaví Carrocerias (in Jacareí). In the following year, following the death of the factory's owner, Biriba moved to Caçapava (São Paulo, Brazil), where he worked at La Pereira Carrocerias, remaining there until 1984. He then returned to Jacareí to work at Carrocerias Jacareí (former Apaví Carrocerias, after the new owner changed the company name). In

2000, Biriba was hired by Carrocerias Garcia.

Before hiring Biriba, Carrocerias Garcia, had an old painter, known as Seu Cláudio, who learned the occupation with his father when he was child. Seu Cláudio's father was the first painter at Carrocerias Garcia (testimony from Francisco Garcia (one of the company owners), recorded on December 8, 2017 at Carrocerias Garcia). According to Biriba's testimony, Seu Cláudio used to work following a certain system of truck body painting (Figure 2), based on the use of brush and backgrounds with flat colors. As soon as Biriba began to work at Carrocerias Garcias, the transition from what Biriba calls "the old system" to a new system (Figure 3) began. The new system included the presence of visual elements known described Biriba as *frisos* (beads), painted bas-relief elements that follow parallel to the body structure (in Figure 3 those elements are painted in navy blue, white and blue) and "wide board with shading", which is a dark gradient surrounding the filete (painted in purple in Figure 3). Regarding the production of the ornaments, the main difference between the two systems was the introduction of a new tool to paint filetes: the striper (Figure 5).



Figure 2: Filete made by Seu Cláudio using "the old system" (photo from Carrocerias Garcia collection, used with permission).



Figure 3: Filete made by Biriba and Seu Cláudio already using “the new system” (photo from Carrocerias Garcia collection, used with permission).

Brought by Biriba from Carroceria Jacareí to Carrocerias Garcia, the stripper is a tool that produces filetes composed of thin lines with uniform strokes. The filetes obtained with this tool are different from the ones made with brush or stencil, as we can see in Figure 4. Biriba bought his first stripper from a manufacturer and seller of this specific tool, based in São Paulo city, Mr. Willson. However, over time the demand for this product declined, possibly because it was a highly durable tool, with a limited number of consumers. According to Biriba, Mr. Wilson’ son managed the business for a short time after his father passed, until the company closed (testimony from Vladimir Bertaco Salata (Biriba), recorded on December 12, 2017 at Carrocerias Garcia).



Figure 4: Examples of filetes made with different techniques (brush and stripper photos from Carrocerias Garcia collection, stencil photo by Damião Santana, all used with permission).

The stripper is a tool, patented by Samuel Beno Beugler in 1933 (figure 5), created for quickly and accurately painting linear ornaments on automobiles and motorcycles (Beugler Pinstriping Tool, 2017). Despite the apparent complexity, the stripper makes use of a mechanical system similar to a ballpoint pen: the pulley rotation transfers the ink from the inside of the pen to the surface to be painted.

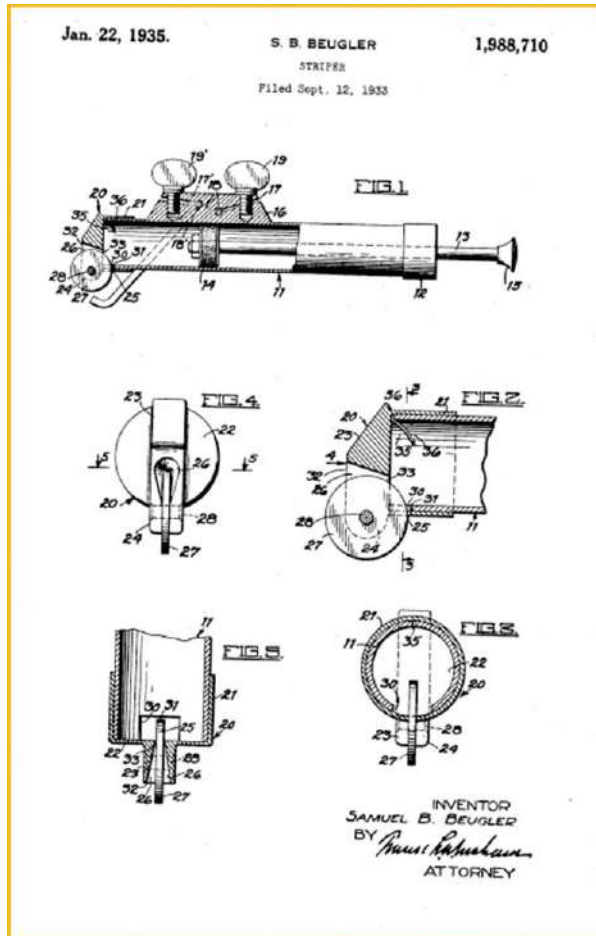


Figure 5: Samuel B. Beugler's original patent (U.S. Patent No. 1,988,710)

The term *carretilha* is the one chosen by Biriba to refer to this tool, and is also used by Finizola and Santana, who mention that this is the main instrument used by Rio de Janeiro truck body painters (Finizola and Santana, 2014, p. 854). The expressions “*caneta de filetar*” and “*filetadeira*” were found in advertisements for strippers in the Brazilian version of the e-commerce website Mercado-Livre (Figure 6). Because the stripper has been used only by a quite specific group

of people, there is no official translation for the term to Portuguese (the expressions “carretilha”, “caneta de filetar” and “filetadeira” are not recorded in major dictionaries), and other expressions to refer to the same or similar tools may still be in use.

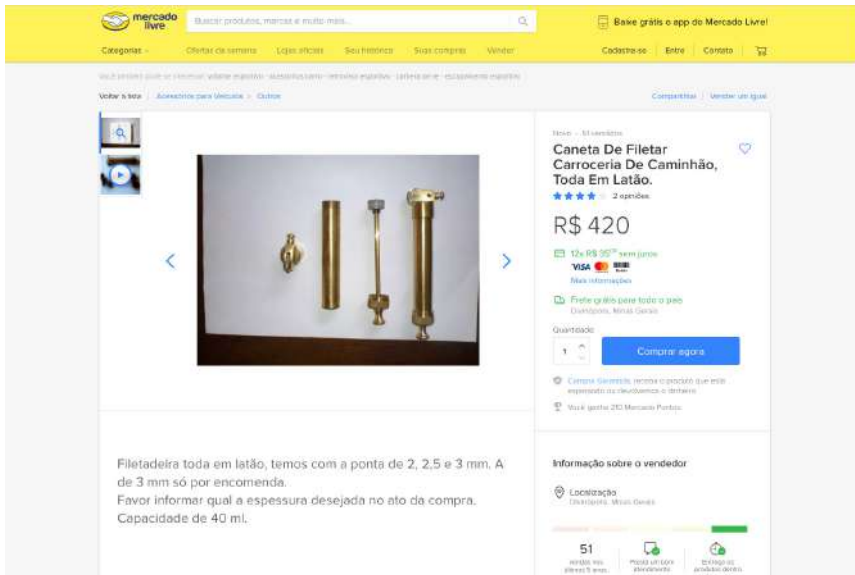


Figure 6: Ad for a caneta de filetar in a page of the Brazilian version of e-commerce website MercadoLivre.

METHODS AND PROCEDURES FOR A CASE STUDY ON BRAZILIAN TRUCK ART

In order to identify general principles in the truck art pieces produced by Biriba, a methodological procedure that would fit the research needs and also allow for replication in future research, including other truck bodies manufacturers, was devised. Organized in three stages, the procedures are explained below.

Stage 1 – Technical visit

In the first stage a company that produced ornamented truck bodies (Carrocerias Garcia) was identified, contacted and visited. A presentation of the research project was prepared and offered to the company staff. During this stage, basic information on the production of truck bodies was gathered, including details about the history of Carrocerias Garcia and the role of Biriba as a truck body

painter. During the technical visit, differences in the nomenclature for truck body parts and structure adopted by Carrocerias Garcia staff and that shown in the scheme presented by Finizola and Santana (2014, p. 857) were noticed. Some of those differences may be just due to variations in regional terms, but, besides that, filetes in Carrocerias Garcia were painted on parts of the truck body that were missing in Finizola and Santana's scheme. A new scheme was created, in collaboration with Francisco Garcia, who is one of the company owners, containing all parts that use to receive any kind of decoration or special treatment such as the addition of filetes, or just special custom colors. Figure 7 shows the new truck body scheme, including, in red, the names given by Finizola and Santana, and in black, the names used by Francisco Garcia. It also includes names for parts not mentioned by Finizola and Santana, such as toolbox, little and back skirt, top and lower handrail, wide board, inside slat and tie slat (in Portuguese, caixa de ferramentas, sainha and saia traseira, corrimão superior and inferior, tábua larga or faixa, sarrafo interno and sarrafo de amarrar corda), and translations to English for all terms (in blue).

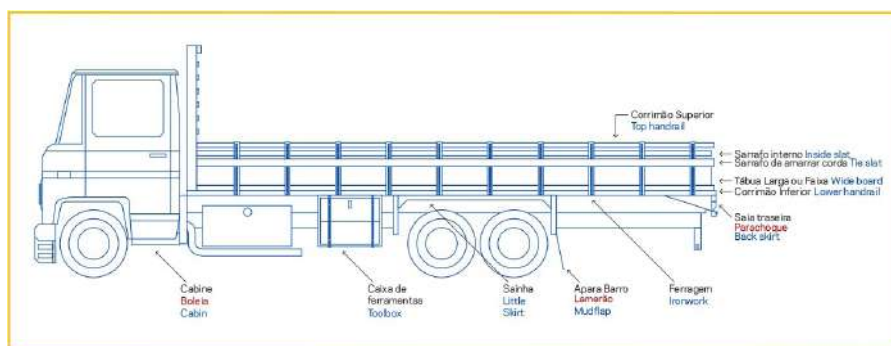


Figure 7: Truck body scheme, designed from photos of truck bodies produced by Carrocerias Garcia in collaboration with Francisco Garcia.

Stage 2 – Thematic interview

In the second stage, a thematic interview with Biriba was recorded. Questions asked included information about technical and practical aspects of the truck art field, aiming at a better understand of how truck art is planned and executed. Questions on his professional background were also made with the purpose of recovering the memory of Biriba's work and to better understand his trajectory. Alberti's methodology for thematic interviews, as explained in her oral history handbook (Alberti 2004), was adopted for this interview. According to Alberti,

The ideal, in an interview situation, is to move towards an informal and sincere dialogue that allows the complicity between interviewee and interviewer

as they engage in the reconstruction, reflection and interpretation of the past. (ALBERTI, 2004, p.102)

A general script was devised for the interview, containing the main topics and questions that were expected to be answered. Thanks to the overt interview and the interest of the interviewee to participate, most of these questions were answered spontaneously as Biriba narrated his life history.

Stage 3 – Graphic analysis of truck bodies

Carrocerias Garcia, like many manufacturers, keeps a constant photographic record of the truck bodies they produce. Those photos are used as a portfolio of their products and are also delivered to the truck owner, who commissioned the truck body, as a souvenir when the work is completed. Carrocerias Garcia photographic collection holded, in January 2017, 60 photos of different truck bodies produced by Biriba, between 2000 to 2016, covering the work of the painter since the first year he started working in the company. The data collected was organized in cards (Figure 8), where all colors used in the painting were listed, along with all truck body's decoration, and the identification of different ornament designs (filetes) and their location. Data on the use of letters and numbers was also collected, for future studies.

Simultaneously with the data gathering, vector illustrations of each filete found was produced, and those ornaments were identified according to the patterns and repetitions. During the vectorization process, the ornaments were digitally reconstructed following the painting procedures explained by Biriba during the thematic interview. The combination of the author's testimony with the process of decomposition and reconstruction of ornaments allowed for a greater understanding of how they were structured and produced.



Figure 8: Example of data gathering card.

RESULTS

Data gathering and analysis has shown that Biriba uses a limited amount of filetes —18 different patterns— to create his truck art. Figure 9 shows all the filete patterns found, separated by the truck body part where they usually appear. Below each pattern is the code created for its identification (in black), followed by the number of times it was found in the truck bodies analyzed (in red). The location of the ornament has a direct influence in its design. More complex designs were found in the wide board, which is also the truck body part with largest surface area.

It has also shown that the variety of pattern design is smaller for the more complex filetes and bigger for the simpler ones. Only 3 different patterns for wide board filetes were found (A1, A2 and A3 in Figure 9). Pattern A1, however, according to Biriba, has not been made since 2010. Even though there is a greater variety in the less complex filetes, a more frequent occurrence of specific designs—such as B2, C1, C7, and C11— has been noticed.

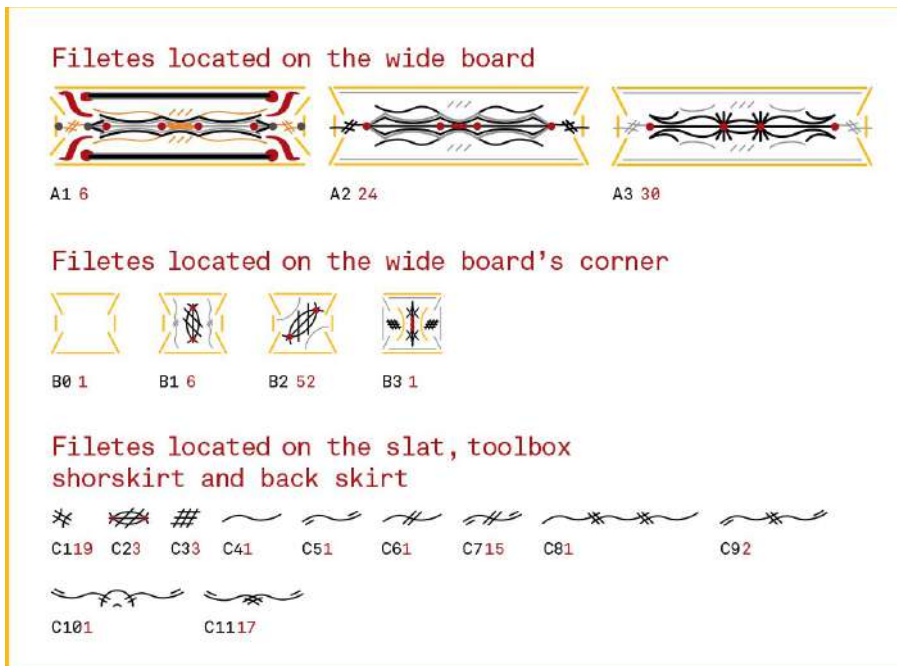


Figure 9: Identified filete patterns.

An infographic created from data gathering cards (Figure 10) allowed for the identification of the colors and color combinations more frequently used by Biriba. In Figure 10, each line represents a truck, and each column a part of the truck

body and the colors used to paint it. In the top line of the infographic the number of times a color appears in a certain part of the truck body is given. It is important to mention that the colors used in this infographic are not the exact colors used by Biriba, but rather approximations in CMYK scale. The infographic aims at the quick identification of color combinations, so for example, instead of the word “yellow” a yellow square was included.



Figure 10: Infographic showing the colors used in the 60 truck bodies examined.

It is possible to verify that some colors appear much more often than others. Black, for example, appears in all 60 bodies examined, while orange just in 2. The color palette is relatively concise, with 17 colors, including 4 shades of blue, 2 shades of green, 2 shades of gray, plus one shade of other colors (yellow, white, black, red, brown, lilac, purple and orange). The color combinations are quite varied, so that few truck bodies are alike. According to his testimony, Biriba seeks harmonic color combinations to create his pieces of truck art, giving preference to the use of colors close to each other in the chromatic scale, and avoiding strong contrasts.

I try to make it look alike. If I use white, then I also use blue, and a second shade of blue —a stronger and a weaker one. I use just a little red. You cannot use much of some colors, otherwise they stand out a lot (testimony from Vladimir Bertaco Salata (Biriba), recorded on December 12, 2017 at Carrocerias Garcia)

However, according to Biriba, when it comes to color choice, the customer's will is what really matters. Some clients ask Biriba to do what he believes is best. In this case, he prefers the use of harmonic colors. On the other hand, there are clients that choose in advance the color combinations that they want, which may differ or not from Biriba's preferences. There are also customers who wish their truck bodys look like another one they saw on Carrocerias Garcia website or at the company plant.

It was possible to reconstruct Biriba's painting procedures from start to end thanks to the information obtained in the thematic interview. Before starting a painting, Biriba looks for specifications regarding the truck body, which has already been assembled and sanded. The first stage of painting consists in a first layer of flat colors. At this moment, only three colors are used: one for the wide board, another for the tie slat, and a third for the handrails, inside slat and all other small parts of the truck body. This last color, by being in a larger proportion, is considered "the truck body's color." Very often this color, or the color of the wide board, is the same color used in the truck cabin. When there is more than one color in the truck cabin, it is also very common that these same colors are used for other truck body parts (Figure 11).



Figure 11: Truck painted by Biriba (photo from Carrocerias Garcia collection, used with permission).

After the first layer of painting is done, Biriba creates the shades in the wide board, using a technique that he learned at Jacareí Carrocerias. He uses a spray gun to create a gradient from the border to the center of the part, as it is possible to see in Figure 3. These shades are characteristic of Carrocerias Garcia's "new system" of painting. Since shadows are dark, the color most often used by Biriba to create the shades is black. However, they can also be painted with a darker shade of the color used for the wide board base, as we can see in the color infographic (Figure 10).

To make the filetes, Biriba wields the stripper in different ways, according to line direction and line position in the wide board. To draw lines parallel to the truck body structure, Biriba slides two fingers on the wood, following the movement of the trace, while holding the stripper with the other fingers.

Due to the time taken for emptying, cleaning and charging the stripper with a new ink color, Biriba prefers to paint all wide board modules simultaneously, drawing all traces of a certain color first, then all those of the next color, and so on until he finishes to paint the entire truck body. The whole process of painting a truck body usually takes a day's work. Due to the time needed to dry each ink layer, Biriba paints several truck bodies at the same time.

INTERPRETATION AND ANALYSIS

Data interpretation and analysis was conducted seeking, on a first approach, to identify similarities in different patterns of Biriba's filetes, and then, in a second moment, to analyze the particularities of each one. The "singular and plural" strategy adopted by Aragão (2011) for a study on early twentieth century Brazilian litographic labels inspired the approach adopted for the analysis of truck art patterns. According to Aragão, the method

was pretty much like reverse engineering: we dismantled the images and then figured out how they were composed. This essay will follow that same path, presenting disassembled elements, and eventually assembling them into standardized, repeated and copied labels. (ARAGÃO, 2011, p. 94)

Filetes' structure

The detailed description of the painting process, combined with the process of creating vector illustrations for each filete pattern found in wide boards—A1, A2 and A3 (Figure 9)—, allowed for their decomposition, revealing the steps of the painting process, as shown in Figure 12. It can be noticed that filetes begin to be drawn from the external border. Next, the center line, used as an axis to define the vertical and horizontal symmetry of the pattern (Figure 13), is drawn. In

step 5, vertical markings that will guide the drawing of curved lines are established (Figure 12). From the next step, the differentiation between the filete patterns occurs, as curved lines are drawn. In the last step of each pattern, another set of elements, which is not made by the stripper, but is common to all Biriba's filetes is added: points. Points are made with the painter's thumb, and add attention spots to the pattern, giving some stability that balances the mobility of the curves traced with the stripper.

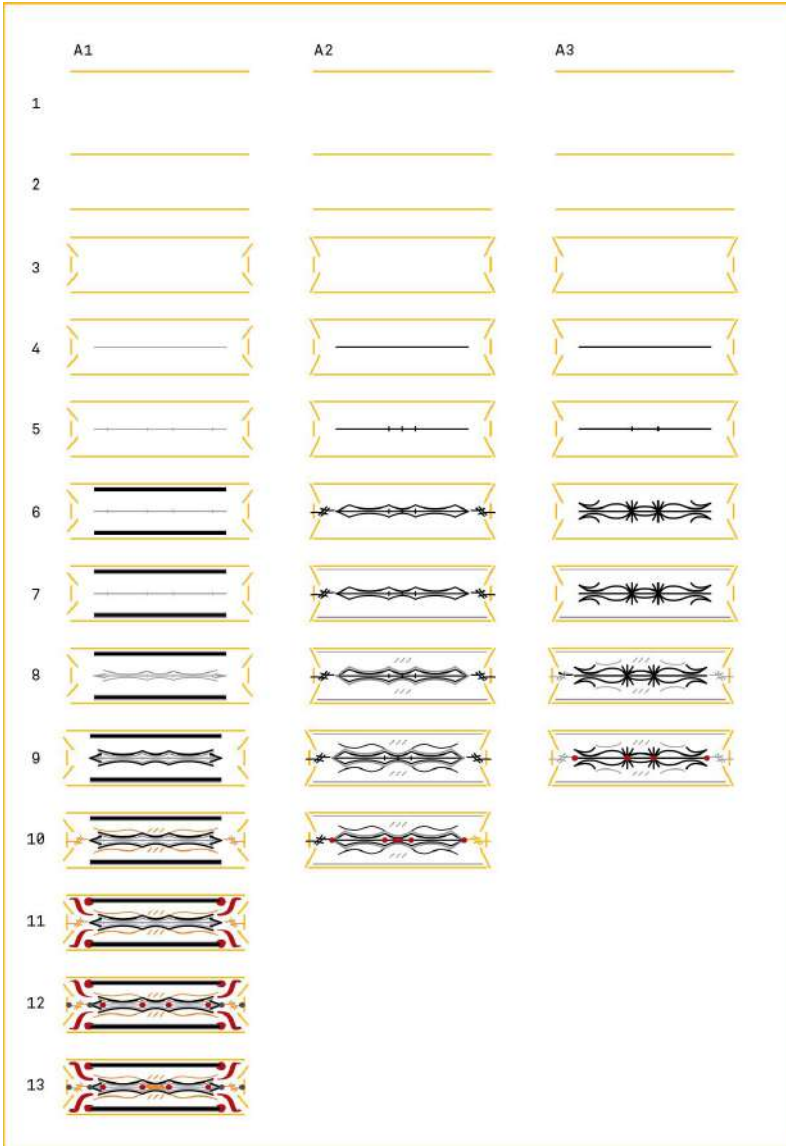


Figure 12: Steps in the painting process of the 3 filete patterns used by Biriba for the wide board.

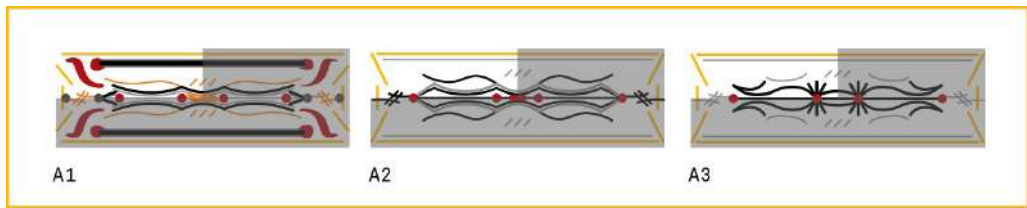


Figure 13: Symmetry in the wide board filete patterns.

From the center line, curves are drawn based in a constructive grid of seven to nine columns, which varies according to the dimensions of the wide board (Figure 14). Regardless of the overall design width, the filete pattern core is always located in the five central columns, and occupies approximately one-third of the wide board height. The points are also arranged following this grid. These structural and proportional principles, common to all filete patterns, give them a certain visual identity. It would be interesting to check whether this is an exclusive characteristic of Biriba's work, or if such structures are also present in filetes by other truck art painters.

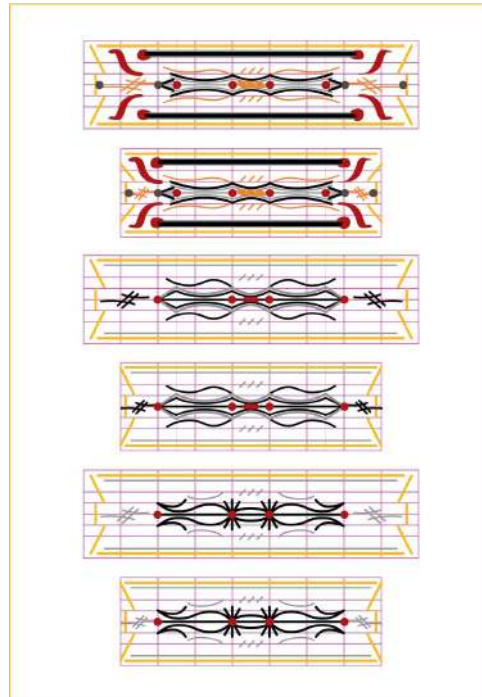


Figure 14: Variations of the three wide board filete patterns, based in constructive grids of 7 or 9 columns.

The findings regarding the filete pattern structure became evident as collected data from interview and photographs was organized in tables and diagrams. Even before facilitating the understanding of research results for a reader, information design can help researchers to better understand their own research results, providing new ways of visualizing the study object, potentially generating new conclusions.

Symmetry and borders

Two characteristics common to all different filete patterns created by Biriba, and easily identified, are the presence of borders and of vertical and horizontal symmetry. According to Gombrich (1979, p. 129), symmetrical ornaments provoke the sensation of an “expanded horizon.” When faced with a symmetrical ornament, Gombrich asserts that the brain quickly understands that one side is the reflection of the other, leading the eye to fix focus on the less redundant point of information, which is the ornament center. Moreover, on examining the peripheral extremities, the eye would go neither to one side nor the other, remaining suspended between two mirrored hemispheres. This path taken by our gaze through the ornament would, according to the author, create the effect of an “expanded horizon.”

Gombrich also compares the “expanded horizon” effect to Gibson’s concept of “panoramic flow” (Gibson, 1950), suggesting that the effect of a symmetrical ornament would be similar to our experience of moving in the real world.

Walking or driving towards an object on level ground and fixing our eyes on the “target,” we not only see it increase in size, we also perceive what Gibson calls the “panoramic flow” of the surround which opens up before us and swings round in a regular pattern. In this situation asymmetry of the flow will either denote that we have swayed from our course and must adjust it, or that the ground is not level. In other words the “balance” of symmetrical patterning of peripheral vision is involved in the basic experience of monitoring our own balance and movement. (Gombrich, 1979, p. 129)

The author also warns about the importance of borders or other types of insulation to ensure the reading of an arranged set of symmetrical drawings.

It fits in well with these considerations that the “balance” of symmetrical design demands as a corollary a firm frame or another means of isolating the configuration. In particular any further repetition will threaten the repose; because it destroys the uniqueness of central axis. The sequence ATA is symmetrical, but if it is repeated as ATAATAATA, rival symmetrical

orders of TAAT and AATAA are created which extend on either side and threaten the restfulness of the single reading [...]. A variety of “templates” fit the case and so the search cannot come to a successful conclusion. (Gombrich, 1979, p. 129-130)

Biriba's truck art patterns include borders and insulation that protect the filetes' symmetry. The truck body physical structure (Figure 7) segments the wide board in several sections isolated from each other by the ironwork. Once in each section only one filete is painted, body shape itself protects its symmetry. Biriba also paints a border around every single filete, following truck body's structure, in order to guarantee even more protection to its symmetrical harmony. The border delimits the field to be ornamented serving as a barrier to the observer's eyes and highlighting the filete's core by bringing all the attention to the center of the ornament. Furthermore, the border also serves as an orientation for the painter by marking the area to be ornamented (Gombrich, 1979, p. 75).

The singularity of Biriba's filetes

Once similarities between the patterns have been verified, it is possible to establish their uniqueness. The filete described in A1 model (Figure 12) is the first pattern used by Biriba at Carrocerias Garcia, being a joint creation with Seu Cláudio (former company painter). The stripper is partially adopted to facilitate execution, but the drawing still has many references to Seu Cláudio's truck art, which was entirely made by brush, as can be noticed in the black and thick lines located at the base and the top of the ornament.

Characteristic of Seu Cláudio's truck art patterns are the brushstrokes at the end of the filete lines (Figure 2). In contrast with that, traces obtained with a stripper are light lines of uniform thickness, but in A1 pattern the set of stripper lines ends up creating a shape with varied thickness, producing an effect analogous to the change in thickness characteristic of filetes made by brush. This effect happens in the filete's core where the lines are really close to each other, leaving almost no blank space. The accumulation of lines ends up creating a drawing with more fill compared to A2 and A3 patterns.

Following Seu Cláudio's retirement, in 2010, Biriba became the only painter at Carrocerias Garcia. From that moment, Biriba started to produce his pieces of truck art exclusively with a stripper, using, for wide boards, two patterns created by himself: A2 and A3. Created while working in Jacareí, A2 filete pattern (Figure 12, center) has in its core a shape similar to that found in A1 (Figure 12, left), although a little taller and with larger blank spaces inside. In addition, because the edges are light, the core of the pattern is highlighted. A2 pattern composition

is cleaner than A1, requiring fewer steps for production (compare left and center columns in Figure 12). Besides that, the production is fastest because it does not require the use of a brush.

Created in Mogi das Cruzes while working at Carrocerias Garcia, Biriba's A3 pattern (Figure 12, right) has an execution step less than A2. It is cleaner than the previous ones, having no double line and assuming integrally the characteristics of the stripper light lines (Figure 15). On the other hand, its curves are more complex, with more changes in direction than the other patterns. If in A1 the main form was established by areas filled with color, and in A2 by overlapping lines, in A3 the movements of the curves creates a gestalt effect, which fills the wide board without loading it with information. A3 pattern has certain uniqueness in its layout, yet it remains faithful to the constructive grid and symmetry common to all Biriba's designs.



Figure 15: Filete following pattern A3 made by Biriba at Carrocerias Garcia (photo from Carrocerias Garcia collection, used with permission).

FINAL CONSIDERATIONS

The methods and procedures described here made it possible to discover general principles behind the filetes painted by Biriba at Carrocerias Garcia. Common aspects of different filete patterns, which give them a certain visual identity were identified. Simultaneously, it was possible to appreciate their uniqueness through the identification of the morphological and structural variations that make them different from each other.

The study presented here focused on truck art produced by a technique different from that documented by Finizola and Santana (2014), who focused on paintings made by stencil. It offers, therefore, a different record of this type of popular Brazilian manifestation about which there is still so little investigation. It will be necessary to expand the analysis beyond Biriba and Carrocerias Garcia in order to describe what characterizes Brazilian truck art in general, as well as to verify if there are singularities in the work of different painters.

Up to date, 40 truck painters have been identified only within the state of São Paulo (Figure 16). Some of these painters work in structured companies such as Carrocerias Garcia, while others work in small workshops or even as autonomous artists. As a next step of the research exposed in this article, the work of 19 other painters from the state of São Paulo, should be examined, using the methods and procedures presented here.

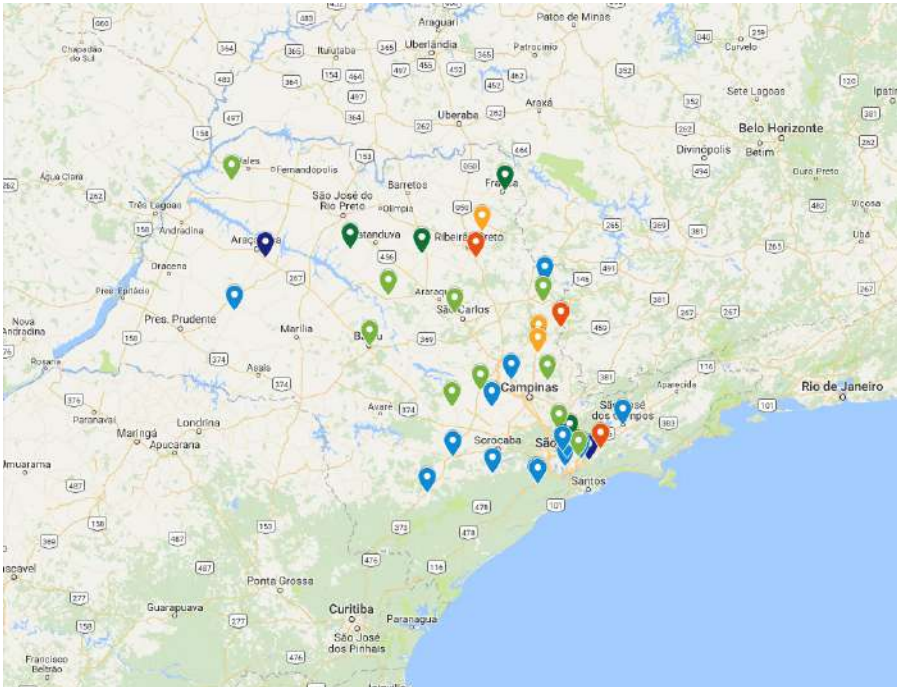


Figure 16: The location of truck body painters identified in São Paulo state.

Researching truck art from an information design perspective lead to the deconstruction and rebuilding of the artifacts under scrutiny several times, something that allowed for a greater comprehension than that would be obtained by simple direct observation. The vectorization process demanded accurate observation of pattern drawings and their simplification, making visible the structures

that permeate the composition of each design. Once vectorized, different parts of a filete can be isolated, allowing for the visualization of its internal structures. It also facilitates the recompositions of its production process —something that must always be compared with the craftsman’s testimony for greater accuracy. The data gathered, besides producing individual cards, generated infographics that facilitate the overall view of the artifacts studied, allowing the reader to more easily follow the research analysis and conclusions and also facilitating the analysis process by enabling the object of study to be considered from new perspectives.

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From Pará to Brazil, João Francisco Madureira: a pioneer in Brazilian type design

*Fernanda de O. Martins,
Edna Cunha Lima,
Guilherme Cunha Lima*

*... And for them not to beg for stranger books ,
that were foreign to their reality and needs,
I myself opened the punches, prepared characters,
casted types, directed the machine's works,
and lately I organized the Press getting it ready to work:
only those familiar with the state of delay of the
Industry in Pará can accurately assess the
great difficulties I have overcome;
one of the largest being the lack of means...
João Francisco Madureira, 1821¹*

INTRODUCTION

Printing authorization in Brazil were granted only after the arrival of the Portuguese royal family in 1808, with the installation of the Royal Press in Rio de Janeiro. From then on, the process of installing private printing workshops began in various parts of the country, especially after 1820, with the end of previous censorship in the period leading up to Brazil's independence. According to Rizzini (1945, p. 322), the printing shos that operated in the country before the independence were: that of Manoel António da Silva Serva, in Bahia, in 1811; that of Ricardo Rodrigues Castanho, in 1815 Recife, which only worked in 1817; the one installed in Maranhão by Governor Bernardo Silveira in 1821; and, that

¹ Original Portuguese passage “...E para que não mendigassem dos Livros estranhos, que são raros as noções de que necessitassem , eu mesmo abri ponções, moldei os caracteres, fundi os Typos , e dirigi os trabalhos da Maquina , e ultimamente organizei a Imprensa pondo-a em estado de poder trabalhar: só quem conhece o estado de atrasamento em que se acha a Industria no Pará, poderá justamente avaliar as grandes dificuldades que venci; sendo huma das maiores, a falta de meios...”

same year, the one set up by Daniel Garção de Melo in Belém do Pará; and two in Villa Rica, the Patrícia and the Provincial (Rizzini, 1945: 322). According to the author, the chronology indicates that the Province of Grão-Pará would have housed the fifth private typography to come into operation in Brazil.

This article presents the typography of João Francisco Madureira as the first typography to operate in Pará, in May 1821, even before the workshop that ran in Maranhão, imported from Lisbon. The new fact here is the revelation of a printed petition, presented by João Francisco Madureira on May 28, 1821, when he requests authorization to start printing services in the Pará Province.

Madureira, unlike the others, did not import from abroad a complete printing shop but built one himself without previous knowledge, based on the study of book prints. What makes his work more relevant, besides the construction of the press and other utensils to make the workshop feasible, is the fact that he planned, coined and cast the types needed to fulfill his objectives.

Rizzini's claim (1945), later reproduced by several authors, is based on the fact that Daniel Garção's workshop printed, in 1821, the first newspaper of the province, *O Paraense*, edited by Felipe Patroni. This newspaper can be easily found in libraries, thus suggesting it could be the inaugural document, when in fact it is not. We believe that this is the reason why contemporary historians, more concerned with the history of books or journalism, have dedicated only small paragraphs to Madureira's initiative.

In contrast Antônio Ladislao Baena (1838), who was a historian researcher contemporary to the typographer, considered the presence of a typography in the Province so important as to include it in his work, a historical narrative book about the significant moments in Pará between 1615 and 1823. Once the printed petition has been identified, it is possible to narrate the feats of João Francisco Madureira and finally give him due credit.

THE FOUNDING OF LETTERPRESS SHOP IN PARÁ

It is now possible to affirm that the first attempt to use type presses in Pará, as mentioned above, was João Francisco Madureira's, who, in 1821, without training or practical knowledge, presented to the Royal Provisional Board a dispatch printed in his own workshop, requesting a license to enter into the free exercise of printing.

João Francisco de Madureira (who later added to his surname the nickname Pará, and as such appears in several references) was born in October 12, 1797 in Vila do Acará, Pará. Abandoned by his parents, he was raised by an adoptive mother. In 1818, he obtained from the state Governor, Count of Vila Flor, the job

position of accountant at the Royal Treasury Board. He also acted as acolyte chaplain at the Cathedral. He was an inventive man, and besides the typographic business, he obtained, by the end of the 1820s, from the part of D. Pedro I, incentive and materials to build a maritime device - without success, by all indications.

Madureira himself narrated the fact in the printed pamphlet “O despotismo desmascarado ou a verdade denodada dedicado ao memoravel dia 1.º de janeiro de 1821, em que a provincia do Grão-Pará deo principio á regeneração do Brazil offerecido ao soberano congreço da nação portugueza pelo patriota paraense João Francisco de Madureira Pará, amanuence da contadoria da junta da fazenda nacional e real daquella provincia; e nascido na sua capital a 12 de outubro de 1797”, published in 1822 in Desiderio Marques Leão’s Press, in Lisbon. (Figure 2)

According to Madureira (1822, p. 64), he asked the Government Board to release him from his services so he could devote to the execution of the printing press. Once the license was granted, he dedicated himself - with the collaboration of three carpenters and two goldsmiths -, in his own words, “I myself opened the punches, prepared characters, cast types, directed the machine’s works, and lately I organized the Press getting it ready to work”.

(...) Then I, filled with joy for the freedom of my country, and animated by a true Patriotism and the pure desire to be useful to all my fellow citizens, conceived the arduous project of arranging a letterpress; without having exercised any art or office, never having left my native country, having as companionship only my frail industry and the assiduous desire to be useful. Recognizing the urgent need we had for said letterpress, I demanded from the Government the necessary release from duty, to dedicate myself to its making, which was granted to me, as well as the assistance of three Arsenal Carpenters and two Train Goldsmiths to help me, for whom I paid their fees. I also begged for the faculty of ordering the making, in the train, of a steel piece which I need, not having found outside professionals who could do it perfectly and fast, and I paid it for this dutifully evaluation, which I was readily granted. (Madureira, 1822, p. 64-65)²

² Original Portuguese passage: “(...)Então eu transportado de alegria pela liberdade da minha Patria, e animado de hum verdadeiro Patriotismo, e daquelles puros desejos com que devemos ser úteis a todos os nossos Concidadãos, concebi o árduo projecto de arranjar huma Typographia; sem haver exercido Arte ou Oficio algum, não tendo jámais sahido do meu Paiz natalicio, tendo só por companheiros a minha fraca industria, e assidua vontade de ser útil. Reconhecendo a urgente necessidade que della tínhamos, exigi do Governo a necessária dispensa do Serviço, para me empregar na

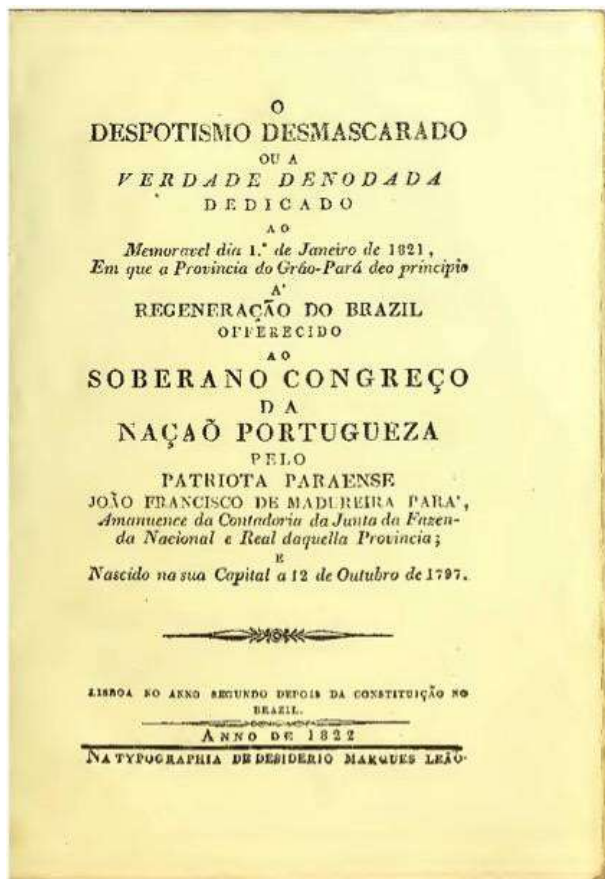


Image 1 – The *Despotismo desmascarado*, a João Francisco Madureira’s pamphlet printed in Lisbon, 1822 (Source: <https://repository.library.brown.edu/studio/item/bdr:576116/PDF/?embed=true>)

He further states that, having spent all his resources on this enterprise, he once again requested financial help from the government. Government’s aid was denied, but he got financial support from a fellow citizen, Francisco Jozé Gomes Pinto:

factura da dita Typographia, o qual ma concedeo, como também o auxilio de trez Carpinteiros do Arcenal, e dous Ourives do Trem para me ajudarem, pagando-lhes eu os seus jornaes; implorei lambem a faculdade de mandar fazer no Trem uma pessa de aço que me era necessária por não achar Officiaes por fora que ma fizessem com perfeição e brevidade, pagando-a eu pela justa avaliação, o que me concederão prontamente”. (Madureira, 1822, p. 64-65)

(...) I have dispossessed myself of all my own belonging. As this did not balance the expenses, I demanded via petition to the government to receive two-quarters of salary as an advance, the sum of my receivable wages; and the leave of absence agreement. I was honored to receive, by Order of March 28, 1821. = Considering the circumstances, two months of leave are granted; but not the rest of the requests. = seeing myself reduced to the last resources, I turned to Francisco Jozé Gomes Pinto, a businessman from the Plaza (after having already pleaded to some other people without success), and meritorious citizen (...). He did not hesitate to come see the machinery and, willing to protect it with all that was necessary, he gave me a hundred and twenty thousand reis with which I put it to work - so much so that I was able to complete a printed petition to the government, which showed that the letterpress printing shop was ready to work, for which I needed the competent License required to be able to enter into the free exercise of the workshop (...) (Madureira, 1822, p.65-66)³

On May 28, 1821, he presented to the Governing Board a request printed on his own letterpress, in which he showed that it was ready to work, requiring the appropriate license to enter the free exercise of the workshop. The president and other Board members welcomed the news and praised Madureira, who even printed some ephemera papers from the government's file. According to him:

(...) I myself opened the punches, prepared characters, cast types, directed the machine's works, and lately I organized the Press getting it ready to work (...)

³ Original Portuguese passage: "(...) desfis-me até, do que possuía inteiramente. e como isso não equilibrasse as despesas, exegi por hum Requerimento ao Governo me mandasse dár dois quartéis adiantados; a conta dos meus vencimentos: e refórma de Licença; o qual se dignou honrar-me com o Despacho de 28 de Março de 1821. = Attendidas as circunstancias consede-se dois mezes de Licença; quanto ao mais não pôde ser deferido. = vendo-me reduzido ao ultimo extremo, recorri a Francisco Jozé Gomes Pinto, negociante da Praça (depois de já haver recorrido a alguns infructiferamente) e Cidadão perfeitamente Benemérito, (...) o qual sem exitár vai vêr a obra, e tanto que a vio, prestes a protejêla com tudo o que fosse necessário, ministrou me cento e vinte mil reis com que a púz em termos de poder trabalhar, e tanto que pude fiz hum Requerimento Impresso ao Governo em que mostrava que a Typographia já podia trabalhar, para o que requeria a competente Licença para poder entrar no Livre exercício da Officina andc. (...)" (Madureira, 1822, p. 65-66)

(...) Having after that the satisfaction of printing some documents for the Government Secretariat's files; and offering over a thousand copies to compatriots who gave me proof of esteem and friendship, and evaluating my circumstances of which they were fully aware, helped me with a spontaneous subscription, with which I could pay back my debts (...)" (Madureira, 1822, p. 67)⁴

As his license was not published, in September of the same year he filed a new request asking to be removed from his duties as an accountant. He travels to Lisbon in 1822 to apply for a license from the King and to learn about the art of printing.

(...) Since I had not obtained any answer to my requirement by September, and given the sad circumstances in which I saw the fruit of my tireless efforts, and experiences that will oblige me by the stimuli of honor, to implore the necessary License to come to Lisbon in order to require His Majesty's assistance, whom so many praise, for the benefit of my country. At the same time, I will educate myself in mechanisms and geometrical precepts related to the Typography, so as to be able to accurately continue its progress. I posed my Application, in which I begged for a year of leave of absence, not to harm the National Treasury. That leave will be granted by Order of September 26. (...) (Madureira, 1822, p. 73-74)⁵

⁴ Original Portuguese passages: "(...) Eu mesmo abri ponções, moldei os caracteres, fundi os Typos, e dirigi os trabalhos da Maquina, e ultimamente organizei a Imprensa pondo-a em estado de poder trabalhar. (...)

(...) Tendo após disto a satisfação de imprimir alguns papeis gratuitos para o espediente da Secretaria do mesmo Governo; e offerecer para mais de mil Impressos aos meus Compatriotas que deraõ me testemunhos, de estima e amisade, e avaliando as minhas circunstancias de que tinham cabal conhecimento, e sem se exemirem prestaraõ-se a concorrência de huma espontanea Subscrição, com a qual pude reçarcir o que devia(...)" (Madureira, 1822, p. 67)

⁵ Original Portuguese passage: "(...) Como já em Setembro não tivesse obtido Despacho algum do meu Requerimento, e attendendo as tristes circunstancias, em que via o fruto das minhas incansáveis applicações, e experiências que me obrigarão pelos estímulos da honra, a implorar a necessária Licença para vir a Lisboa, afim de gostar o auxílio de V. Magestade de que tantos se aprazem, em beneficio da minha chara Pátria; e ao mesmo tempo instruir me no mais fácil mecanismo, e preceitos geométricos, que sejam anexos a huma Typographia, para assim poder com exactidão continuar no progresso da mesma; fiz o meu Requerimento, em que para não lezar a Fazenda Nacional,

The military man and historian Baena confirms, in his 1838 publication, *Compêndio das Eras da Província do Pará* (Image 2) that, on May 28, 1821, João Francisco Madureira Pará submitted a printed request to the Government Board, as follows:

João Francisco de Madureira Pará, native of the same country and accountant of the Treasury Board, presented to the provisional Government Board an application printed on a press that he himself organized, by opening the punches and preparing the alphabetical characters. For that, he had only studied some foreign prints, not ever having seen this kind of machine in person, nor having practical knowledge in the art of printing and the art of easily extracting numerous copies of written discourses. In the said request, he mentioned that, notwithstanding the lack of protection and necessary knowledge, he had tried to form a press his country lacked. Having almost finished the works, he made it available to the provisional Board, and asked that not only they grant him permission to start working, but that they also reward his enterprise, if it were deserving. Before such request, he had already pleaded the Board for subsidy with which to cover the expense of his typographic experiments: and obtaining insufficient means he turned to the merchant Francisco José Gomes Pinto, who saw the Press and soon gave him a hundred and twenty thousand reis. He later obtained a subscription from one hundred and eighteen people, adding up to seven hundred and eighty thousand two hundred and sixty reis. (BAENA.1838, p.526)⁶

implorava hum anno de Licença registada , a qual ma concederão por Despacho de 26 de Setembro. (...)” (Madureira, 1822, p. 73-74)

⁶ Original Portuguese passage: “Apresenta João Francisco de Madureira Pará, natural do mesmo paiz e Amanuense da Contadoria de Junta da Fazenda, à Junta provisoria do Governo um requerimento impresso em um prelo que elle mesmo organisou, abrindo os ponçoens moldando os caracteres alfabeticos, fundindo os typos e dirigindo o trabalho, só pelo estudo de algumas estampas estrangeiras, e não por ter visto este genero de maquina, nem por ter noçoens praticas da arte de imprimir isto he da arte de tirar facilmente numerosas copias dos discursos escriptos. No ditos requerimento expressou que não obstante a falta de proteção e de necessários conhecimentos tentara formar um prelo para suprir a carencia que delle tinha a sua patria: e que tendo a obra quase acabada a collocava sob o favor da Junta Provisória, e pedia que não só lhe concedesse licença para entrar no destinado lavor mais ainda que galardoasse a sua empresa se por ventura ella disso for merecedora. Ja antes deste requerimento elle havia supplicado a mesma junta subsidio em que se estribasse a despesa de seu ensaio Typografico: e obtendo meios que não podiao emparelhar com os gastos recorreio ao

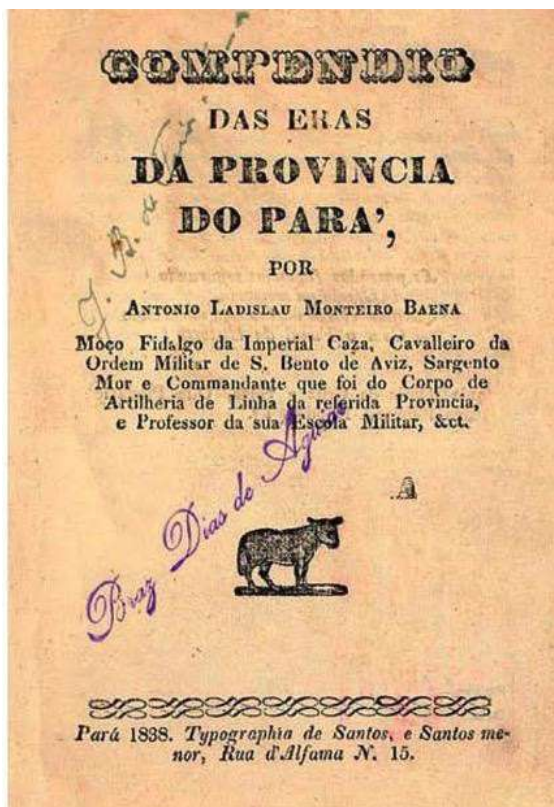


Image 2 – Compendio das Eras do Pará, book by Antonio Baena, title page – printed at the Santos and Santos Press, in 1838 (João Meirelles Collection)

The beginning of the 1820s is especially troubled in the province of Grão-Pará. Closely linked to Portugal, the Pareses believed that liberalism would include them, and stood in favor of Portugal's liberal revolution, against Brazil's Independence. Due to this complicated context, Madureira decides to travel to the King's Court to petition to D. João VI the necessary financial support for his workshop. It is important to note that Madureira stated that he had previously requested financing from the Provincial Government, and since it was insufficient, he had to obtain support from a merchant to complete his work and present said printed application.

negociante Francisco José Gomes Pinto, que vio a Imprensa e ministrou-lhe logo cento e vinte mil reis. Depois conseguiu uma subscrção de cento e dezoito pessoas, que composeraõ a quantia de sete centos e oitenta mil duzentos e sessenta reis”. (BAE-NA.1838, p.526)

It is also noteworthy that the typographic workshop actually operated for a short period, for in the same document the typographer tells that, after petitioning to the Governing Board, he even printed official documents and “over a thousand copies”.

Even though Madureira had never left the Pará Province or seen a type shop before, it is clear that he had a fair notion of the complexity of his initiative when he requested from the Board the assistance of three carpenters and two goldsmiths, as well as authorization to make a piece of steel “on the train”. He also quotes that his requests were promptly answered, and that he personally paid for the services. He developed his letterpress “through observation and study of some prints that came to my knowledge”, and at the end of this short experiment he realized that he needed more knowledge. Therefore, he requested the leave of absence to head to Lisbon and study “mechanisms and geometrical precepts related to the Typography, so as to be able to accurately continue its progress” (Madureira, 1822, p. 73). After his departure to Lisbon, nothing more is known about his connection to typography. Nevertheless, he continues to be an inventor, and in 1832 he conceives a navigation machine and obtains money from the emperor to build it.

The functioning of Madureira’s letterpress is narrated by historians from Pará such as Antonio Baena (1838), Domingos Rayol (1865) and Manuel Barata (1908), and recounted by several historians such as Rizzini (1945, p. 325), Sodré (1966, p. 36), Hallewell 2005, p. 129,192) and, more recently, Molina (2015, p. 337) without, however, being recognized as the founding landmark of the history of printing in Pará. Material proof was necessary to corroborate his claims and reclaim the pioneer’s place in history. Because he only printed ephemeral documents, it becomes more difficult to prove his groundbreaking nature through material references. It was only after many attempts of search in libraries, at the Public Archive of the State of Pará, in the National Library, and in the National Public Archive that we found, in the Brazilian Historical and Geographical Institute – IHGB, a copy of Madureira’s requirement, definitely proving its existence and its pioneering nature.

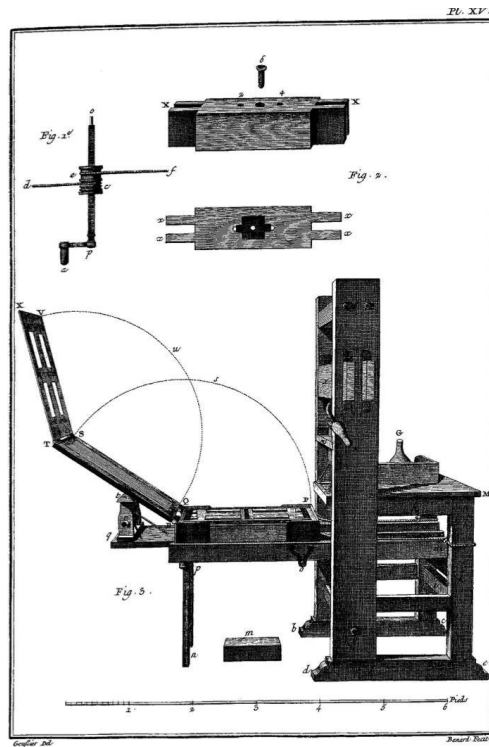
COULD THE EXISTENCE OF THE MADUREIRA LETTERPRESS BE POSSIBLE?

The legal authorization of the printing press in our territory only occurred in 1808, from equipment and professionals imported from Lisbon. When the access to printing technologies was allowed, they start being implanted at an intense pace - first in the Rio de Janeiro Court, and then in Salvador with Silva Serva. In a decade, the printing presses play an important role in the social and political scene of the colony.

The graphic workshop played a significant role, though neglected, in combining intellectual and commercial activities, which mutually reinforced each other and thereby created a particularly powerful impulse, almost irresistible. (Eisenstein, 1998, p. 84)

In the early 19th century, a letterpress workshop in Brazil had a wooden press and type cases with a collection of sorts for texts in various sizes, including the largest for titles, emblems, lines for composition and other tools required. The main tasks involved in this sort of workshop are composition, revision, imposition, printing and finishing. Many of those could be executed by the same professional (as they were in the beginning), with the collaboration of assistants.

While printing material such as types, lines and embellishments needed to be imported, wooden presses could be built locally, as the necessary knowledge for it was accessible in old publications. The more complex type casting, however, required technical knowledge and larger skills, harder to grasp from studying old printings, such as the examples below, from *Encyclopédie de Diderot et d'Alembert*.



Imprimerie, Presse vue par le côté du dehors.

Image 3 – Press for typographic printing (source: *Encyclopédie de Diderot et d'Alembert*).

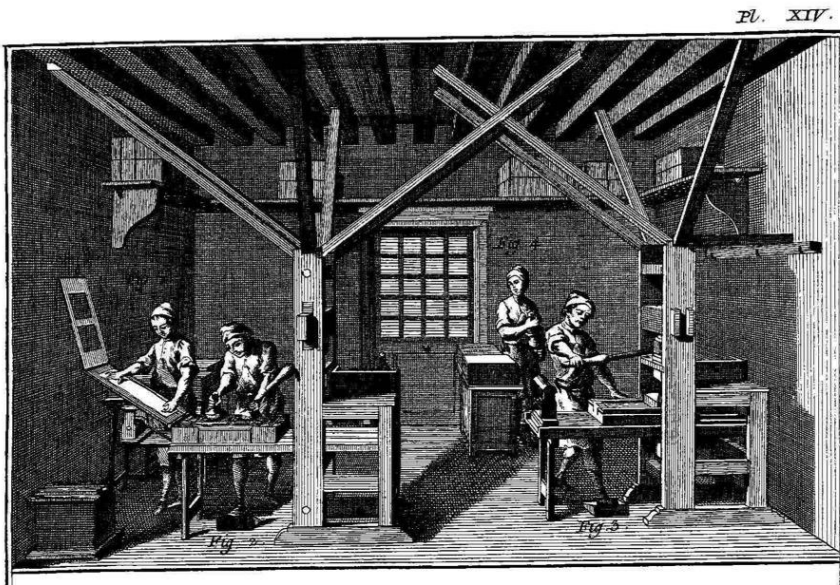


Image 4 – Typographic workshop (source: Encyclopédie de Diderot et d'Alembert).

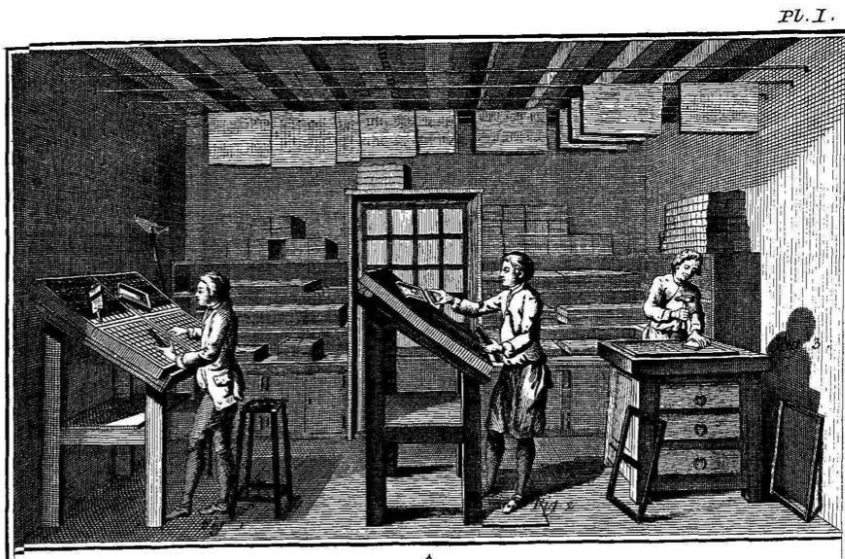


Image 5 – Area for typographic composition (fonte: Encyclopédie de Diderot et d'Alembert).

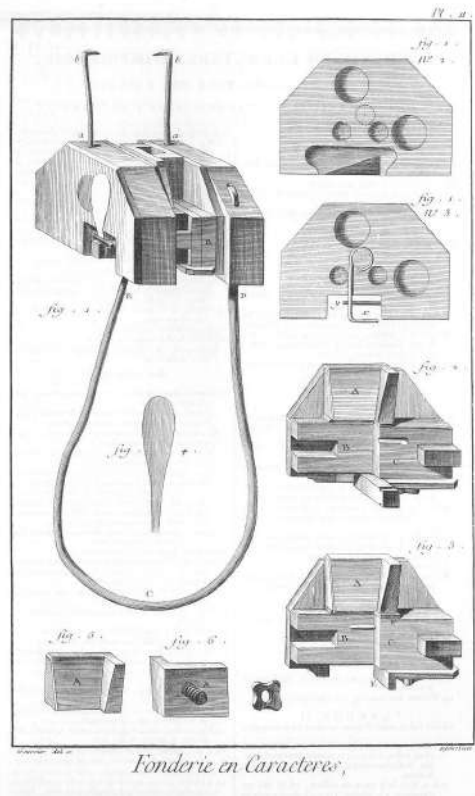
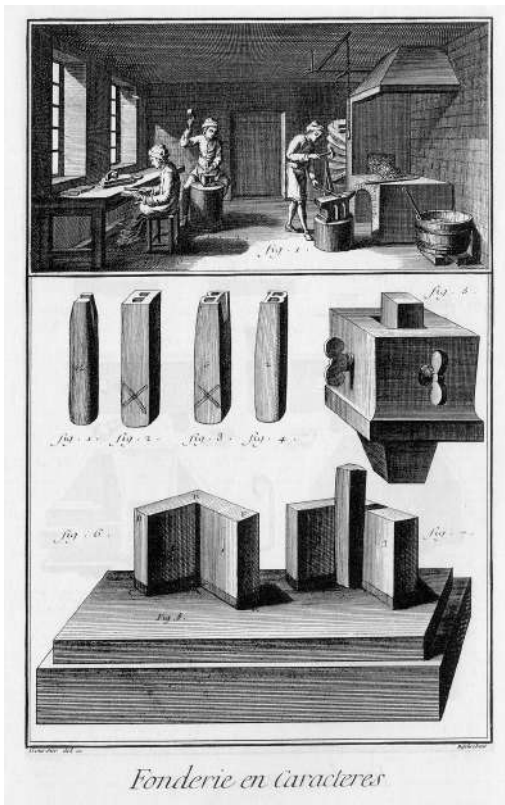


Image 6 – Casting of Types (source: Encyclopédie de Diderot et d'Alembert).

Authors who dedicate themselves to the history of books or to the printed culture weave their analysis from the book object, and therefore tend to ignore ephemeral prints. According to Edna Cunha Lima, it is common that the history of printing be delimited by the beginning of the production of books or newspapers, objects of greater prestige, obscuring the fact that the printing presses operated in the production of ephemeral prints for commerce, public administration or even playing cards.

Traditionally, even when it precedes other prints, the printing of ephemeral material is not usually regarded as the beginning of the press in western countries, which usually consider the inaugural date as that of the first book. However, other materials suitable for visual communication were already being mechanically duplicated without flaunt, for everyday use. Playing cards, for example, have a long history, of humble origin, in the field of fun and leisure. (Lima, 2000, p. 1)

According to Hallewell (2005, p. 129), even before the arrival of the Royal Print, Father Jos  Joaquim Viegas de Menezes printed in Villa Rica, in 1807, a 9-page booklet. The publication was of a poem dedicated to the Provincial Governor, engraved in a metal plate and printed in a press designed for domestic purposes. Viegas de Menezes, who as a student in Portugal had become friends with Jos  Mariano da Concei o Veloso, manager of Arco do Cego Typography, had learned the art of engraving and printing. Thirteen years later, associated with the shoemaker Manuel Jos  Barboza Pimenta e Sal, he built a complete letterpress, which according to the author was finished by the end of 1821. He was only given license to operate in April 1822. The workshop, named Patricia de Barbosa e Cia Typography, was recognized for its excellent technique and printed only newspapers.

Therefore, just as it was possible for Viegas de Menezes and Pimenta e Sal, it is absolutely plausible that Madureira built his press, cast types and made impressions solely from the knowledge acquired in manuals and encyclopedias. It is to be expected, too, that he obtained poor results, since he had no previous experience and had no guidance in the matter.

MADUREIRA'S PRINTED PETITION

To remain in operation, a letterpress performs jobs of various natures, not just printing newspapers and books. Traditionally, studies of the area are more concerned with the history of books or journalism, and therefore ignore the production of ephemeral prints. In order to be able to say that Madureira's letterpress was effectively put to work it was necessary to find a copy produced by it. Despite the abundance of references, the search for the document itself required determination from the researcher. The so cited (and rarely seen) petition presented by Madureira was found at the Brazilian Historical and Geographical Institute.

It is a double-sided printed folio folded in half, resulting in four pages. The type used is quite irregular, both in its design and spacing, as well as in the form it rests on the baseline, which leads us to conclude that they were indeed cast locally by professionals unskilled in the art of typography. Although a more detailed analysis of the typographic fonts used has not yet been carried out, the presence of different characters for the same glyph is readily noted, that is: multiple models for the lower-case letters "e" and "a", for example. The entire document consists of only one letter size, approximately 16 points. The requirement contains a decorated capital "S", and in an attached document there is a capital "Q", which follows the style of the text. At the end of both documents, there is the signature "Jo o Francisco de Madureira" in an apparent italic, also printed in a non-uniform way, with some areas more inked and others faded.

In any case, the requirement is indisputable proof of the operation of João Francisco Madureira's company, therefore the first typography to come into operation in the Province of Grão Pará.

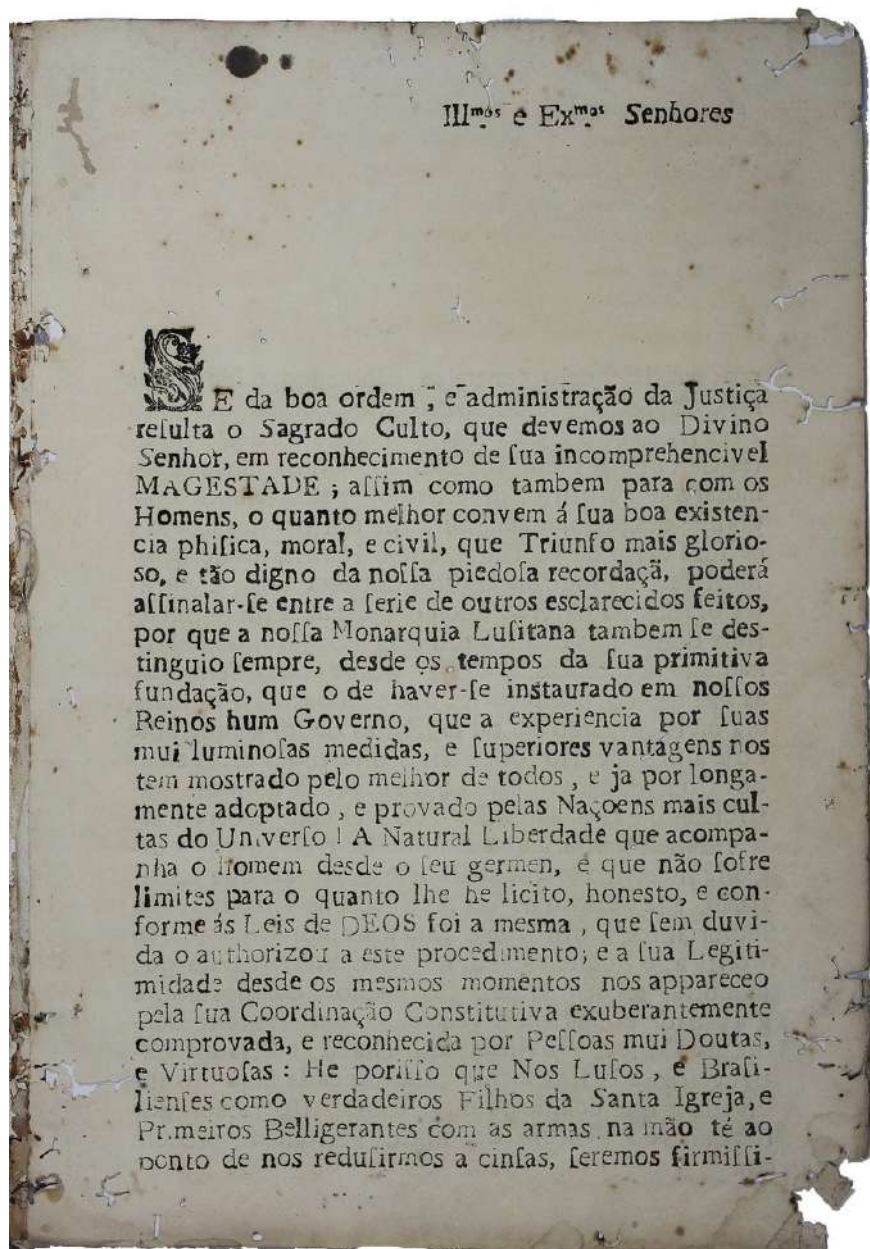


Image 7 – Cover of Madureira's petition

Source: IHGB

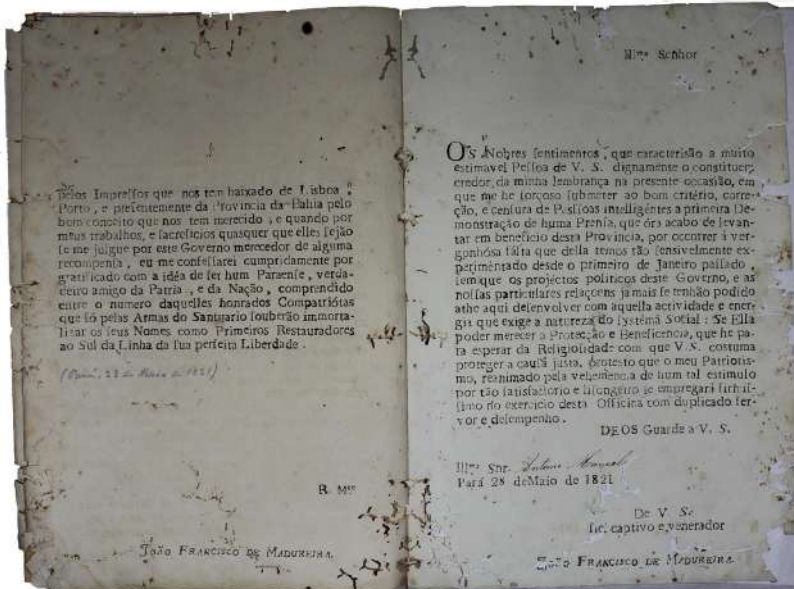


Image 8 – Internal pages of Madureira’s requirement (Brazilian Historical and Geographical Institute)

FINAL CONSIDERATIONS

João Francisco Madureira presented to the Governing Board on May 28, 1821, a petition printed in a local letterpress, which he himself had built based on

references from books, requesting permission to start its operations. This fact is presented by Madureira himself, and quoted by narrators at the time, but it has been treated superficially by authors on the subject, important names such as Rizzini (1945) and Hallewel (2005). Perhaps because they disregard ephemeral prints as milestones of the printed culture, or even because they did not access the original document, these authors only reproduced previous information. However, its existence cannot be ignored as proof of the operation of his printing shop.

It is important to highlight the relevance of a printing shop for the time, which is why the subject was included in the historical work of Antonio Ladislao Baena, military man and historian who published *Compêndio das Eras da Província do Pará* in 1838. It is equally interesting that this author possessed varied information, such as the origin and the amounts of money Madureira borrowed, considering the absence of any documentation on the Madureira press in the Public Archives, whether that of Pará or the national one, in Rio of January, both of which have been researched for this study.

Surely Madureira, who dedicated a couple of years to deliver this print, deserves the credit for his pioneering work. Particularly since the workshops cited by researchers in the area (the one in Maranhão and the second in Pará), were imported in full from Lisbon, both in terms of equipment and of the professionals who operated the machinery.

From the documents presented, it is possible to affirm that João Francisco Madureira's printing shop, with its press and type casting, was the first workshop to cast types and produce prints in the Amazon in general, and specifically in the province of Grão-Pará, and the fourth to be operational in the country.

The most important aspect in Madureira's achievement is not the construction of the printing press. Presses were common and known for centuries, and documentation on printing techniques was available. The completion of the entire casting process, however, is what is complex, and hardly achievable without the guidance of an official master. That process requires the letter to be carved on the end of a piece of soft steel creating a punch, which originates the matrices that, when inserted in a mold, allow for the casting of multiple equal letters. These letters should compose lines, which make up paragraphs. The set should be uniform, one texture. João Francisco Madureira produced prints in the province of Grão-Pará in May 1821, with the types he created himself, despite the meager resources and difficulties encountered.

Considering that the National Press, in the Rio de Janeiro Court, started with foreign professional type casters and reproduced imported moulds, the set of characters created and used by Madureira can be considered, to this day, the first created by a Brazilian in national territory - followed by those developed by Vie-

gas de Menezes and Pimenta e Sal in Vila Rica. It can be affirmed, until now, that João Francisco Madureira was the first Brazilian to create a typeface. Studies like this provide new possibilities, and contribute to the recent area of research in Design History: the study of type founders in Brazil.

ACKNOWLEDGEMENTS

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Capixaba Press

analysis of the graphic and editorial production of Chanaan magazine, published between 1936 and 1939¹

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Letícia Pedruzzi Fonseca*

PREAMBLE

The press arrived in Espírito Santo in 1840 and upon the fall of Monarchy and the beginning of the Republic, the official press of Espírito Santo was born in 1890. This was a new phase for the capixaba printed media.

1929 was a prosperous year for the Official Press of Espírito Santo, with new shops and facilities of the newspaper *Diário da Manhã* located in Palace of Anchieta. They purchased two linotype machines and used typographic printing process instead of mobile linotype types, “instead of type by type, the ramifications started to be composed of full lines, merged together” (Villa-Boas, 2008, p. 99).

It had perfectly equipped and large facilities for production and for the newspaper; a machinery section, comprising the most perfected bindery and formatting shop; in addition to a living room, a waiting room, offices for the editor-in-chief and for the commercial director, plus a writing room, luxuriously furnished (Mattedi, 2005, p. 41)

After such investment period, the printing plant started taking requests for graphic production from all over the state. During the time the printing service was provided, *Chanaan* magazine was printed (the subject of this research).

In November 1939, the same year *Chanaan* magazine ceased to circulate, there was a fire in the Official Press of Espírito Santo, which caused the loss and destruction of almost all the equipment and inventory of the institution. Up to this date, the causes of the fire are unknown, but it is believed to have been caused by a short circuit fail in the electrical installations of the building, which were

¹ Translator’s note: Capixaba is the name attributed to things and/or people originally from the State of Espírito Santo, Brazil

very precarious and undergoing renovation at the time (Mattedi, 2005). The end of the magazine coincides with the fire in the printing facilities, so it is assumed that this is the reason why Chanaan magazine interrupted its course.

The creation of Revista Chanaan

Intense political ruptures marked the decade of 1930; the starting point was the ascension of Getúlio Vargas to power, as well as a series of changes in the national political structure and to the then current constitution. The most prominent figure of Espírito Santo was Captain João Punaro Bley, Interventor between 1930 and 1943, who represented the interests of Getúlio Vargas against the communist movements that were coming to the state (Achiamé, 2010).

Within such political context in Espírito Santo, it is believed that an economic group (probably from the coffee production sector who supported Bley and his liberal and democrat ideology), conceived Revista Chanaan to compete with a magazine named *Vida Capichaba*, published between 1923 and 1959, although they did not have opposite political positions (Achiamé, 2010). Captain Bley was often portrayed in Chanaan, where his political achievements were showcased and the pictures showed him in political and social events, reaffirming his political image before the capixaba society.

The frequent presence of politicians giving testimonials about the magazine can be seen as cues to Chanaan's idealization, which from the third issue on began to display in its second cover - a prominent place - some statements made by noticeable politicians. For example, the Minister of Education Mr Gustavo Capanema said that "Chanaan brilliantly portrays the development of this state"; a minister of the Supreme Military Court said "Chanaan magazine is the certificate of the cultural development of the prosperous and futuristic Espírito Santo state", and a minister of the Supreme Court said that "Chanaan represents Espírito Santo. It speaks well of its intellectual and artistic progress, the capacity of its administrators and graphic artists" (Chanaan, issue 3, p. 2).

MATERIALS AND METHODS USED IN THE RESEARCH

The data presented in this article results from two steps of research, the first focused on general graphic aspects, whereas the second part focused on the adverts published in Chanaan.

For such analyses, we applied the Methodology for research in history of design from collections of printed materials (Fonseca et al, 2016) used in the Laboratory of Design: History and Typography (LadHT), with the purpose of studying the capixaba graphic memory through the survey of different archives and graphic analysis.

METHODOLOGY FOR RESEARCH IN HISTORY OF DESIGN FROM PRINTED MATERIALS ARCHIVE

- 1** APPROACH OF THE SOCIO-HISTORICAL CONTEXT OF THE MAGAZINE
 - Literature Review
 - Interviews

- 2** GRAPHICAL ANALYSIS OF THE PRINTED MATERIAL
 1. Identifying and mapping archives
 2. Photographic records of the archive
 3. Organization of the digital archive
 4. Creating the analysis form
 5. Data collection
 6. Statistics analysis
 7. Discussion

Picture 1: Methodology structure for research on history of design from printed material archives. Picture created by Daniel Dutra Gomes (FONSECA et al, 2016).

The collection of Channan magazine is available at the Public State Library Levy Cúrcio da Rocha and at the Central Library at UFES (Federal University of Espírito Santo). We have found thirty two issues dated from 1936 to 1939.

Part of the digitalized collection was provided by the office of Special Collections of UFES Central Library and the other part was photographed. After the digital collection was organized; the nomenclature was standardized with the initials of the magazine, followed by the issue number, year and type of page: CH_01_1936_01.

During the next step, we drafted datasheet models using the datasheet of Revista Vida Capichaba magazine as a reference (Tonini et al, 2010).

We divided the final version of the general graphic aspects datasheet into cover, middle images and printing area, as well as the general data used to identify the issue. The cover contained information on the structure, grammage and format, image data and signature. The images of the middle were divided into photographs, illustrations and photocompositions, and within the types of images there was information such as type of paper, use of colour and what was pictured on the image. The printing area comprised the structure of the magazine such as number of pages, type of paper, columns structure and total number of

images and ads, and use of typography, lettering and calligraphy in the text, section titles, section signatures, titles and captions.

The datasheet for ads consisted of data related to the graphic aspects of the ads - product, origin and location on the page.

To complement the typographic data collection, we developed a typographic rule to measure the size of the text and its variations throughout the issues. The choice of material was vegetal paper.

We completed the datasheets for all of the thirty-two issues, which was a critical step of the research.

After completing the datasheets, we began the tabulation of the information to organize and systematize data. This enabled the creation of charts, generating important results for the conclusion of graphic information and allowing the comparison between the behaviour of the same variable during different periods of the magazine. The reference for this step was the data tabulation of *Posição* newspaper (Dutra and Fonseca, 2013).

DEVELOPMENT

Chanaan magazine

Chanaan magazine was published between 1936 and 1939, in the city of Vitória, state of Espírito Santo, Brazil under the direction of Carlos Madeira. It represented the portrait of local life during a time of great political and socio-economic transformations for the state, which was formed by an oligarchic community where public officials, coffee colonels and merchants who played roles of great social relevance (Achiamé, 2010).

There is an article on the first issue of the magazine named “Letter to the press”, presenting the intentions of the magazine

(...) try to do some sort of exchange – it is one of the paragraphs of its cultural expansion program: show Brazil what Espírito Santo has and can show, and bring us all that is good and beautiful, interesting and curious they give us in exchange (Chanaan, issue 1, p. 50).

Chanaan was a variety magazine targeting the intellectual audience of that time, including articles wrote in English, Spanish and French.

During the research on the name of the magazine, we have found an article (page 21 of the first issue) about Valley of Chanaan, written by José Cardoso. It mentions the Bible and the piece by Graça Aranha. The article states that Santa Tereza was the biblical reality of the Promised Land. In another issue, there is another mention of the bible, the Promised Land and the work of Graça Aranha, ending with the following passage:

Now it is time for the new Hebrews of the capixaba press, full of faith and affection, climbing mountains to decant and spread throughout Brazil (as per caption in the magazine), the divine Chanaan of splendour and honourable traditions, the one Graça Aranha found, after many years, still in Jewish clothing, although opulent, folded vegetation and yet, showed it would be the symbol of love and beauty intertwined in labour (Chanaan, issue 7, p.67).

This led to the conclusion that the name was inspired by the great and successful work of Graça Aranha, named Canaã and published in 1902. The book approaches the story of German immigrants in capixaba territories and portrays Espírito Santo as a sacred place due to its fertile soil.

Several other issues also have pieces on the writer and his work. One of the articles says:

Graça Aranha was an innovative person who, without losing a trace of his rare sense of style, gave Brazilian literature the malleability and correctness with which it could better incorporate the modernizing currents of the greatest reformist masters (Chanaan, issue 05/06, p. 44).

The same article mentions the novel ‘which focuses on one of the most fertile regions of Espírito Santo’ (Chanaan, double issue 5/6, p. 44).

According to information contained in the magazine itself, it reached audiences in several Brazilian capitals. The second cover of issue 15 has a list with representatives of the magazine outside the capital of Espírito Santo, listing the following places: Amazonas, Pará, Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, Bahia, other cities of Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, Rio Grande do Sul, Minas Gerais, Goiás and Mato Grosso.

There are also other indicators of the magazine’s popularity in other cities. There is an article where Elemer Toporcz (collaborator and advertising director) was in the capital of Bahia and was welcomed not only by the population, but also by the local press. This would be the reason for a tribute held in another issue in June. In that same issue, there is a note stating that another collaborator, advertising director Antonio Balbino, was in Rio de Janeiro to promote the magazine.

Still on the popularity of Chanaan, some magazine issues had notes on its prosperity, as seen in the seventh issue, referencing the magazine's success in the capital of Minas Gerais. It once more emphasises the purpose of the magazine:

The magazine of Espírito Santo (as our monthly periodic is known) has had, as in São Salvador, an extraordinary acceptance in the capital of Minas Gerais. From there we continually receive literary collaborations, photographs, etc., which we publish from time to time. This increases our circulation which, at the moment, does not find parallels in Brazil, except for the large magazines from Rio, São Paulo and O Globo, from Porto Alegre, in Rio Grande do Sul. Therefore, we are faithfully and successfully fulfilling our purpose of spreading the blatant realities of Espírito Santo, and to promote initiatives that in our land determine the use of sources of wealth and leverage the march of Brazilian civilization (Chanaan, issue 7, p. 46).

The thirteenth issue has an article with several quotations of other printed media mentioning the magazine's circulation in other cities, named 'How the Brazilian press received Chanaan and how Chanaan receives the press', with *Correio da Manhã* from Rio de Janeiro, *Correio do Paraná* from Curitiba, *Revista da Semana* and *Tanagra* from Rio de Janeiro (Chanaan, issue 13, p. 55):

It was launched, in the Capital of the small State of Espírito Santo, a magazine that recommends the capixaba people. Chanaan is an index of culture worthy of great centres of intellectual activity. In Rio de Janeiro it competes with the best publications. It is already available here on the newsstands of Avenida (*Correio da Manhã*, Rio de Janeiro, January of 1936); Bringing the sigma of Vitória, Chanaan magazine auspiciously blossomed in the Capital of the State of Espírito Santo; an excellent monthly magazine, which, without any favours, matches its Rio de Janeiro counterparts, equal in its graphical features and in its spiritual orientation (*Correio do Paraná*, Curitiba, January 1936); Chanaan - Victoria, the insular city that is the beautiful capital of the Capixaba land, is not only proud of its flowered squares, its regatta clubs that create champions, the beautiful eyes of its beautiful girls. Today, the small and graceful city can include among its noble things, a fine magazine: Chanaan. *Revista da Semana* magazine - the oldest in South America - records the appearance of Brazil's newest magazine, and do so with an abundance of affection and enthusiasm, predicting for 'Chanaan' magazine - that emerges so gallantly in the journalistic arena - a glorious future (*Revista da Semana*, April 4, 1936); Some days ago, we received the luxurious illustrated monthly periodical Chanaan. The first issue of this magazine, headquartered and written in Vitoria, co-written by the brightest intellectuals from Espírito Santo, brilliantly began a life that we wish to be

long. Chanaan will soon have wide circulation throughout Brazil (Tanagra, Rio de Janeiro).

It was quite common to see advertising for the magazine itself, as seen on issue 16. It informs that Chanaan is 'The magazine with the highest promotion on the North of the country. It advertises the most reputable products of Brazil' (Chanaan, issue 16, 2nd cover).

Another issue reinforces its image of good advertising distribution, highlighting what the magazine aimed to achieve by showing

Three reasons that make Chanaan an essential carrier for good advertising in Espírito Santo, in Brazil and in the World: '1st - It is distributed free of charge in all official circles of the interior of Brazil and abroad; 2nd - It is sold throughout the country for 1\$000 per copy; and 3rd - It has the largest circulation of all Brazilian magazines, except for the largest magazines of Rio de Janeiro, Sao Paulo and Rio Grande do Sul.

The magazine also shown a large amount of data about its collaborators. The second cover of the third issue clarifies that the sections are fixed and have fixed writers, who were invited to talk about specific topics, but that they 'welcome anyone who is worthy of the magazine audience'. In the same issue, the magazine mentions its fixed collaborators: Julia Penna, who owned a school frequently advertised on the magazine, Eurypede Queiroz do Valle, Augusto Estelita Lins, Christiano Fraga, Frei David Arias, Jones Filho, Judith Castello, Clovis Ramalheite, Nilza Braga, Dario Darenzi, Heitor Rossi Bellache, Norberto Madeira da Silva, Claudionor Ribeiro, Hermar Wanderley, Cyro Vieira da Cunha, Olintho Aguirre, Luiz José Barbosa, Nicanor Paiva, Ayrton Machado and Alfredo Gomes.

It also brought notes regarding other roles within the magazine, such as photographers who were often recognised. On issue 4, for einstance, there is a note on the cover: 'The photographic work is by Osvaldo Camara, especially for Chanaan, in cliché of J. Barreto and Fazano (...)'. The same note also mentions the names of other collaborators: 'Pagination by Jayme Almeida; Affonso Sant'Anna who, together with Arthur Silva, Arlindo Nunes da Silveira, Aureliano Barreto and Durval Muniz, form the team of graphic artists at Chanaan. Photographers Paes and Mazzei are also mentioned, 'Mazzei is an element of inestimable value for Chanaan' (Chanaan, 4, p. 13).

Presence of Punaro Bley - Interventor of Espírito Santo - at Chanaan

As mentioned earlier, Punaro Bley was the Interventor of Espírito Santo between 1930 and 1943, and represented the interests of Getúlio Vargas in the state.

We carried out analyses of the portrayal of Bley in the magazine, for it was a frequent topic. We believe Chanaan was created with the aim of supporting him. Taking into account that Vargas government encouraged other periodicals to promote his administration, he probably also promoted the publication of Chanaan and publicized the accomplishments of Bley in the State. In the first issue of Chanaan, there is a full-page photograph of him on page 22, with a message to the magazine: 'To Chanaan, my vows of prosperity and of a brilliant life in the vigorous literary duality of Espírito Santo'.

We made this assumption on the creation of the magazine after identifying that during the period Chanaan circulated, there are pictures and articles on Bley in 16 issues exclusively in political events, on top of the issues that mention him and his family, also frequently seen in several articles.

In addition to the portrayals of Bley in the magazine, other politicians were often present; but it was common to mention only their title instead of their full name. This evidences a different nature in his relationship with the magazine. In issue 4, there is an article on the election of the presidency of the Espírito Santo Legislative House, with the presence of Bley and others, including the Head of Congress, Secretaries of the Interior, Finance, Education and Health, among others, but only Punaro Bley is identified by his name and not only by his role, like the other authorities.

The same way Bley was portrayed in political events, Chanaan also publicized several social events in which he was present, such as the inauguration of Monte Líbano Cement Factory in Cachoeiro de Itapemirim (Chanaan, issue 4, p. 24). There is a photograph with representatives of the state and the caption reads they 'posed especially for Chanaan during the launch of the offices of such an important enterprise'. In the same photograph are Carlos Lindenberg, Secretary of Agriculture, a federal representative and other members who are not named. After the inauguration, there was a commemorative ball, with a photo of Bley and his wife.

The magazine also frequently presented Bley supporting sports. One of the magazine reports highlights the launch of the Rio Branco Football Club stadium - Estádio Governador Bley -, named after him in gratitude. One of the photographs captures Bley and the caption reads 'Captain João Punaro Bley, Governor of the State, who has given all the official support to the sport in Espírito Santo, determining, with his encouragement, the beautiful performance by the sports

representatives of our land' (Chanaan, issue 06/06, p. 34). In another issue, there is a tribute to 'Alvares Cabral Rowing and Swimming Club', which also honoured his wife. During a speech, the president of the club 'focused on the positive achievements by the honourable Governor for capixaba sports.' (Chanaan, issue 10, p. 27).

In addition to these forms of representation of the state interventor, the magazine also portrayed his actions in Espírito Santo. This is noticed in the seventh issue, which contains passages of the governor's message to the population of Espírito Santo about his government: 'In this document I publish the most possible precise and extensive description of all the different activities of the public administration, in the first constitutional year of my Government' (Chanaan, issue 7, p. 23). After this speech, he details his acts, the expenses related to debts, management, construction, military police, civil police, health and education, among others.

As a means to thank the Governor for what he was doing for the state during his government, issue 11/12 has four pages with photocompositions of his actions, highlighting a photograph of him signing the settlement of the latest debt of the state.

On page 41 of issue 18/19, there is an article publicising an award that Puna-ro Bley received from then President Getúlio Vargas, at Catete Palace in Rio de Janeiro. The award was granted because Espírito Santo opened the largest number of schools in Brazil during a given year.

General graphic aspects

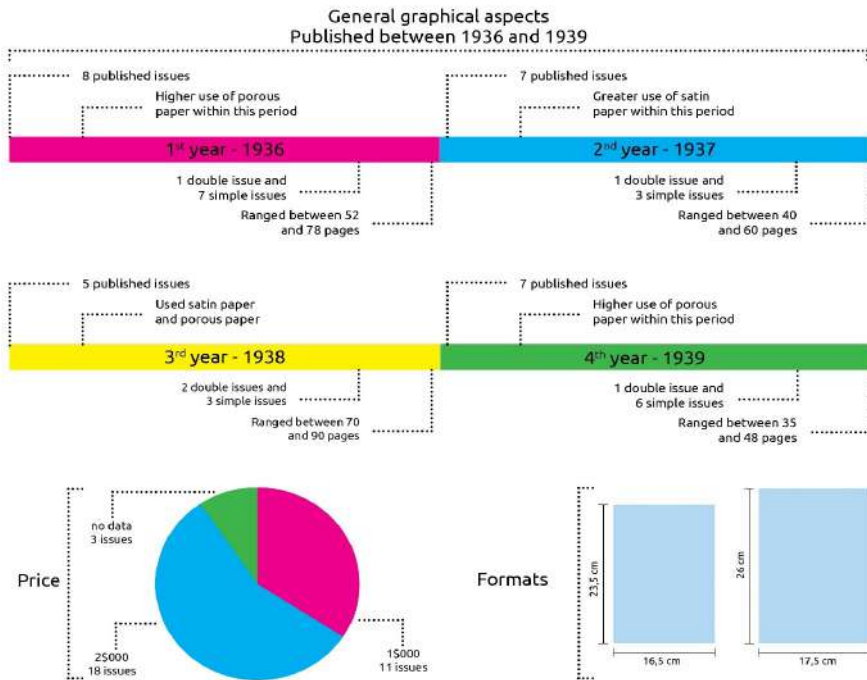
Chanaan was published for four years in thirty-two issues, divided into singles and doubles, one issue for every two months. The first four issues averaged sixty-five pages; the following were shorter, with forty pages each. There was little difference between the single and double issues. The use of satin paper and canoe-type binding was predominant, probably because it is simpler, cheaper and faster.

There were two formats: 23.5 cm x 16.5 cm and a slightly larger one of 26 cm x 17.5 cm.

The magazine used two types of paper: satin and porous. We carried out a price comparison for the magazine using the different types of paper and the number of pages, and we could notice that there was no direct relationship. The price ranged between 1\$000 and 2\$000. Some issues were printed only in satin and the price was lower, but the opposite also occurred. The same goes for the number of pages.

When comparing the use of images and the price of the magazine, we could not find a direct connection between the price and the use of images, since issues with a larger numbers of images oscillated between the two prices.

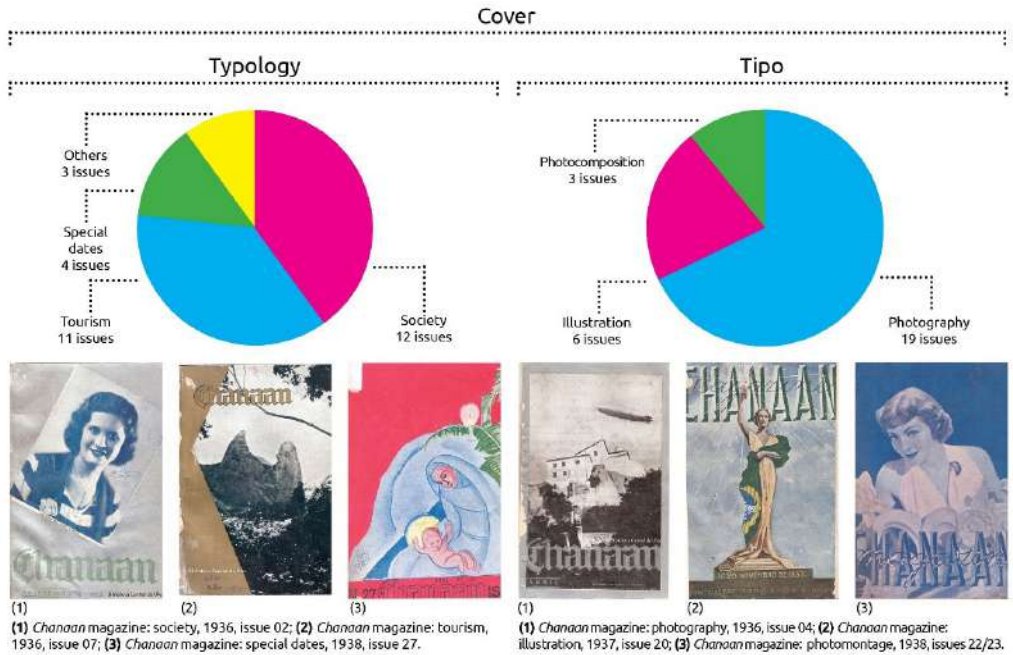
We have also compared the type of paper with the frequency of images on the issues, and again we could not notice a direct connection. There is a large number of images in issues printed exclusively in satin paper, as well as in those printed in porous paper.



Picture 2: Data regarding general graphic aspects of the magazine (created by the author).

Covers

On the covers of Chanaan, the type of images oscillated between illustration, photocomposition and photography (the most common with 68%). The typology of the images on the covers varied between personalities (40%), tourist spots (37%), commemorative dates and others. Picture 3 shows such data and examples of covers portraying the identified types.



Picture 3: Data on graphic aspects of the magazine covers (created by the author of this paper).

The covers of *Chanaan* most frequently portrayed personalities ranging from local politicians' wives or daughters, high society people, businesspersons, and politicians themselves. They also portrayed tourist attractions from Espírito Santo, such as the Convent of Penha (which made the cover more than once), the legend of 'o Frade e a Freira', Glória theatre and Moscoso Park (located in the centre of Vitória), the landscape of Alegre waterfall with the Força e Luz hydroelectric plant Alegre-Veado (information inside the magazine). There is also an issue depicting Salvador on the cover, and with a visual report of the city inside the magazine, advertising the administration and the development of the capital of Brazilian state of Bahia.

Printing area

Chanaan's printing area was composed mostly of two or three columns with similar sizes and justified text. We noticed variations occurring in fixed sections, special reports, poetry, short stories or chronicles with left alignments and experiments such as columns on the diagonal.

The highest frequencies of number of fonts used in texts varied between the 1, 2 and 3 families per issue. In most of the issues, we could find two typographi-

cal families in the composition of the texts. Four issues with four families (issues 2, 24, 31 and 36/37) and one issue with 5 families (issue 35) were also found. The use of typographic families had little variation; the most used ones were those with serif and sans serif with round edges.

Using the typographic ruler we produced, we could analyse the body of the texts and notice that the most frequent one was 7 pt. We also verified that when the body of the text was larger, the body of the text was often placed in the fixed sections or in highlight texts. The Guri section, for example, measured 9 pt in all issues, and the Dona section in some issues measured 11 pt. In page twenty-one of the first issue, there is a featured article about the Chanaan Valley, where the body of text was 9 pt. This technique of using a larger body in prominent articles is present in several issues. On the first issues, the name of the magazine is in capital letters, centralized on the top of all pages, body of 6 pt.

Among the variations used in the text, the most used ones were in bold and italic; there are 18 issues which used bold and 17 that used italics. Issue 20 is the one comprising more variations, with use of normal, bold, expanded and light typographies. Most issues presented between 2 and 3 variations, including regular, bold, italic, light, expanded, and condensed, and some only used the regular type (issues 15, 17, 18/19, 22/23, 25, 26, 28).

The most commonly used text alignment was justified. The left alignment was used for poetry, tales or chronicles, as shown in picture 5. There were also several experiments regarding alignment with images inserted in the text, as seen in picture 4 - where the alignment was arranged diagonally, accompanying the image.



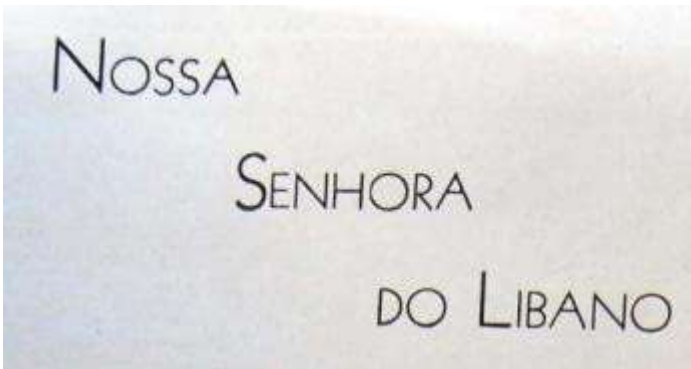
Pictures 4 and 5: Experiments of alignment, on the left we see alignment with the image in the text, and on the right, we see the use of left alignment. Source: Chanaan magazine, 1936, issue 11/12, page 01 and 1937, issue 21, page 15.

The captions varied among typographic and calligraphic basis. There was variation in the use of typography; however the most used one was sans serif with round and regular edges. Among typographic variations, bold, italic and light were the most frequent ones; expanded was less used. Issue 22/23 has the greatest number of variations in the captions; the others vary between two and three, among typography and calligraphy.

As seen in the body of the texts, the body size of the most common captions was 7 pt., but sizes varying between 8 pt. and 11 pt. were also found. In photo-montages and articles about then current politicians and society, the captions were larger (9 pt. or above), the largest one was 11 pt.

The study of the titles refer to several topics, poetry, short stories and chronicles that varied between typography and lettering. Issues 1, 4 and 22/23 contained the largest variations between typography and lettering, the other issues varied between four and seven different uses.

The most commonly used alignment was centralized, but we have found experimentations on the alignment of some titles, such as the one seen on Picture 6. As shown, each word is placed on a different line, and in pictures 7 and 8, we see the title beginning at the top of a page and ending at the bottom of another.



Picture 6: Title with each word on a line with different backspaces. Source: Chanaan magazine, 1937, issue 14, page 11.



Pictures 7 and 8: Title starts at the top of a page and ends at the bottom of another. Source: Chanaan magazine, 1939, issue 29, pages 12 e 13.

Print area – titles, texts and captions

<p>Ranged between 6 and 13 typographies on the titles</p> <p>Ranged between 2 and 4 typographies on the text</p> <p style="text-align: center;">1st year - 1936</p> <p>Ranged between bold and italic on the texts</p> <p>Ranged between 1 and 4 typographies or calligraphy on the captions</p>	<p>Ranged between 3 and 10 typographies on the titles</p> <p>Ranged between 1 and 3 typographies on the text</p> <p style="text-align: center;">2nd year - 1937</p> <p>Ranged between italic, bold, condensed, expanded and light on the texts</p> <p>Ranged between 2 e 3 typographies or calligraphies on the captions</p>
<p>Ranged between 3 and 13 typographies on the titles</p> <p>Ranged between 2 and 4 typographies on the text</p> <p style="text-align: center;">3rd year - 1938</p> <p>Ranged between expanded, light, italic and bold on the texts</p> <p>Ranged between 2 and 6 typographies or calligraphies on the captions</p>	<p>Ranged between 2 and 1 typographies on the titles</p> <p>Ranged between 1 and 5 typographies on the text</p> <p style="text-align: center;">4th year - 1939</p> <p>Ranged between light, bold and italic on the texts</p> <p>Ranged between 1 and 4 typographies or calligraphies on the captions</p>

Houve um corre-corre (parabéns). Cadeiras caíram, copos pararam, e vozes sussurrantes galgavam pelos cantos, pavidas!

(1)

O "Espadarte" marcou nossos escoteiros do ma

(4)

VALLE DO RIO DOCE

(7)

(8)

Em Siqueira Campos foi organizada, no Grupo Escolar, uma exposição de trabalhos executados por professoras e alunos.

(2)

dependência do Brasil. 4— Última reunião saldanhista na sede primitiva. 5— Uma parada náutica saldanhista

(3)

mas muito ao sabor da sua genie; *aurivindia* dizia eis de uma situação acadêmica; como de volta batida e com o hostia em volve em frases corriqueiras nos seus diálogos, in-

(5)

Equipes das escolas.

(6)

Dr. Antonio Carlos Mello Barreto, dd. Director da Escola Profissional, Federal, de Victoria.

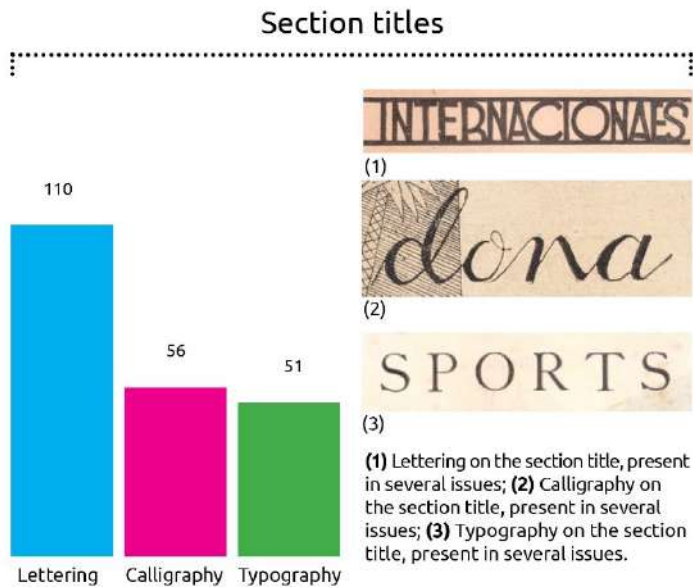
(9)

(7) Typography on the title, 1936, issue 3, p. 4; (8) Lettering on the title, 1937, issue 17, p. 30; (9) Caption in sans serif typography with rounded edge, 1939, issue 31, p. 12.

Picture 9: Data on graphic aspects about titles, text and captions (created by the author).

There were three types of section headings: typographic, calligraphic and lettering, as seen in picture. The most common was lettering, as seen in 110 examples of section titles using this technique. The use of typographic and calligraphic title was similar: 51 and 56, respectively. Most of the issues had samples of the three types of titles in its sections, where the 20th issue has the highest number of sections and variations with 9 titles in typography, 6 in lettering and 5 in calligraphy. The only issue with no fixed section was the 29th. The most frequent typographic variations in section headings were regular, bold and light.

Variations have been published in the section headings throughout the magazine's publication. These variations were in configuration and alignment. The most common form of alignment of the section titles was centralized. To the right and to the left had similar use: 42 and 49 times each, respectively.

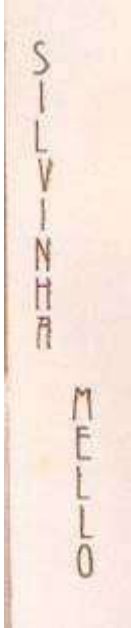


Picture 10: Data regarding graphic aspects of the section titles (created by the author).

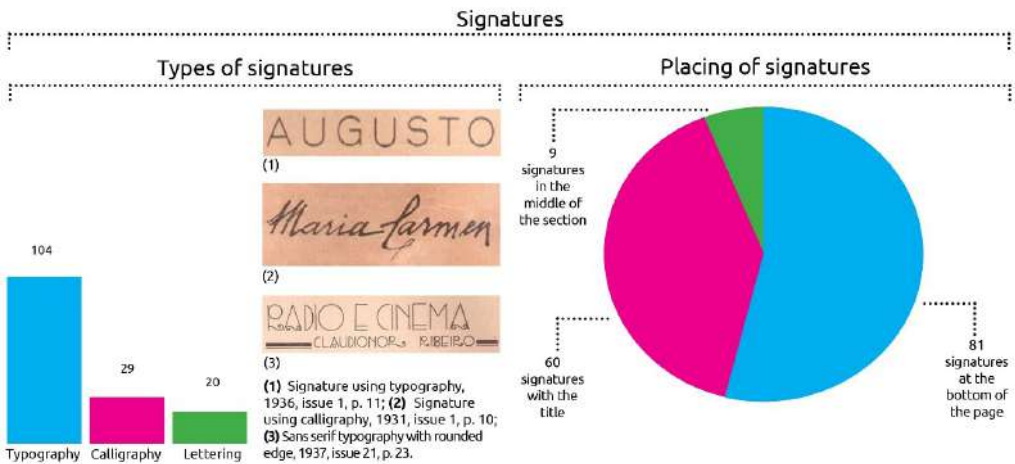
It was common to find signatures of the authors of the sections and articles on each page. The most frequent type of signature was typographic, totalling 104 amongst all issues. There were also signatures in calligraphy (29 signatures) and lettering (20 signatures).

In typographic signatures, the present variations are regular, bold, italic, light and expanded. The use of each type is quite similar, but regular was used the most. The most frequent body size was 7 pt., but it ranged between 10 pt., 12 pt. and 14 pt. in some issues.

The most common positioning of the signatures was the bottom of the pages, followed by the signature with the title. Signatures were also found in the middle of the page and vertically, as shown in picture 11.



Picture 11: Experiment with vertical signature. Source: Chanaan magazine, 1936, issue 01, page 42.



Picture 12: Data regarding graphic aspects of signatures (created by the author).

Ads

The ads published on Chanaan were frequent and were part of its visual identity.

The magazine had four advertising directors, Antônio R. Balbi, Geraldino Drummond, Wilson Laranja and Elemer Toporz.

Most advertisers were Capixaba companies, but there were also some national ads from Rio de Janeiro, São Paulo, among others. National advertisers are still seen today, such as Colgate, Palmolive and Granado.

To allow a better analysis of the ads, they were split into categories: typographic, imagery, classified and hybrids (ads with images, but where the main focus was a text).

The typographic ads often had edges as a visual aid, which in this analysis were divided into simple, ornate or absent.

It is relevant to point out that the edge was considered simple when it used a single thread, used to make compositions. The ornate edges were formed by elements like circles, triangles, dashed with 'x' between the traces, among others. At a glance the ads without borders seemed to belong to the text or to some other type of advertisement, as in the case of aguardente², whose advertisement was simply a sentence "Engenho Araçatiba is the mill that produces the best Aguardente in the State", located at the bottom of the page (Chanaan, issue 1, p. 12).

Most ads used two typographic families in its compositions, followed by three families, and then just one.

In addition to typography, the ads had lettering and calligraphy in their compositions. Lettering was more frequent, used in 31 ads in the second issue of the magazine.

The page use by typographic ads varied between one, two or three columns, bottom, heading, full page or half page. The most common were in one column and at the bottom of a page.

Image ads ranged from pictorial illustration, photography, comics, and others (which were usually a mix of illustration and photography). The pictorial illustrations were more frequent (80% of the ads), followed by photography (9.5%).

Until issue 23, the composition of the image ads was predominantly made with two typographic families; on the following issues this changed to only one family.

² Aguardente is a Brazilian spirit made of sugarcane.

The use of calligraphy and lettering in image ads was higher than typography, and lettering came first place.

Image ads most commonly took one and two columns, and from the thirteenth issue on it became common for these ads to take entire pages.

Not all issues had hybrid ads, those that did had only one ad; the only issue that posted two was 34. Typographic families ranged from one to four different ones per ad.

Most hybrid ads took a full page, and the others took one column or half a page. The type of image present in the ads varied from pictorial illustration to photography.

It was quite common for these ads to be connected to women's health, followed by an explanation about the produced effects, such as the following text for female hormone Ovariuteran:

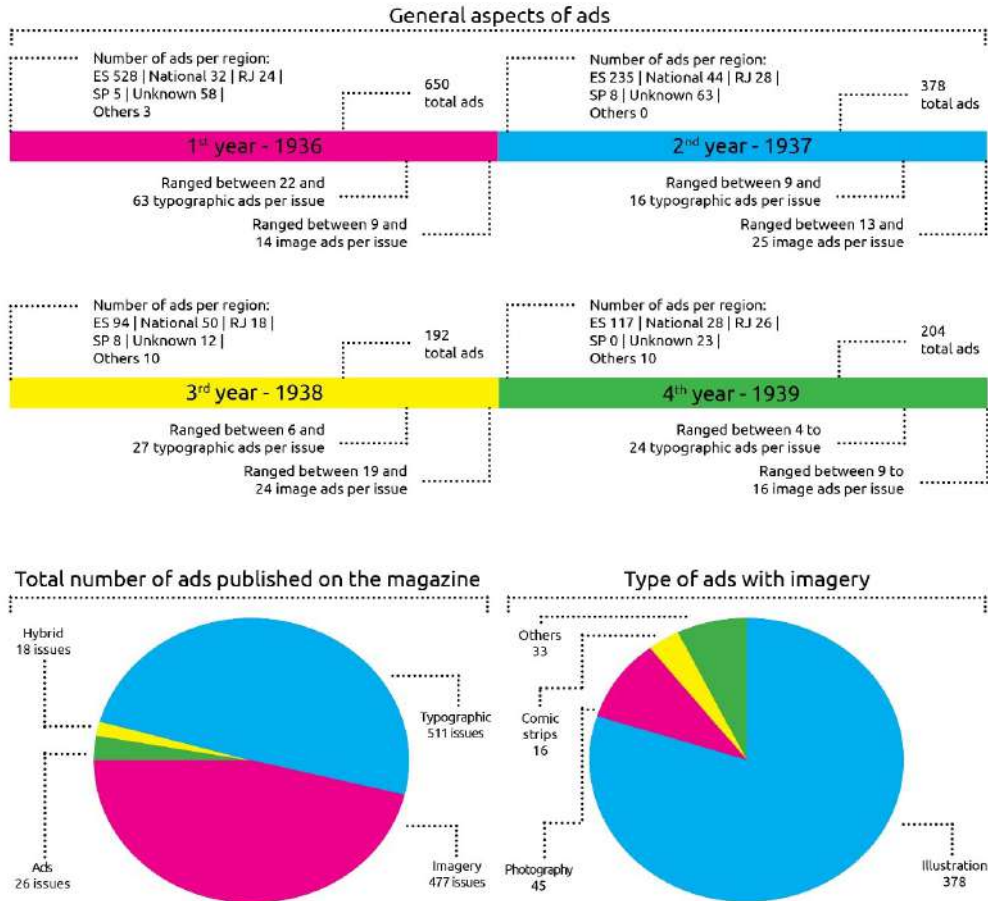
Hormones are the active principle of certain organs, which act in the body maintaining the normality of its functioning, and therefore, health. The lack of a certain hormone soon causes disturbance, diseases. For example, ovaries are very important organs for the health of the ladies. Any deficiency of these organs soon brings about disturbances that make women suffer: period delays, colic, haemorrhages, nervousness, etc. However, when you are sick, take the medicine containing the hormone and your health comes back as if by a spell (Chanaan, 1936, issue 09, p. 7).

Until the fourth issue, there were 34 ads; afterwards the number was reduced: between 17 and 14; placed on the second or on the third cover.

There was little typographical variation, and until the twenty-fourth issue the use of one typographic family prevailed, from the thirtieth issue on, the use of two families became more frequent.

The most common advertisers were physicians, clinics and lawyers.

The data is shown in the following picture:

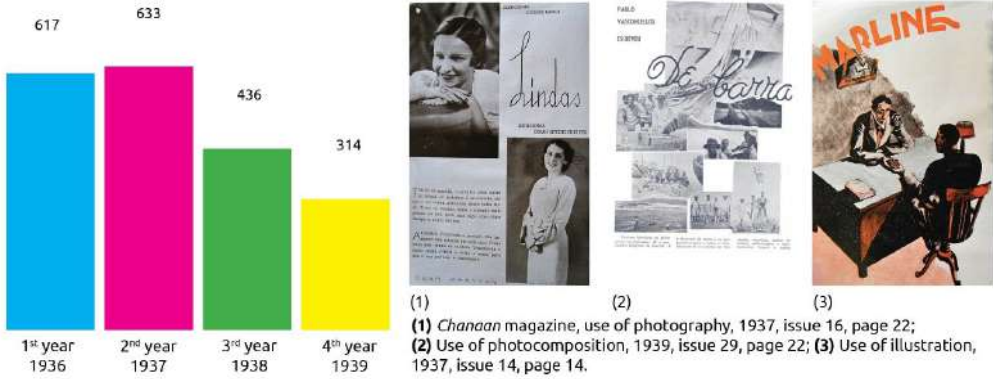


Picture 13: Data regarding general graphic aspects of ads published in the magazine (created by the author).

Use of images

In the first issues of Chanaan there was a smaller number of images, but this number increased and in the 20th issue there were 120 images. The issue with the least number of issues is the 31st, with 28 images. The issues of the last years are the ones with the smallest number of images, but the last issue (36/37) has one of the highest numbers (82 images). The images were categorized according to their typology: photomontage, photography and illustration. The photomontages contained several experiments composed of photos, illustrations, calligraphic texts and letterings. Picture 14 contains examples of the typologies identified in the analyses.

Images



Picture 14: Data about the images posted in the magazine (created by the author).

CONCLUSION

The results of the present research show the rhythm of the experiments and the capixaba graphic production from the viewpoint of design in the 1930s. They revealed the technological and editorial advances in the state of Espírito Santo, contributing to studies related to the graphic memory of the state.

Archive survey, data collection, analysis of charts and editorials enabled us to identify graphic resources of a repertoire that is a reflection of its time, proving to be a rich source of visual aids in composition.

It also showed that Chanaan made several experiments, both in graphic aspects and in content - this was a characteristic of the magazine. Even with these experiments, there was a pattern, such as the use of text body, of typography with serif and of a specific size. When the reports and fixed sections were more prominent, the typography was larger, sans serif with round edges. We can also consider as a pattern the justified alignment of the sections and reports, and the alignment to the left for poetry, stories and chronicles.

We were able to identify the following graphic aspects: the captions, which were mostly the same size standard as the body of the text, the main typography was sans serif with round edges; but they also applied the use of lettering and calligraphy, mostly in the photomontages. In the signatures of the fixed sections and reports, the differential was the signatures using calligraphy, to legitimize that they were actually written by the author. In the section titles, lettering was

the most used resource, with a great variation from one issue to another.

The popularity of the magazine is noticed on the large amount of advertising found in the issues, and by the frequency of the ads placed by companies from other states, plus national companies such as Colgate, Palmolive and Granado.

We could also notice the great repercussion of the magazine amongst several states and its relationships with other periodicals from other capitals that referred to the magazine, as well as affinity with other cities, as seen on the issue about the city of Salvador.

The results also show a strong politic tone on the articles, especially related to the portrayal of Punaro Bley, which could be the actual motivation behind the creation of the magazine. He also reinforced the political content with his testimonials in a prominent area within the magazine, aiming to legitimize the government support for the publication of Chanaan.

Studying Chanaan varieties magazine allowed us to understand the capixaba graphic and editorial production in the 1930s, and we can assert that its pages display the yearnings and records of the local elite, being an important memory token for the capixaba press.

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A picture of time and knowledge in the almanacs from Amazonas (1870 to 1927)

*Rômulo do Nascimento Pereira,
Washington Dias Lessa,
Ligia Maria Sampaio de Medeiros*

TO THE READER

This article proposes the registration and organization of data with regards to the Amazonian almanacs and is related to a broader research that focuses on printed artifacts from this location, from 1851 to 1930. This paper comprises the collection of editorial information and graphs as well as other observations arising from the reading on the almanacs. These publications were printed with types, rules, typographic vignettes, illustrations, photographs, varied styles organized according to the society's demand for specialized professionals to be produced following the available techniques and materials, especially the typography.

The set of data collected from the study of these publications provides a perspective on the development of the graphic activity circuit and its culture. In which it is believed to perceive a greater specialization of printed communication and the broadening of the domain of commercial information over others. In this sense a higher complexity is noted of the graphic design, of the visual rhetoric presenting advertisement and text, besides the more extensive use of the image as concrete evidence of this movement. It was also observed that this set of communication artifacts was also compared to a portrait or representation of society from which varied information was raised, and, to a certain extent, to life.

The objective of collecting these objects, which are not yet altogether observed, was twofold. First, to gather and register a particular type of printed artifact published in Amazonas as the subject – the almanacs. At the same time, aiming to organize and study graphic and editorial features of them, not as an isolated technical product, but as a social tool in which there are yearning, disputes, representations and more. There was also an effort to restore and organize information of interest to a wide number of specialists of the region and of the printed artifact. In order to do so, it was necessary the support of primary sources collected in the archives of the libraries of the Amazonian Museum, the Reunidos Cultural Center, the Public Library of the State of Amazonas, including the Digital Collection Management, all located in Manaus. In Rio de Janeiro, the library

of the Brazilian Historic and Geographic Institute – IHGB, the initials in Portuguese – was consulted as well as the digital collections of the Brazilian National Library and the Brasiliana Library of the University of São Paulo. Research was also conducted in other databases of national and international universities and of other foreign organizations.

The adopted temporary clippings begin with the introduction of the printing technology in Amazonas, occurred in 1851, going through 1930, and during this period 17 almanacs were identified. Of the total, two referred to the Madeira River region, seven are complimentary almanacs, which were distributed at no charge to clients of a printed office, two pharmacies and a store, one of the almanacs covers the Police Force of Amazonas. Therefore, they possess a wide range of information, making use of distinct graphic, editorial and productive resources and forming a heterogeneous collection of printings. At least eleven were designed and printed by typographic offices in Manaus, two were produced in Europe, and in three others it was impossible to specify the place of their production.

There is large discontinuity in the almanacs' publications (Figure 1), and it was noticed a greater occurrence of these printings, with nine editions during the period of wealth in the region, known as the Amazon Rubber Boom, from 1890 to 1910. Out of this set of seventeen, eleven were completely analyzed, whether in digital or physical form. Indeed, they are the objects of study used herein. Of the other five almanacs, the access was by some pages found in the Internet and other digital written references. Annuals and other prints lacking precise indications were not included, as observed in the "Prologo" of the 1889 Almanach Madeirense. In this prologue, the editor mentions the difficulties and critics received whilst organizing the first almanac in the Madeira River region, that was published in 1888, of which another reference was published in a newspaper. From this almanac, there are imprecise records of possible issues of 1891, 1892, and 1893, to be confirmed. Just as in the 1907 Almanach Camillo, which in its cover page indicates "V Anno", possibly four other previous editions were published, although not yet found.

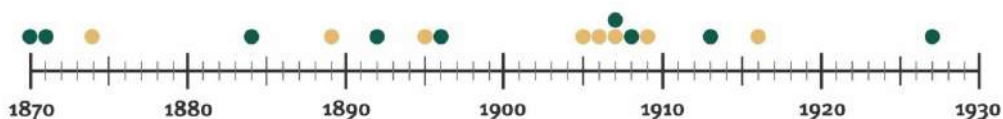


Figure 1: Year distribution of the 17 identified almanacs. The color variation refers to the almanac's frequency of publication, two equal tones in sequence indicates issues consecutively organized by the same publisher (Own source).

The Brazilian bibliography on the subject did not reference the almanacs related to Amazonas or even the northern region of Brazil. As a matter of fact, the first two, of 1870 and 1871, seem to have been completely ignored until today, as no records of them were found in the works consulted nor in other sources. In research conducted by Fernanda Martins (2017) on printed material of Pará consists of a set of almanacs published in that location. A gap that begins to close with research about the region's printed culture, although this paper does not intend to exhaust the topic. Its goal is to contribute to the access and the broader circulation of these popular and significative information tools. Not just as a data depot on the past, but as a picture or snapshot of several narratives registered on paper, images, design, production, speeches and in representation of a community, including what has not been registered. And it is worth remembering that almanacs are still produced in this day and age, surviving by publishing a combination of short, fragmented, and sometimes just curious or anecdotal information.

ALMANAC CULTURE

Almanack, almanach, almanak and the current spelling in Portuguese *almanaque*, are the titles that originally identify the annual publication that contains diverse information, including a calendar with festivities, relevant material of local interests, advice, and more. This work is related to two areas: time and knowledge, organized according to the demands of each place and time. Correia and Guerreiro (1986, p. 44) consider the almanac as a way imported from some asian courts. Within them, astrologers presented to their sovereigns loads of information, including indications of the stars at the beginning of each year. The calendar is also present in Europe, printed on woodcut in the 15th century in patterns, some of them decorated. It is no accident that this form of arranging time in an annual calendar makes it an essential part of this publication. They have varying sizes and page numbers, although portable editions seem to be more common, easier to check. They were produced handwritten in the Middle Ages and gained popularity with the arrival of printing in the 15th century.

The *Almanach Perpetuum, incunabulum* by Abraão Zacuto, was the first one of its kind published in Portugal, in 1496, and brings a collection of astronomical information arranged in tables. This information was important to the Age of Exploration, and to a Portuguese expedition that aimed to dock in the Indies, but docks at a coastal place with a great deal of Brazilwood at the threshold of the 16th century. This land gave birth to the Brazilian colony, territory where typographic technology has remained forbidden by royal decree for a long time. Its introduction occurred in 1747 by a Portuguese man known as António Isidoro da Fonseca, although his publishing adventure was interrupted and he had to return to Lisbon. It was only when the Portuguese court, escorted by English Navy

ships, escaped from Napoleon's troops that the first printing office could be definitely established in Rio de Janeiro in 1808.

In 1811, the installation of the second printing office is established in Bahia, owned by Manoel Antonio de Silva Serva. The following year this printing office became the first privately owned establishment in Brazilian territory, and published *Almanach para a cidade da Bahia 1812* [Almanac for the city of Bahia 1812]. Still in the 19th century, other almanacs are printed and become popular, like *Almanak Laemmert*, published in Rio de Janeiro. In 1820, there are records indicating the appearance of the first printing office of Grão-Pará, but it was only with the boost of Amazonas to a provincial town that this location can benefit from the services of Manoel da Silva Ramos' printing office, in 1851. The first identifiable Amazonas almanac was published 19 years after the beginning of printing activity, in 1870. This sort of publication was defined in the book *Os sucessores de Zacuto* [The successors of Zacuto]:

An almanac is a guide, an instrument that contains elements for the organization of everyday life. First of all, it manages time based on a yearly calendar. Organizes activities, arranging useful information for these activities. Organizes the community by registering proverbial moral and culture. Organizes space by providing a clear picture of the universe, traditionally defined in astrology. Without losing the original meaning of enumeration, the notion of almanac will tend to reflect the idea of compilation of knowledge, in particular intended for audiences with little access to other readings. (Galvão, 2002, p. 11).

Usually characterized as being a periodic publication, the almanac would thus have a life more ephemeral than a book, whether for being handled in excess or for being discarded after the launching of following issues. Nonetheless, this publication will be the only edition for many families, being kept as a source of knowledge. Le Goff (1990, p. 527) speaks of the calendar as a system associated with the almanac, both analyzed as cultural objects, "a privileged place where popular and erudite cultures meet." In France, almanacs were associated to famous characters and official discourse, but also raised a lot of questions and criticism. During the French Revolution, they were extensively used as propaganda (Andries, 1996, p. 294). This was when they became objects of government censorship and academic criticism for being regarded as a means of disseminating futility (Lisboa, 2002, p. 16). In Brazilian context, they are artifacts equipped with social importance, or, as preferred by Ferreira (2001, p. 20), it speaks of their "civilizing aspect" by bringing varied knowledge to distant places, transitioning between rural and urban areas, and through different social classes with poise.

In the almanacs, communication may be thought of in terms that Flusser (2007, p. 93) puts it, as the accumulation of acquired data to make sense. Thereby the political and social structures of a location, in multiple signs, would be visible and organized for a traveler. Similarly, they sought to arrange the time by giving social meaning to this elastic measure, indicating, for instance, the sign of the month, saint's day, holidays, phases of the moon or other information of which the reader wanted to write down. Afterwards it will constitute a repository of several curious pieces of information and advice, again as propaganda. Within the Brazilian editorial outlook in the 19th century, the almanac occupies a privileged position and there are reasons for being sponsored by local government, because their production provided an indicative trait of growth and served as a means for dissemination.

The commercial information, in the form of indication of commercial firms, self-employed professionals, and advertisements, are also present in this type of publication. And as noted, regarding this collection from Amazonas, this information stands out in complimentary almanacs given to clients by firms and in almanacs with strong visual and rhetorical appeal such as that of 1912-13. In Brazil there is an increasing popularity in so-called pharmacy almanacs, especially in the beginning of the 20th century. In Amazonas only two of these were found, published in 1907 and 1908. Albeit in the January 11, 1910 edition of *Correio do Norte* there was a note appreciating the receiving of *Almanack da Pharmacia Amazonas* [Amazonas Pharmacy Almanac], this would be the forth published.

The following survey and the study of the almanacs from Amazonas almanacs allows for the observation of local graphical circuit, beyond the data shown related to quantity of active professionals and companies. By peeking at their pages, it is aimed to read their resources, graphic styles, images, text, projects, and from them observe the formation of editorial and graphical activity and its relation to society. Even though the collected almanacs are from inconstant and distinct periods, this diversity and contrast only makes the perspective brought by these publications richer and more interesting.

AMAZONAS ALMANACS

The seventeen identified almanacs were organized in a table for registration purposes, of these eleven were effectively consulted and some were considered more significant according to their project, graphical and visual features, data organization and symbolic importance. Therefore, the almanacs of 1870, 1884, 1895, 1905 and 1913 had more detailed descriptions of their editorial and graphic information, while the others had been mentioned only when deemed conve-

nient to this narrative. Data of interest were also removed, like indications of professionals and trading houses in graphic arts circuit, with additional observations, some of which were gathered by research in journals which were considered relevant to form an objectively condensed overview.

	Título	Year	Printing [location and house]
1	Almanack Administrativo e Commercial do Correio de Manáos da Província do Amazonas	1870	Manaus, Typ. do Correio de Manáos
2	Almanack Administrativo e Commercial do Correio de Manáos da Província do Amazonas	1871	Manaus, Typ. do Commercio do Amazonas [Edited by Correio de Manáos]
3	Almanack Administrativo da Provincia do Amasonas para o anno de 1874	1874	Manaus, Typ. do Commercio do Amazonas
4	Almanach Administrativo histórico Estatístico e Mercantil da Provincia do Amazonas	1884	Manaus, Typ. do Amazonas
5	Almanach Madeirense para o anno 1889	1889	Porto (Portugal), Typ. de Arthur José de Souza and Irmão
6	Almanach Madeirense para o anno 1892*	1892	–
7	Almanach do Amazonas Histórico, administrativo, commercial, estatístico e literário	1895	Manaus, Typ. do Amazonas
8	Almanach do Amazonas Histórico, administrativo, commercial, estatístico e literário	1896	Manaus, Officinas do Diario Official
9	Almanack brinde Palais Royal	1905	Manaus, Palais Royal
10	Almanack brinde Palais Royal	1906	Manaus, Palais Royal
11	Almanack brinde Palais Royal*	1907	Manaus, Palais Royal
12	Almanach Camillo	1907	–
13	Almanack da Pharmacia Amazonas*	1908	–
14	Almanack brinde Palais Royal*	1909	Manaus, Palais Royal

	Título	Year	Printing [location and house]
15	Almanak Amazonense de 1912-1913	1913	Paris (França), Soci�t� G�n�rale D'impression. Edition by Empresa do Almanaque Henault (Rio de Janeiro)
16	Almanack Amazonense Paulo	1916	No indication
17	Almanack da for�a policial do Estado do Amazonas*	1927	Manaus, Typ. da Imprensa P�blica

Table 1: Amazonas almanacs, those with an asterisk after the title have been partially consulted.

In 1870 the *Almanack Administrativo e Commercial do Correio de Man os da Prov ncia do Amazonas* [Administrative and commercial almanac of the *Correio de Man os* of the Province of Amazonas] was organized by the editor Eugenio Ataliba dos Santos Ferreira (Figure 2). He comments in the text entitled “To the reader”, which opens the edition, the “notable missing feeling” that an almanac makes to both national and foreign visitors arriving to the province capital. The editor remarks on his audience: “It is perfectly understandable the gaps within an assignment like this, all the more when it is not developed in the Province the taste for this and other works.” Implying that the audience had still many limitations.

Its edition has small dimensions, about 10 x 14 cm, and 240 pages. It begins with a calendar in which each month was composed in several pages, with a typographic vignette of the zodiac sign corresponding to the month and varied information. The content is divided into four parts: the first with the names of the Imperial Family, ministers, senators and deputies. The second, with the political, administrative, judicial, police organizations and other information about the Province of Amazonas. There were also the department titles, positions and the names of the occupants, both in the capital and in districts in the countryside. The third contains commercial and ecclesiastical information, and the fourth lists the names of retired employees and a few advertisements.

This almanac registers five “Typographias” [printing offices] having the name of five journals also listed in the same publication: *Correio de Man os*, which published this almanac; *Amazonas*; *Commercio do Amazonas*; *Catechista*, *Reforma Liberal*. In the newspaper *Correio de Man os* of September 7th, 1869, there is an advertisement of the almanac’s editor asking all merchants, laborers and workers to provide information about their activity to be included in the *Almanak*’s edition: “the first that will have the province.” In the same newspaper, in the October 11th, 1869 edition, there is a note indicating that the almanac was in the press, that it would be distributed by December 15th and that advertise-

ment would be accepted until the end of November. From this data, it is possible to have an idea of the steps and production time of this publication, asking information as well as professional and commercial indications in September, the following month stating that the almanac is in printing process, but still accepting advertisements. And finally announcing that the almanac would be finished by mid-December.

The following year, the almanac of 1871 is published by the same printing office. In this year there were only four printing offices registered. In the publication's opening text the editor promises "to improve this paper that, still incomplete for the difficulty of finding data and clarification, deserves to be forgiven." Both almanacs are graphically modest, joining them in the publication of 1874 with similar features and organization (Figure 2), although having a more common and unconventional graphic design. These three almanacs mark the beginning of this type of publication in Amazonas.

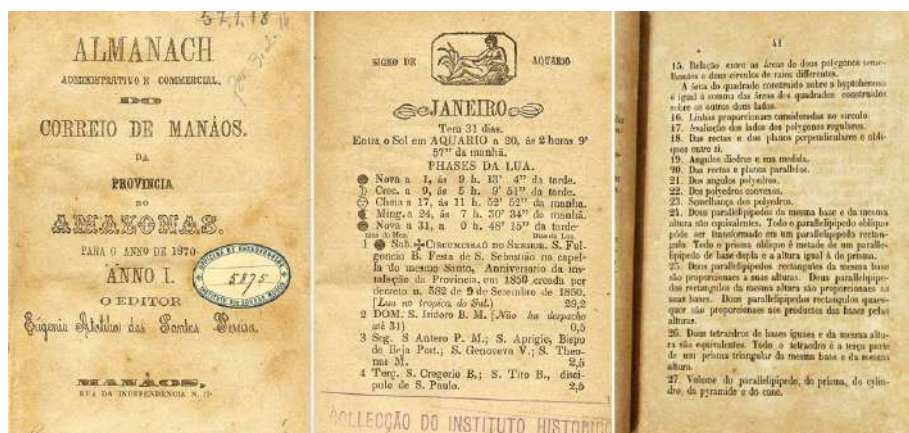


Figure 2: Almanac of 1870's cover page with title composed in a centralized form in various types and styles. Around the center of the same almanac's calendar page, in which is the use of typographic vignettes. On the left, detailed page of the third almanac of 1874 (used with permission of IHGB and the Amazonian Museum, respectively).

The Almanach administrativo histórico estatístico e mercantil da Provincia do Amazonas para o anno de 1884 [Administrative, historical, statistical and commercial almanac of the Province of Amazonas for the year of 1884] was the fourth to be published, ten years after the preceding. It brings already a significant change in relation to its predecessors, because it has in its title page a picture covering the whole page (Figure 3). On this page, there is a large river with vegetation, dwellings, human elements and vessels, a canoe can be seen from top to

bottom, followed by a sailboat, after a steam boat and, in a prominent position, a ship sailing in front of the sun, which seems to rise and extend its brightness across the upper part of the picture. This figurative image reflects the signs of growing prosperity and the belief of a brilliant future. These are some of the signs of this movement or progress: in 1867 the navigation on the Amazonas River was permitted to foreign vessels. In 1878, the Cathedral in honor of Our Lady of Immaculate Conception was inaugurated, according to Mesquita (2006, p. 67), being “the first great architectural work built in Manaus.” In the subsequent years, other buildings were built, businesses were opened, the population and formal education were magnified. In accordance with Santos (1980, p. 76), by the end of the 1870s, the rubber exploitation had become the main source of wealth in Amazon, beginning the period of great wealth provoked by the latex exploitation, which becomes intensive by the end of the century. The shiny or bright future seemed to be the fate of the great Amazonas, as the picture in the title page seemed to express.



Figure 3: Illustrative front page, full page advertisement on Loja Parthenon, and “Parte Mercantil” [Commercial Section] page, formed by two columns, with rules and tables (used with permission of the Brazilian National Library).

In its editorial entitled “To the readers,” it states that the publication of an almanac was established as an “imperative need before the upward movement that the same province experiences in its fast and safe progress.” It points out, in the same text, that its edition was only possible due to the capital allocated by the Assembleia Provincial [Provincial Legislative Assembly]. Which explains, to some extent, the excessive patriotism when intended to “engage in propaganda of the large resources this vast region has, for the most part unknown and, what is more painful to say, within the country.” After these explanations for the first part of

the almanac, called “Preliminares” [Preliminaries], is the “Folhinha, Informações Uteis e Genealogia da Augustissima Casa Imperial” [Flyer, Useful Information and Genealogy of the Magnificent Imperial House].

Each of the twelve months of the flyer was organized in only odd number pages, with the days of each month formed by two columns. There are indications of the Zodiac sign, the phases of the moon, and the saints of the day. In the even number pages, there are advertisements in full page or up to two on the same space. One of the full-page advertisements is of *Typographia do Amazonas*, the same one that prints this almanac. In addition to offering printing services for “excessively low prices,” it claims to possess three presses of the builders Maulde Geibel and Wibart, “Liberty” by F. M. Weilers and “Perola” by Goloing and Comp. In other advertisement, there was a “*Officina de Encadernador*” [Bookbinder Office], led by Virgilio J.C. Travessa and located in the already mentioned *Typografia do Amazonas*. This first set of advertisement used rules, borders, capitulates, various types and other graphic elements that build a wide variety of graphic, visual and rhetorical compositions.

The almanacs’ second section is the “*Parte Administrativa*” [Administrative], followed by the “*Parte Histórica*” [Historical], the fourth is the “*Parte Estatística*” [Statistical] and in addition to the textual part organized in two columns, is composed of several tables, sometimes incorporated to the layout, other times covering full and double pages. The fifth and last section is the “*Parte Mercantil*” [Commercial], which in turn is organized into four subsections, the first one would have information translated into English and French. This is the longest part in the almanac, with some more advertisements on its last pages.

This almanac registers on its page the presence of three bookbinders, a bookstore, four journals: *Amazonas*, *Commercio do Amazonas*, *Jornal do Amazonas* and *Rio Madeira*, located in the inner-province town of Manicoré. It also registers a “*photographo*” [photographer], three “*typographies*” [printing offices] and twenty-one “*typographos*”.¹ Undoubtedly the number of printing offices and other professionals in the graphic field in Manaus was greater than registered in the almanac, that depended on forwarding information from businesses and professionals.

In the January 27, 1884 edition of *Amazonas*, it is announced that the almanac is on the press and is accepting advertisements, just by heading to the printing office. The same announcement is repeated from time to time, until at least the

¹ It is important to note that the term “*typographos*” seems to indicate both the professionals who plan and compose the printed matter and those responsible for the impressions because at the time these activities were often performed by a single individual.

March 7, 1884 edition, which indicates a delay in the production and that the advertisements were the last to be printed. However, this graphic artifact was well edited, planned and produced with good command of the techniques, holding a more complex visual language than the previous ones. It consists of a large volume of information, some translated into two other languages, and uses composition of tables. It is noticeable a better command of statistical and commercial information.

In 1889 the *Almanach Madeirense* was published, alluding to the region of the Madeira River, in the countryside of Amazonas. This publication highlights the interest of a region to be noticed, having the community information arranged in one publication. It is also a sign of prosperity, as this edition, although organized by Amazonas' locals, was printed in the city of Porto, in Portugal.

The *Almanach do Amazonas Histórico, administrativo, comercial, estatístico e literário de 1895* [Almanac of historical, administrative, commercial, statistical and literary Amazonas of 1895] was organized by the alumnus José Feliciano Augusto d'Athayde and Arthur Cardoso de Oliveira, and holds a long list of collaborators (Figure 4). In the brief opening text, they speak of the literary part, which "is extremely useful, especially to the beautiful sex," in a clear reference to the feminine readers of the publication. This section was non-existent in the six previous almanacs that were analysed before, information thoroughly highlighted in its title. The contents begin with a general calendar with varied indications, followed by another monthly calendar, set in two columns on a single odd page number. On the pages with even numbers, there are a great number of advertisements with multiple arrangements and extensive use of typographic vignettes, rules and other graphic and visual resources. Next there is a part dedicated to Brazil. The third part covers Amazonas with a list of departments, positions and names, including the *Imprensa Official* [Brazilian Official Press], inaugurated in 1893. This institution started to publish the *Diario Official* [Official Gazette], and in this almanac there is information that shortly will be built a lithographic office. Whilst describing the Brazilian Institute of Arts and Craft, there is an indication of a post in "Drawing with applications to the Arts. Sculpture." and, in the professional course, it is cited a "Bookbinding workshop."

The fourth part is entitled "Commerce, Industry and Professions" and registers three journals from the capital: Amazonas, *Diario Official* and *A Republica*, and four from the countryside: Humaythá, in the Madeira River; Labrense and Rio Purus, in Lábrea and Município in Itacoatiara. Four other bookstores, one bookbinding office, two photography shops and five printing offices: Amazonas, *Imprensa Official*, Lino Aguiar, República, Silva and Gomes. And 38 printers registered in three offices of the capital's newspapers. The almanacs were sold in bookstores, other stores and in their own printing offices. The almanac of 1895

had several advertisements published in January in the *Diario Oficial* announcing its sale in the *Clássica*, Universal bookstores and in the store D. Pedro II.

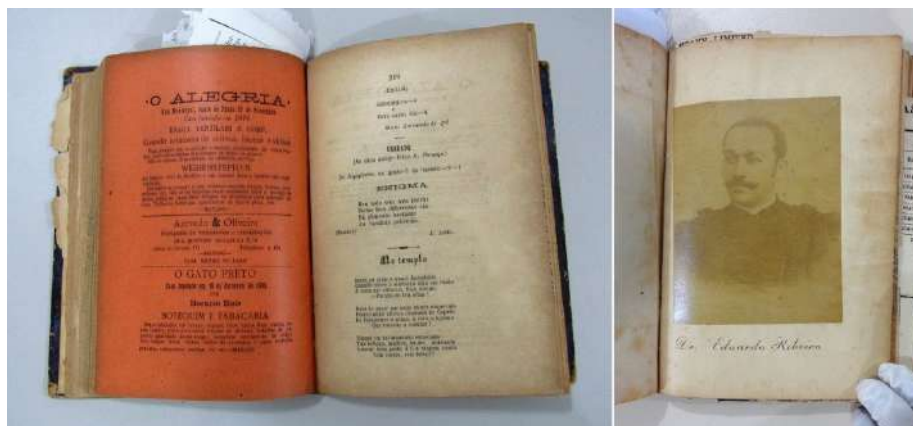


Figure 4: Double page of the almanac of 1895, and photograph of the Governor of Amazonas Eduardo Ribeiro published in the almanac of 1896 (with permission of the Amazonian Museum).

In a note in the October 27, 1895 edition of *Diario Oficial*, speaks of the next almanac to be published, says the editor that all “useful information” will be accepted until November 20th and that the following edition will have “developed historical news containing the biography of the most prominent men of the State and more: commercial, administrative, statistical, literary news, etc.” It is also said that advertisements are accepted from shipping companies, businesses and self-employed professionals, showing the prices of full-page advertisements “entitled to a free copy”, and prices of half-page or quarter-page advertisements, indicating where the interested party should go. The almanac of 1896 is organized by Augusto Celso de Menezes and presents a single photograph of the Governor of Amazonas, Eduardo Ribeiro (Figure 4), as presented on the cover page. There features a literary section, like the previous almanac, and a varied number of advertisements, including the presence of colorful papers.

At the beginning of the 20th century, four almanacs were identified as having produced a “bookstore, stationery store, steam printing office and bookbinding office,” this is the *Almanack brinde da Livraria Palais Royal* [Complimentary almanac of Livraria Palais Royal]. The issues were produced in hardback cover for 1905, 1906, 1907 and 1909, and were distributed free of charge. The owner was Lino Aguiar, and his company was the Amazonas main graphic enterprise during this period. The almanacs were more than just a simple gift to the clients. They are, to a great extent, a showcase of the services and a sophisticated adver-

tising piece to be consulted all year round. Its French name alludes to the luxury and cosmopolitan modernity of Paris, common practice to many stores and enterprises in the Province of Amazonas.

The content of the 1905 edition has a smooth humorous speech, different from the previous almanacs, more organized. As it is made clear in an introductory note by Tósca: “An almanac, although complimentary, not judging the year, is like a suit lacking a piece of clothing. And to judge it is essential to have years of experience in judging. And, regarding this gift, I am honestly up the creep.” It is a resource to gain the compassion of your audience and make the reading effortless, always having own advertisements sprinkled with information and funny stories.



Figure 5: Livraria Palais Royal complimentary almanac of 1905: cover page, double pages illustrated with Art Nouveau vignettes, with image representing the interior its printing office and colophon (used with the permission of the Amazonian Museum).

Though this unpretentious tone, these complimentary almanacs are well polished pieces of a business strategy from a graphic company, with the most visible piece being the Palais Royal bookstore. The two first issues, completely analyzed, have the traditional calendar, with a variety of historical information, with a more general nature and vast literary or recreational content. There are several advertisements, mainly related to Palais Royal, sometimes highlighting its graphic or bookbinding services, its great variety of books, along with the advertisements of other businesses. A great amount of images are used, either photographic, clichés, vignettes, and other varied types, borders, rules, bound in hardcover. The 1905 edition advertises a colorful cover and the core printing in two colors, always black and another color, in a large stockpile of Art Nouveau vignettes (Figure 5).

The following year the almanac's pages remove the colors giving place to many humoristic drawings. There are only the credits for produced images, including the printmaker. It continues to be produced in 1907 and 1909, in the latter being announced: "This office has just been renovated with modern and varied German equipment, and with improved machinery, in order to satisfy the due execution of all services." On behalf of the *Jornal do Commercio* of March 25, 1907, the then almanac is described as being "this magnificent publication... warehouse of accurate information about the State of Amazonas in general and on commercial matters." The newspaper also highlights the literary and recreational part and praises the excellent text and great work.

The *Almanak Amazonense de 1912-13* presents considerable differences to the previous almanacs, including the fact that this publication was edited by the company Henault in Rio de Janeiro, with plentiful and rich illustrative material. The fact that the almanac was edited by a printing office in another state and printed in another country was not innovative, because a numerous amount of iconographic albums were produced by the state government at the end of the 19th century and beginning of the 20th. Henault, as advertised in the almanac, was a representative of foreign manufactures, working especially with drugs, perfume, dyes, fashion items and new products. In the same advertisement, it is said that there is an "advertising section" responsible for publishing in *Almanak Brasileiro Commercial Ilustrado* [Brazilian Commercial Illustrated Almanac] and in *Almanak Médico-pharmaceutico do Brasil* [Medical and Pharmaceutical Almanac of Brazil].

This almanac starts with a 1912-13 calendar, each formed of only a couple of pages, followed by pictures of works of art, building views, mostly foreign, some national figures and varied information. This first part of generalities was printed in ochre coated paper, which does not occur in the following section, entitled "State of Amazonas," printed in black uncoated paper. This section has

information regarding the federal and state departments and the city government, followed by the “General index for occupations in Amazonas.” After that there is big advertising section, and this seems to be the artifact’s main objective – to represent the ostentatious wealth of the Amazonas. Not just informing, but also illustrating a sophisticated and varied urban life, making vast use of the image, as in photographs and illustrations. Several European artists sign the drawings in the advertisements, including the Parisian artist Marcel Lebrum, responsible for many works published by Henault, in Rio de Janeiro. In those publications, there is a bourgeois lifestyle, giving emphasis to the female figure. There still are a great number of advertisements printed in one color, with pictures of the façade or the interior of businesses as the main element (Figure 6).



Figure 6: A 1913 almanac: cover sheet and double pages featuring the colorful advertisements produced and printed in Paris (used with permission of the Amazonian Museum).

In the part entitled “General index for occupations in Amazonas”, in the section “Newspapers and Magazines”, ten journals are indicated, nine “Book

and stationery stores”, quatro “Photography shops” and ten “printing offices.” In the colophon contained on the last page, it is said that the publication was made in August, 1912 by *Société Générale D’impression*, with the collaboration of *Arc Engraving Company* in Paris, in engraving of the colorful pages. It is also stated that the inks used for printing are manufactured by *Casa Lorilleux e Companhia*. The last identified almanacs, of 1916 and 1927, depict the end of the economic period and the misconception brought by the economy of the rubber boom, holding rather graphically and editorially modest pages.

To conclude this survey, an interesting text published in *Correio do Norte* on Tuesday, October 3rd, 1911, in a first-page column entitled “Cavaqueando” [Shooting the Breeze]. One can get a sense of receiving printed information, including the almanacs, as can be read a good-humored speech on the proliferation of existing publications and relationship between the text’s author and the enigma:

We experience a full control of the practice of riddles. Our confused workbench is cluttered with almanacs from several nationalities; the thought harassed in pansophic diabolism to resolve the massive wave of devilish productions of all genres, the lost view of mare magnum of books and booklets, dictionaries, albums, auxiliary books... Anyway, all kinds of things.

I myself seem like an enigma very difficult to solve [...]

The reader might dislike this sort of fun and find it true that riddles shrink their brain and bewilder their rationale.

Right now, I don’t know where I should turn my attention to, and I would betray my conscience if I intended to speak of another thing. My brain seems to want to devour itself at this moment [...]

I rest from the fatigue of an almanac in another.

My eagerness is to crack, crack riddles, and with this yearning, I would leaf through the *Lembranças* [Memories] when the simplicity of two initials caught my attention – S.C. Manaus. Amazonas. We are in the presence of a riddler from Manaus [...]

Interestingly, around page 358 of *Senhoras* [Ladies], they are also there. And I just had a very quick peak at this almanac.

Not all of them are cracked, yet, but may Mr. S.C. pray the *De profundis*, though I haven’t so far found out the “only walks ahead” [...]

Yet, the author praises the riddler of Manaus, cites other important players, always enthusiastically, then end the words and sign:

After this reading, the reader may feel at least somehow curious about plunging into tangled meanders of Oedipus' art, and run to any bookstore to buy all the almanacs, and, from this curiosity, it may arise an incurable riddle mania.

This is my most sincere wishes. Jodoval.

FINAL CONSIDERATIONS

Although there was a significant number of almanacs collected in Amazonas, while searching at local journals, other almanacs were cited, but there was no other evidence of their existence. For instance, in a note from the *Jornal do Commercio* of December 19, 1907, there is a warning towards advertisers of the *Almanach Commercial do Amazonas* that they could remove their copies starting on January 15th. In the same newspaper, the January 21, 1908 edition said that the almanac was offered to the newspaper editorial staff by *Livraria Universal*. There is also the *Almanack da Empreza Telephonica do Estado do Amazonas*, cited in the January 31, 1895 edition of *Diario Official*. It is believed that there is a large number of almanacs to be discovered and unraveled, including those registered herein, as it is just a first discussion on the topic.

In the set of registered information about Amazonas almanacs, the aim was to throw some light, with graphic and editorial hues, on an artifact, rich source of study, and not only focus on what was written and quantified on its pages. Its printed format, visual language and information arrangement are of the same importance. By reading them, it may be noticed a greater use of resources – graphic, visual, rhetorical – to grant distinction and value to what is informed or advertised. And to foster other readings of the time apart from the calendar on their pages. It was observed a diversification of information, a literary section is seen in the almanacs of 1895 and 1896. As well as, in the fourth almanac, there was a revealing movement: a perceptible reduction of pages, due to working time, the calendar, bigger space occupied by advertisements and statistical data. Along with the considerable occurrence of images, be in the form of either typographic vignettes, illustrations or photographs, mostly from 1896.

The Amazonas almanacs, initially a privileged source of political and administrative information, with time had their pages covered with literary and commercial information. Including professional recommendations and advertisements, until taking over the publication, turning it into a means for advertising of local businesses, clearly adopted in almanacs from the 20th century. Turning these publications into complimentary printings, like those carefully published by *Livraria Palais Royal*. The Frenchlike name of this business, including a print and bookbinding shop, can be read as an indication of the adoption of the French-

-toned model of modernity. It was also observed in the advertisements finally drawn up by European artists in the almanac of 1912-13, duly printed in Paris.

Our incursion by the Amazonas almanacs showed various forms of organizing and viewing information. It is wished that the enthusiasm for the almanacs is renewed, as expressed by Jodoval, author of the previous citation. Although he sought to crack the almanacs' riddles, he hopes this printed material continues to be published, read, studied, and that they contribute to the reflection of time and social space in which they are inserted including the design. From this point, it was observed that the graphic smudge has become more complex by articulating text, image and varied messages, demanding a better technical command in the execution plan. Although there was no credit, in any of the analyzed publications, for the professionals responsible for the "art" or "artistic direction" in the almanacs, just their editors, printing offices, a few engravers or illustrators deserve, if anything, this acknowledgement. This is just one more fortuitous observation, like many others, that the almanacs, and not only them, nourish themselves.

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Methodological procedures for the interpretation *of images present in tactile illustrated books*

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INTRODUCTION

The volume of book production with braille text in Brazil has increased significantly in the last few years. Nonetheless, the data collected point to a context still lacking in mechanisms that allow access to them, considering the population with visual impairment. According to the latest demographic census by the Brazilian Institute of Geography and Statistics (IBGE), in 2010, around 45.6 million Brazilians, which amount to 23.9% of the population, presented some sort of incapacity or impairment. Among them, almost 530 thousand declared themselves blind and 6 million, with great seeing difficulties. Of the total, 5% were children, 10% young people, 48% adults and 37% elderly.

In face of the panorama of visual impairment in Brazil, we recognized the relevance of the production of this kind of publication and identified the lack of books adapted to haptic reading¹ destined for children at the alphabetization stage. The Dorina Norwill Foundation for the Blind (FDNC, in the Portuguese acronym) classifies the literary distribution in three accessible formats: braille with enlarged text (braille and ink), spoken (audiobook) or accessible digital (Daisy). A large portion of the contemporary book production targeted at people with impairments is found in the format of audiobooks. According to data at FDNC website (2012), half of the titles available in the foundation's collection is in audio format, amounting to 886 works in Braille against 1.569 in audio. The use of voice softwares and the internet has opened up new access routes to knowledge; however, these tools are destined mainly to blind adults, who, many times, haven't been alphabetized in Braille. It is undeniable that technological advances have allowed an increase of the collection; however, this investigation

¹ The term "haptic", according to Polato (2010), is used to highlight active touching, in which touch is accompanied by the movement of the hand, the wrist, the arms, the back, a tactile sensation emphasized on the skin, the musculature and the tendons.

focuses on printed books in braille with tactile images (tactile illustrated books). Materiality, for the developing reader, blind or not, is fundamental in the process of apprehension of knowledge and for the development of the perceptible field. Tactile communication, defended by Munari (1985), teaches the child a new way to read information.

A tactile illustrated book is a product that demands technical care because, besides the text in braille, also includes images in relief, which is what makes it scarcely available in the national and international publishing market. Printing in braille is still a barrier in the publishing sector due to the specificities in reproduction and editing, so few publishers invest in this segment, leaving the production of such titles in the hands of private initiatives or non-governmental organizations. This production is also tied to the charitable character of aid institutions for people with impairments, which motivates low cost as a basic project premise. When it comes to books with tactile images, the complexity of the editorial project increases because, besides the technique of reproduction, the conception of the design will affect the comprehension of the image by the blind.

In Brazil, the two main institutions that produce books with braille text and nationwide circulation are the Dorina Norwill Foundation for the Blind (FDNC), formerly the The Brazilian Foundation of the Book for the Blind, in São Paulo, and the Benjamin Constant Institute (IBC), formerly the Imperial Institute for Blind Boys, in Rio de Janeiro. Both institutions distribute books to schools, associations, libraries and organizations all over the country, which has been confirmed during field visits. Besides the Braille Press, these institutions provide services of adaptation and transcription of textbooks financed by the government and perform services of adaptation in dotted relief for publishers. Despite the efficiency of production, resulting in high print runs, their printing process is somewhat restrictive, which results in a limitation of the haptic perception of blind readers.

Although the offer of tactile books has increased due to the advancement of printing technologies, there is still a lack of instruments to analyse the efficiency of this kind of book, considered as a publishing product, in transmitting information. Hatwell (2010) explains that the process of tactile recognition demands a lot of time and effort by blind readers, because haptic perception is fragmented in moments of appreciation, requiring much concentration during the exploration process. The author still reports that haptic reading requires an effort of memory and synthesis to interpret the unitary representation of the object, concluding that it's very difficult to conduct research with people with visual impairment because there are many variables to analyse, one of them the learning delay in reading and writing braille.

The bibliographic review showed that the theories on haptic perception weren't enough to elucidate the level of clarity of blind readers in relation to tactile images, because the studies, such as the ones by Amiralian (1997), Bonanomi (2010), Hatwell (2010) and Secchi (2011), focus on the cognitive psychology of the blind or their processes of mental construction. Other than the researches on perception, the authors Bruno (1997), Duarte (2011), Reily (2004) and Restelli (2002) approach the teaching of drawing to blind children, rather than observing their comprehension during reading. Therefore, the absence of this kind of study, especially in the field of graphic design, motivated the development of an empirical research on the comprehension of images by the blind in the case of tactile illustrated books.

The premise was that the text in braille would be legible when well done, and that many of the ways of representing images found in tactile books weren't understood by blind readers. Consequently, reading would have to be aided by a mediator: parents, friends, neighbors or, what would happen more frequently, by the meaning of the words in the text. With that in mind, we considered that the reading of publications jointly selected with the target audience — blind children and adults — would contribute to the comprehension of the haptic reading process based on certain tools and procedures created specifically for this type of reader. Therefore, the aim of this paper is to present the methodological steps used to assess the perception of blind readers, bearing in mind the process of image creation in the context of the design of tactile illustrated books.

METHODOLOGICAL PROCEDURES PROPOSED FOR ANALYSIS

The methodological steps undertaken in the research were the following: selection of the object of study, analysis of the chosen book, translation of texts in other languages into Portuguese, preparation of research protocols, definition of the dynamic for the reading encounters and, finally, data collection. Bauer and Gaskell (2012), Cardeal (2011) and Vianna (2003) provided the basis for the instruments and procedures of the analysis.

Selection of the books

The analysis of blind readers' understanding of tactile illustrated books was based on instruments and procedures of qualitative research, combining different sources of information. The first step, prior to the analysis proper, was assessing the various initiatives of tactile illustrated book production and identifying their graphic proposals. Currently, a good portion of the graphic development of tactile books is linked to the areas of knowledge of pedagogy and psychology, and is

developed in the centers of assistance to people with visual impairment. For this reason, in Brazil, the books of different publishing initiatives are similar and reproduced based on the conception of didactic material for the blind. From 2012 to 2015, a survey of the tactile publishing production in the city of São Paulo was performed, after visits to its three major braille collections: the Braille Section of the Senac SP Library, the São Paulo Library and the Louis Braille Library (BLB).

The collections found in the libraries weren't very different from one another, being mostly composed of braille books produced by the FDNC or by the IBC. There was the occasional book by other publishers, such as Paulinas, WG Produto and Pallas, and handcrafted titles by the BLB. The only books not printed or adapted by the FDNC were those of the Adélia collection, *O livro negro das cores*, the *Traça Traço* series and the handcrafted books. After building a panorama of tactile illustrated books in the city of São Paulo, we observed that the graphic and tactile solutions were not very different, with exception of the books produced without any interference by the FDNC.

The field research was essential for the assessment of the collection of tactile illustrated books available as potential objects of study. Based on this, it was possible to choose a research focus, selecting the following titles for the reading evaluation: *O Chapeuzinho Vermelho*, by Bia Villela; *Abraço de urso*, by Cláudia Cotes; *Adélia sonhadora*, by Lia Zatz; *Ruvidino in piscina*, by the Istituto dei Ciechi di Milano; *Des vers de travers*, by Anette Diesen; and *Petit soufflé de vent*, by Elisa Lodolo. Furthermore, the choice of these books hinged on the purpose of the research: to investigate image comprehension. In this manner, the selection of the books should represent the diversity of the Brazilian and, in some cases, foreign production, as well as different elaboration methods and graphic languages.

Preliminary analysis of the selected books

After selecting the titles, each book was analysed with the goal of broadening the discussion of the theoretical field based on the products available in the market. This moment of investigation was destined for the photographic register of the double pages, identification of the details of the object of study and comprehension of the narrative proposal regarding the graphic elements present in the book. In this way, during the readings, it was possible to observe whether the participants would recognize such differentiated aspects in each of the selected proposals. The preliminary study also allowed the assimilation of the data obtained in the bibliographical review, in the attempt to establish a link to the theory. The method adopted in the analysis of the books was composed of different approaches, one of them the analysis of the criteria of the graphic language present in these artefacts. The central purpose of this construction of knowledge was

understanding the relation between text and image in tactile illustrated books, thus confirming the role of the word as reading mediator for the illustration.

The studies by Barthes (1990) were a reference for the analysis between text and image, although this production derives from the analysis of advertising pieces. The author argues that, since the invention of books, the relation between text and image is present in publications. Image can duplicate the information of the text through a phenomenon called redundancy or is able to provide new information to the understood text or even add new relations, in what is called complementarity. These concepts were taken up by Van der Linden (2011) in the analysis of illustrated tactile books. While aware of the differences, we appropriated his terms for the methods of message analysis: [1] linguistic messages: texts that appear alongside the graphic composition. The author believes that this message is present in all images in the shape of subtitle, labels and descriptions. The text may be interpreted based on the denotation and connotation of its meanings. [2] Iconic messages: an image may be codified, transmitting a denoted message or a non-codified one (based on anthropological knowledge), in which the symbolic messages is connoted.

Barthes (1990) presumes that image is representation, formed by a series of signs that, when interpreted, generate a piece of information. The analysis of the iconic message took into consideration the study on visual perception by Arnheim (2004) and the information collected in the reading encounters, using the systematized data and the observation of the participants during the process of reading the tactile images. The complementation of the information made it possible to compare the visual perception with the haptic perception.

The linguistic message followed the classification of Nikolajeva and Scott (2011), namely: narrative (with story) and non-narrative (with poetry, a dictionary, a fictional text), excluding traditional short stories from this classification, since they don't need illustration to transmit their message. The iconic message was analysed, with more emphasis, through the descriptions of visual perception by Arnheim (2004) and Bonanomi (2004), combining occasional comments collected in the reading encounters. In the composition of the image, the contour lines, the material used and the details were observed, as well as the way each reader appropriated the materiality present in the books to conclude what was the meaning in the illustrations.

Other than the linguistic message and the iconic message, the study was composed of the analysis of elements of graphic design, addressing the topics: typography and braille; page composition and graphic production. In terms of the graphic, the text composition and the structure of the designed page were analyzed considering both versions for reading, in ink and braille. In this way, we sought to describe the typographic font used in ink, although the identification of the

version and size were an approximate description, as it was not confirmed with the designers or the publishers.

As regards the page composition, the structure of formatting through the pages was described considering the compositional relation of text and image in the double pages. The text and image composition was classified according to Van der Linden (2011): redundancy, collaboration and disjunction. The definition by Dondis (2003) was also adopted to characterize the anatomy of the message as representational, abstract and symbolic. Despite the appropriation of theories of visual perception and visual communication for grounding the analysis methodology, the relation of the blind with images is not similar to that of people who can see, and the role of image in books for blind readers is still a developing field of study.

In terms of the graphic production, we examined the issues related to the production of tactile illustrated books, which, together with the language of images, will enrich the degree of understanding of haptic reading. Traditional books present some variants of production, based on the choice of support and finish, but tactile books require a careful choice of technique regarding the creation of texture. In each case study, it was described how each volume was produced, considering the use of materials and the techniques employed. The positive and negative aspects of each proposal were analysed according to the theories compiled and the notes by blind readers. Finally, the data were systematized in a summary table so as to facilitate comparison and subsequent analysis.

Text anatomy	
Typography	
Alignment	
Braille	
Message anatomy	
Text and image relation	
Composition	
Format	
Support	
Reproduction technique of the text in braille	
Reproduction technique of the tactile images	
Binding	
Cover	

Table 1: Summary table of the analyzed data

Reading encounters

In this research, the meetings with blind readers were called reading encounters, believing this to be the most appropriate name for this stage of data collection. The main purpose of these encounters was identifying the legibility of the elements within the context of the narrative, involving the reading comprehension of the image, the text and the book composition. The supervision of mediated reading is commonly found in projective methodology, with the purpose of understanding the reaction of the user to a stimulating situation (Gil, 2000). Although the researcher participated in the activity, the intention was intervening as little as possible during the reading process, restricting the mediation to occasional stimuli regarding an enigmatic image. The mediation, identifying the image after the text was read, was a strategy adopted so that the reader would gradually learn the language of drawing.

Preparation of the books

So that there would be a full understanding of the text and in order to observe how much blind readers depend on the text for the comprehension of tactile images, books written in languages other than Portuguese were translated. During the reading, these were delivered to readers in the shape of subtitles in loose sheets (Figure 1) and in the narrative sequence of the original title. The transcription into braille code was executed in a plastic slate, which didn't allow for total legibility, identified by the adult participants, who claimed a slight difference in the dots and more difficulty to get a fluid reading. However, considering that the mass of text was small in all the analysed books, the quality of the braille didn't hinder the development of the research.



Figure 1: Example of the application of subtitles during the reading of a French title.

Elaboration of research protocols

For the reading encounters, the data collection was structured based on methods of qualitative research, especially participant observation and a questionnaire at the end of each book. Bauer and Gaskell (2012) defend, as an alternative to interviews, the observation of the participant in order to obtain more amplitude and depth of information, making it possible to triangulate different impressions and observations. The questionnaire or interview as a source of data limits the information provided by the interviewee. “The real goal of qualitative research is not to tell opinions or people, but rather to explore the spectrum of opinions, the different representations of the matter at hand” (Bauer and Gaskell, 2012: 68).

Bearing this in mind, the extraction of the data occurred especially through the observation of the reader with visual impairment during the reading process of a pre-selected book. To avoid losing information, the reading sessions were recorded in audio and video, and some situations were registered with photography. The monitoring of the user’s behaviour regarding the book allowed us to add data that could have passed unnoticed during the reading dynamic with the researcher. In addition, the data collection through the questionnaire strengthened and complemented the observation. The construction of the questionnaire obeyed the recommendation of a structured interview (Silverman, 2009), namely, using standard presentations, following a sequence of questions, avoiding explaining the questions, avoiding interruptions and external opinions, never suggesting an answer and not improvising answers during the study.

The readings and questionnaires were applied after a schedule was decided with the agreement of all parts. First there was the collection of personal data, so as to know a little about the participants. The participants’ forms (Table 2) with personal information and the developed protocols composed the participant’s profile and allowed knowledge of their existing imagetic repertoire or even to understand if the reader retains visual memory. To preserve the participants’ identification, fictional names were adopted. Although each participant had a form of their own, the dynamic was mostly conducted in small groups. According to Bauer and Gaskell (2012), in a group environment, people are more willing to accept new ideas and explore their implications. The group might provide levels of involvement that are rarely observed individually. On the other hand, some opinions may prevail over others.

Name
Age
Type of visual impairment
How old were you when you started learning braille?
What is your connection to the book?
Do you have any knowledge of drawing?

Table 2: Script for the profile of the participants.

Site selection and sampling

After establishing the investigation protocols, the following step was selecting a site with the proper infrastructure to carry out the research, as well as the getting the institutions' consent to conduct the activities at their facilities. The choice of participant institutions followed two criteria: legitimacy and participant access. The encounters occurred in institutions located in the city of São Paulo, due to the feasibility of access, as it was understood that the estimated number of visits would not be feasible in case there was the need for long commutes. In this way, the BLB and the Padre Chico Institute (IPC) were chosen. At the BLB, the research was targeted at adults, given the low frequency of children at the library (during six months of constant visits, no children were seen at the site). After visiting many institutions in the city of São Paulo, the IPC was chosen to conduct the research with the children. The selection of this school for the readings was a result of its historical importance and the fact that there were children there who already had contact with tactile images.

The management of both the institutions that hosted the research chose the group of participants. In each institution, a distinct group of readers was heterogeneously composed: adults between 36 and 64 years of age, congenital and late blind, and a group of children and one teenager between 8 and 18 years of age, who lost sight before the age of 1, and with no indications of visual memory. At first, the intended sampling was of a higher number of participants, both adult and children, however, the selection was at the hands of the management of both institutions that hosted the research. Due to the complexity of the dynamic with blind people, a typicality sampling was chosen, considering a small group to represent the readers in question.

Dynamic of the encounters

After the Informed Consent Forms were signed, the group readings were scheduled on a weekly basis. The encounters with the children were overseen by

the Coordinator of Arts and Music Isabel Bertevelli, and by the music teacher, Marcela Trevisani, within the IPC. All the activities involving data collection with children were overseen by Marcela, always in the afternoon, after the regular school activities. Each encounter lasted 3 hours and took place between October and December 2015. A similar process happened with the group of adults at the BLB. The encounters occurred weekly, in the period from July to December 2015, with previous scheduling of the participants and an average duration of 3 hours. The extensive research period was made possible due to the involvement of all the participants of the group and the management, that supported the research.

The observation of children and adults was aided by video registers during the reading process, properly authorized by the participants. These registers helped analyze body posture, a piece of data that is not transmitted by oral registers. Photographic documentation preserved the identity of the participants insofar as the registers were restricted to hand framing (Figure 2). At the end of the sessions, all the images were sent to their respective institutions, IPC and BLB, in order to obtain the consent for use.



Figure 2: Example of images collected during reading.

The research was based on voluntary adherence by the participants, and the child or adult could solicit the end of the activity at any moment during the interview, as well as the interruption of the recordings. The conduction of the encounters was important so that the child didn't become too distracted during the reading, ensuring that the activity respected individual time of haptic perception. The researcher assumed an active role, defended by action-research (Vianna 2003), by posing some strategic questions during the contact with the children, that promoted a larger understanding of the reading: "Could you speak about this?", "What else do you understand?", "Why do you think that?", "What do you think this drawing represents?".

At the first reading encounter, the purposes of the activity were explained, emphasizing that the research was targeted at the books. It was hoped that, in this way, the participants would feel they had more freedom to respond, without fearing an institutional school evaluation, especially in the case of the children. After the process was explained, each book was delivered in the participant's hand so that they would have their own perceptions of the tridimensional object. They were not given a specific time to read it. After signaling the end of the reading of each double page, the book was passed on to another participant. At the end of the reading, the questions were asked to each person.

The questionnaire conformed to the following principles of behavior, as Silverman (2009) describes: ask the question exactly as it is written and in the order of the script, without demonstrating surprise or disapproval after the answer, and offer explanations when there are doubts. The performance of the interviewer-mediator had the goal of preventing the conversation from deviating from the matter at hand, in this case, the analyzed books. The replies were registered at the time of the interview through notes and the use of recordings for a final check. The questions were open, and fewer than those of the mediated intervention.

Data collection

The data analysis began with the participants' reports, collected through a questionnaire (Table 3) and questions mediated during the reading, systematizing the data for each participant. Information was collected regarding each double page of the book, measuring the degree of comprehension of the tactile image through the inquiry: recognizes immediately; recognizes with difficulty; doesn't recognize and believes it to be. In the case of "immediate" recognition, it is considered that the reader doesn't need mediation for understanding the illustration and when there is "difficulty", the reader understands the image after receiving a clue (verbal or textual). Before each encounter, a form was designed for data collection (Table 3), in a similar way to Cardeal (2013).























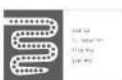


		■ CHILD	▲ TEENAGER	● ADULT	
Place in the book	Image	Recognizes immediately	Recognizes with difficulty	Doesn't recognize	Believes it to be or recognizes
Cover					
Page 2					
Page 4					
Page 5					Cloud
Page 6					Triangle Book Comb
Page 7					
Page 9					Ladder
Page 10					
Page 12					Smile

Table 3: Form for data collection.

PARTICIPANT'S NAME		
DATE	BEGINNING OF THE READING	END OF THE READING
What did you understand about the book?		
What did you like the most about the book?		
What didn't you like?		
How was the reading?		
What would you say about the reading of the text in braille?		
What did you understand about the drawings?		
If you had to exclude one of the drawings, which would it be? Why?		
Which drawings did you recognize immediately?		
Why do you think that happened?		
Would you read this book again?		

Table 4: Script for data collection of the books.

Difficulties encountered

The described methodological procedures were put into practice in the second semester of 2015, when the six tactile illustrated books selected were evaluated. In the first month of the research with adult readers, the participants' moment of apprehension was used in order to discuss other types of publication with tactile images. In this period, there was clear rejection of the participants in relation to this kind of image. This refusal was later understood as lack of confidence, given they were from a generation that didn't have contact with drawing and images in the process of braille alphabetization. The difficulty of reading tactile illustrations became clear throughout the encounters. At first, the participants appeared reticent to say what they read in the illustrated pages, because they believed it was a matter of personal inability instead of imagining that the book could present some problem of representation. At the first encounter, the 64-year-old participant said: "I'm very bad at reading diagrams". This was another conflict to be overcome: the understanding that tactile images go beyond the diagrams of teaching resources.

After breaking down all the barriers that could interfere in the process of haptic reading, an assiduous encounter group was established. The research project predicted individual reading sessions, however, we opted to conduct group dynamics, as the participants were willing to collaborate at all times. Although unforeseen, the conversations held among the participants during the encounters also proved themselves sources of information.

At the same time that the encounters at BLB began, the IPC was contacted for the conduction of a similar research with the children. Encounters were scheduled outside of school hours, after lunch and before parents came for their children, between 1 and 3 in the afternoon. This slot was the first barrier, because, in this period, the children had extracurricular activities, such as music, vocational guidance and dance. The management was asked to select children fluent in braille reading and that were willing to participate of their own free will. Due to the fact that the activity would compete with these classes and that the research was voluntary, few children were interested in participating, especially since it was an activity related to reading. For the first two books, we had a group of four children between 8 and 10 years of age, three boys and one girl. However, of this initial group, only the 8-year-old girl was interested in continuing to participate in all encounters.

The absence of interest in the reading sessions was a factor not envisioned in the research project. After this initial impasse, the Arts coordinator at the school suggested the substitution of the boys by an 18-year-old girl. This student was a later learner of braille, and consequently behind in school, but very interested in reading. Unlike what happened with the adult participants, where there was the need for previous interaction so that they could feel more confident, the IPC students didn't have any problem of inhibition or socialization. The impasse faced was of a different nature: making them focus on the book, which required a re-evaluation of the initial composition with four children simultaneously.

Another point of divergence between adults and children, and that was also not predicted in the project, was the questionnaire presented after the reading. Only the teenager had the patience to take it seriously and answer the questions calmly, unlike the girl who didn't do it, so the questionnaire was excluded from the encounter with the children, proving to be an inappropriate instrument for the task.

CONCLUDING REMARKS

Investigating the production of tactile images was the guiding principle of this research, to question whether tactile illustrations, in the current context of the production of tactile illustrated books in Brazil, were understood by blind readers, ensuring them autonomy in reading. At first, a bibliographic review was conducted to obtain the instruments of analysis, however, the isolated theories proved to be insufficient to answer every inquiry, but served to establish comparative parameters to discuss the books selected for case study. The preliminary analysis of the selected books allowed us to understand the narrative proposed by each title, and the systematized data were important to confront the theoretical

basis with the practice of reading. Considering that not every study of visual perception applies to haptic reading, research with the blind indicated some of the artifices used by them to interpret tactile images.

The interaction with blind children and adults allowed an approximation with the reader, something that would not have been possible merely through the literature. A dialogue was therefore established beyond the book, making it possible to understand their perceptible universe. Blind readers, before anything, are people who express themselves at every moment, share emotions during reading, and all the feelings were constantly reflected in the visible comfort with which children arrived for the reading activity and the anxiety shown by the adults with each new title and discovery. The moment of reading was always accompanied by much talk and grimaces by the participants, for they were sometimes taken by surprise by the images.

When assembling different reading groups, there wasn't the intention of establishing comparative patterns between the comprehension level of the adults and the children. However, during the activities, some differences became clear, particularly in the confidence found in the children, unlike the suspicion of the adults, not only in the process of reading, but also in opening up to dialogue in the first encounters. The adults who participated were late blind, so they sought a parallel between the information read and visual memory, which not always permitted a clear interpretation of the visual message. The children, on the other hand, were building a graphic repertoire at school, through readings and during arts classes.

The methodological trajectory described in this article had no intention of closing the subject, rather to broaden the discussion on possible methods of data collection with the participation of blind readers. By considering the limited discussion available in the field of haptic reading of illustrated books, the studied procedures allowed us to confront the knowledge postulated in some educational institutions, as well as those that offer aid to individuals with visual impairment.

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The construction of meaning and collaboration in interactive media

discussion from the Libras Glossary

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INTRODUCTION

Due to the convergence of media and the development of technologies for accessibility, many people with disabilities have access to digital media. Regarding deaf individuals, the technologies integrated to social media (videos, messages, translators, etc.) have helped these users communicate. Thus, people with different skill sets have the conditions necessary to produce and diffuse videos, images, sounds, among other contents, reappropriating the traditional media productions, giving it new meanings.

The convergence phenomenon, according to Jenkins (2015), defines the technological, marketing, cultural and social transformations and it must be understood mainly as a process that goes beyond technologies that gather multiple functions in the same devices. Instead, the convergence represents a cultural transformation that depends strongly on the consumer's active participation, as they are encouraged to seek new information and make connections among dispersed media contents.

According to Flor et. al (2009), multimedia is a form of media convergence that integrates texts, images, videos, sounds and animations in a new media form, which results in the concentration and grouping of these different means in a harmonic and redundant manner that reaches the user in a larger spectrum of their senses. Regarding the hypermedia by convergence of hypertext and multimedia, it is formed by a communication technique that stores data in a digital environment in a way that permits the user to navigate and seek information of their interest, which may be presented in the form of texts, diagrams, still images, animated images, sounds, animations, all supported by the non linear navigability and by new semantic relations (SILVA, 2006) (Flor, et al., 2009).

The hypermedia has set a new paradigm of information, given that, historically, textual language has subdued visual language. According to Bonsiepe

(2011), the study of visuality and the distribution and assimilation of knowledge and also the understanding of complex subjects elevates the image status within sciences: “the new digital techniques will end the supremacy of the text, so strongly ingrained in Western tradition. For this new field of activities, the term ‘Information Design’ is used” (BONSIEPE, 2011, p. 40). Information Design works to reduce the cognitive complexity and contributes to present information in a useful manner, developing the adequate interfaces between the information and the user/reader (Bonsiepe, 2011).

According to Frascara (2011), Information Design must ensure the effectiveness of communication by facilitating the processes of perception, reading, understanding and memorizing and the use of the information presented. The author suggests that the essence of the Information Design is focused on the user and his needs, which causes a shift in the primary purpose of the activity from the production of the object itself to the production of meaning for and by the public.

From a production standpoint, the Information Design process occurs in two distinct moments: the organization of the information and the coding-implementation of their visual presentation. These tasks require interdisciplinary skills to process, organize and present the information in both linguistic (written) and non linguistic forms (the image in its broader sense) (Frascara, 2011).

The traditional view of information suggests a message transmitted unidirectionally to a passive receiver who will have their behavior directly and immediately affected (PASQUALL, 2005). However, Dervin (2000) criticizes this imposed and functional relation that the term has acquired and defends a negotiated and constructive logic of information, called Sense-Making, which, in its turn, establishes a bidirectional communicational approach to the exercise of Information Design. Thus, individuals, in an isolated or collective manner, take part in the production of meaning as they explore the information in an interactive dialogue (Dervin, 2000 apud Gianella and Souza 2015).

Nonetheless, there are many virtual environments that still depend a great deal on written language for communication and, consequently, for the production of meaning to a large amount of users, as well as the unavailability of interactive qualities. Thus, many interfaces exclude the deaf individuals who use sign languages, as the communication of this group is of visual, spatial and kinetic origin. The hypermedia and the digital means of communication need appropriate and adapted interfaces that broaden the access by these individuals, and also that make sense to them, with the potentiality to acquire knowledge.

Therefore, the purpose is to discuss the importance of the construction of meaning for the development of interactive media oriented towards deaf users, once it is observed an increase in the importance of the use of image, video and active interaction and participation of the user/reader-author in cyberspace.

Thus, this literature revision is corroborated by the Social Media integrated Libras Glossary. The glossary project is the result of a sponsorship announcement provided by the Brazilian research funding agency CNPq¹, carried out through a partnership between the Palhoça Bilingual Campus of Santa Catarina Federal Institute, the Deafs Project of Rio de Janeiro Federal University and the Florianópolis' Association of the Deaf. The first and second topic present the literature revision on Construction of Meaning in Hypermedia and Collaboration, evoked from the signification approaches that describe the user's active role in choosing his reading paths in the hypertext and the user's participatory logic in the cyberspace interactions that grant them a reader-author role. The third part presents a discussion on Deaf Users and the Information and Communication Technologies. Then, the methodology and the Libras Glossary example are presented followed by the due discussions on the topics and final considerations.

CONSTRUCTION OF MEANING IN HYPERMEDIA

According to Carvalho and Pereira (2017), the interactive digital environments can be viewed as a pre-linguistic analogous means, in a superior technological level, and the digital interfaces can be viewed as devices that are capable of establishing cognitive relations that do not depend on the linguistic perspective for communication to occur. Therefore, interfaces based on visual, sound and kinetic languages can enable environments that are rich in meanings and with less excluding potential for the deaf users in question.

The interface is the space in which the body, tool (object or sign) and action goal are structured (Bonsiepe, 2015), in a way that fulfills the role of a filter between humans and the digital world, presenting as a translator of some sort, mediating both parts and rendering them sensitive to each other.

These interfaces permeate the hypermedia, which, to Santaella (2009, p. 48) is "the integration, without any sutures, of data, texts, images and sounds, within a single digital information environment". For this author, this constitutes a language hybridization, in such a way that the sum of these elements results in the formation of a distinct semantic context, which requires a reorganization of the cognitive model of the traditional reader's user. This concoction of languages makes it possible for the user to perform a "synesthetic reading" tied not only to the intended message, but also anchored to his own repertoire of cultural and sensory experiences.

¹ Sponsorship announcement CNPq-SETEC/MEC N ° 17/2014 - Support to Applied Research and Technological Extension Cooperative Projects.

This reading mode is enabled by the hypertext, a basic cyberspace² language constituent. The hypertext assigns a more active role to the user, as he himself decides which link groups he will go through. According to Theodor Nelson, who coined the term in the 60's, the hypertext is "a unified concept of ideas and data that are interconnected, in such a way that the data can be edited in a computer. Thus, it is an instance that highlights not only a data organization system, but also a form of thinking" (Nelson, 1992).

According to Koch (2007), the term hypertext designates a non-sequential and nonlinear writing branching out in a way that gives the virtual reader unlimited access to other texts, as he proceeds to make local and successive choices in real time. According to Levy (1993, p. 40) apud KOCH (2007), human memory is structured in a such a way that the individual better understands and retains what is organized in a spatial relation, as is the case of the schematic representations. As the hypertext proposes access and reading paths under the form of networks, diagrams or dynamic and manipulable concept maps, it favors a dominance of the matter that is quicker and easier than the classic audiovisual or the traditional printed media.

According to Falsi (2008), the act of cybertext reading is the act of a player, of someone who bets on certain construction strategies on the web. Each reading choice generates a new set of significations in the cybertext. Therefore, the first signification process is the one in which the reader makes the choice of which significant will be a part of the work that he will read. In the case of a work in digital media, the significant goes from a word on the screen to an animation in which images mix with sounds and other words. Moreover, for the same author, every and any cybertext would also have an interpretative function related to the several meanings the reader can find within the text.

According to Santos (2003), quoted by Falsi (2008), in the process of navigating from one text to the other, through links, there would be, not a first and a second texts, but a relation in which the second text is read according to the extent to which it evokes or not the text from which it arose. From the process of differentiation and from the actions taken by the reader between the two texts, a third text would arise, which would be the text as productivity, a text that the reader provides himself to read.

Thus, in the cyberspace there would be an initial requirement to build the setting of the narrative first and this task would also be the reader's task, or primarily the reader's, since the authorship would be linked to the disposition of the

² Space of communication through computer networks. In: <https://www.dicio.com.br/ciberespaco/>.

prefigured structures for this reader. The author should be able to create a work in which the stories (still) untold appear as stories in a latent state. There would be, in the cyberspace, the need for the reader to be able to dislocate himself not only in the reading process, but in a process of reading-writing. In other words, it is up to the receiver-participant to create the work that he will experience (SANTOS, 2003 apud FALSI, 2008).

HYPERMEDIA COLLABORATION

The web collaboration environments are enabled through chats, forums, open encyclopedias and other forms of sending and receiving messages, in which the individual contacts other people and other cultures, and it is also possible to contact people who are closest to their interests. Furthermore, these environments favor problem solving in a collective manner, as they allow for the knowledge to circulate freely and to be fed both by apprentices and by experts (Flor, et al, 2009).

In the context of convergence, to Jenkins (2009), consuming has become a collective process, and the author understands this as collective intelligence, an alternative to media power, in a way that by piecing together the parts of individual knowledge, the individuals unite resources and skills. The participative culture consists in the consumer's interaction with the communicational forms. The consumer stops watching merely as a passive receiver and starts participating, creating and sharing their project in a collective manner. Thus, participative culture is based on the appropriation of elements belonging to a certain media product by people who did not originally produce it – fans, for instance – and who, from this product, create their own.

Still according to Jenkins (2015), each individual's choices regarding passing on media texts or not – such as tweeting, sharing a video or forwarding something via e-mail – are remodeling the very scenery of the distribution for circulation media, signaling a more participative model of culture, in which the public is no longer viewed as a group who consumes pre-built messages, but as people who are shaping, sharing, reconfiguring and remixing media contents. And furthermore, people are not doing so in an isolated manner, but as members of broader communities and networks that allow them to diffuse content beyond their geographical area.

The collaborative creation processes require that the frontiers between author and reader are tenuous enough so that the emphasis of the relationship is on the process itself, and not on the product of which it derives. According to Couchot (2003) apud Falsi (2008), the ideal is that these participants share the same communicational logic, the same will of crossing, the same sensitive space, the same temporality.

Thus, to Bittencourt and Ribeiro (2016), the hypermedia enables learning and exchange of information from its nonlinear network and its multiple interaction possibilities, promoted by the hypertextual structure and the integration of different modalities.

Therefore, the construction of sense in hypermedia is associated to the user's active role, which puts him in the place of a reader-author, as he builds his text from the choices and paths that he will travel through the hyperlink. Also, the hypermedia signification is tied to a collaborative and constructive process, which can lead the user to the production of a possible meaning within his cognitive and cultural repertoire.

DEAF USERS AND THE COMMUNICATION AND INFORMATION TECHNOLOGIES

According to Carvalho and Pereira (2017), the gesture language is considered the man's first tool of communication, while the speech is defined as a secondary resource. The voice intonation in speech, gestures and body language are commonly used in everyday life, it is non verbal communication, wherein sounds, images and movements are also considered pre-linguistic.

Historically, language has become the main cognition modeling system, to which different classes of signs are subordinated - visibility, sonority, spatiality and kinetics. Thereafter, a major part of the technological advancements were based on this evolutionary process of the communication, leading to the dissemination of information and knowledge on written language level (Carvalho and Pereira, 2017).

Regarding the severely deaf population who use Sign Language, this process of greater appreciation of verbal language to the detriment of visual language in several communicative systems eventually isolated this community of access to information, to knowledge, on television, in educational institutions, movies, public services, courseware, etc.

Also, for many years, sign languages were prohibited to deaf people for being considered a lesser and inconvenient mean of communication, devoid of scientific rigor. Since the 60's, sign language started to be taken under consideration as an actual language and not only as mere gesture. The sign languages are essentially different from oral languages due to their visual-spatial modality, which causes them to be perceived through sight and produced by the hands and facial and body expressions. The oral languages, on the other hand, are characterized in an oral-hearing manner (Gesser, 2009).

Bilingualism is the acquisition and use of two languages, in the case of a deaf person, the Sign Language is the mother tongue and the second language is the

one used in their country, in written form. In this sense, the bilingual proposition understands the deaf subject as a participant of two realities, living at the same time the culture of his mother tongue, in which he has his worldview built, and the one used in the everyday life of the community to which he belongs (MORAES, L. et al., 2017).

However, for a long time, the deaf communities were closed and isolated, due to barriers of physical distance or barriers to access the traditional means of communication and technologies used by the hearing majority. With the access to the Information and Communication Technologies (ICTs), which favor the communication and the exchange of information, the deaf or impaired hearing population has found a new form of communication. (MORAES, L. et al., 2014).

Before long, with the use of digital medias, photographic cameras and videos, webcam chats and text messaging apps, the communication between sign language users has been considerably widened, as well as the propagation and acknowledgement of this language by most users of oral languages (MORAES, L. et al., 2017).

According to Saito (2016), the sign language is a constituent element of the deaf individuals' reality and given that it is present in their everyday life, in the material world, it also needs to be present in the virtual environments. The technological changes have contributed in a meaningful way to include the deaf individual in social, cultural and learning channels by presenting innovative strategies to interact and communicate, creating the possibility to strengthen connections between deaf individuals. The possibility of uploading videos generated by the users now allow deaf people to share their videos and register their language and culture (Schallenberger, 2010 apud Saito, 2016), and vlogs and websites such as YouTube are the most widely used for this purpose.

METHODOLOGICAL PROCEDURES

The present study is characterized as a theoretical and empirical scientific research, that seeks to discover new knowledge on the construction of meaning in hypermedia, more specifically for the development of bilingual interfaces (Libras/Portuguese).

Regarding the purposes, the research is of the exploratory and descriptive type, since it explores reality in search of greater knowledge to be described posteriorly. According to Gill (2008) "the reality is explored in search of knowledge" and "the object of the study, the facts and phenomenon are described, with the maximum accuracy possible". The approach is qualitative, for the starting point is a bibliographic research and the conceptual basis to intermedate the discussion of findings was researched in books, articles, thesis and dissertation databases, etc.

For the purpose of discussion with the literature revision, the example presented here is the construction of a Libras Glossary integrated to Social Media, which enabled the relation of the construction of meaning in hypermedia.

LIBRAS GLOSSARY PRESENTATION

The Libras Glossary³ is a web platform destined to the search and organization of entries in Libras. Linked to social networks, it allows the user to research the words in portuguese and, in the results, videos with the sign and meaning in Libras will come up.

It is a collaborative platform, in which the users take part by sending videos to register signs of different study areas and different regions of the country, where there is linguistic variation. The evaluation and ranking of the entries is performed through the likes⁴ and shares, which allow to evaluate which signs will be more accepted by the deaf community. The prototype is still in testing phase and a few functionalities are still not available, but it can be accessed at: www.palhoça.ifsc.edu.br/glossario.

The proposition is a system based on Web technology for the operationalization of a Libras glossary integrated to social media, therefore boosting its functioning in the molds of Communities of Practice or CoPs. These communities are characterized by “gathering people with a common interest, a passion for a certain subject, with this interest being the responsible for creating true connections between people and propitiating the sharing of opinions and thoughts” (Saito, 2016, p. 81).

The construction of glossaries is very important, since the Brazilian Sign Language (Libras) was only acknowledged in 2005 and it is in full development, with efforts towards building and formalizing vocabulary in this language (Gesser, 2009). According to Saito (2016):

The scientific and technological evolution has provoked the appearance of new terminology (in oral languages) to approach the knowledge generated. However, there is a lack of scientific terminology in Libras in several knowledge areas, which hampers communication, since the literature already re-

³ The Libras Glossary project is the result of a research sponsorship announcement by CNPq-SETEC/MEC N° 17/2014 carried out through a partnership between the Palhoça Bilingual Campus of Santa Catarina Federal Institute, the Deafs Project of Rio de Janeiro Federal University and the Florianopolis’ Association of the Deaf.

⁴ Method of interaction on the social network Facebook, that registers a positive evaluation. www.facebook.com.

ports the shortage of SL registries, as well as the need of communication between communities. (Saito, 2016, p. 41).

The project was developed by a multidisciplinary team, formed by researchers of the group “Development of Bilingual Learning and Teaching Objects - IFSC”⁵, in which take part a designer, two programmers and a film-maker. The images below show the layouts of the screens of the Libras Glossary.

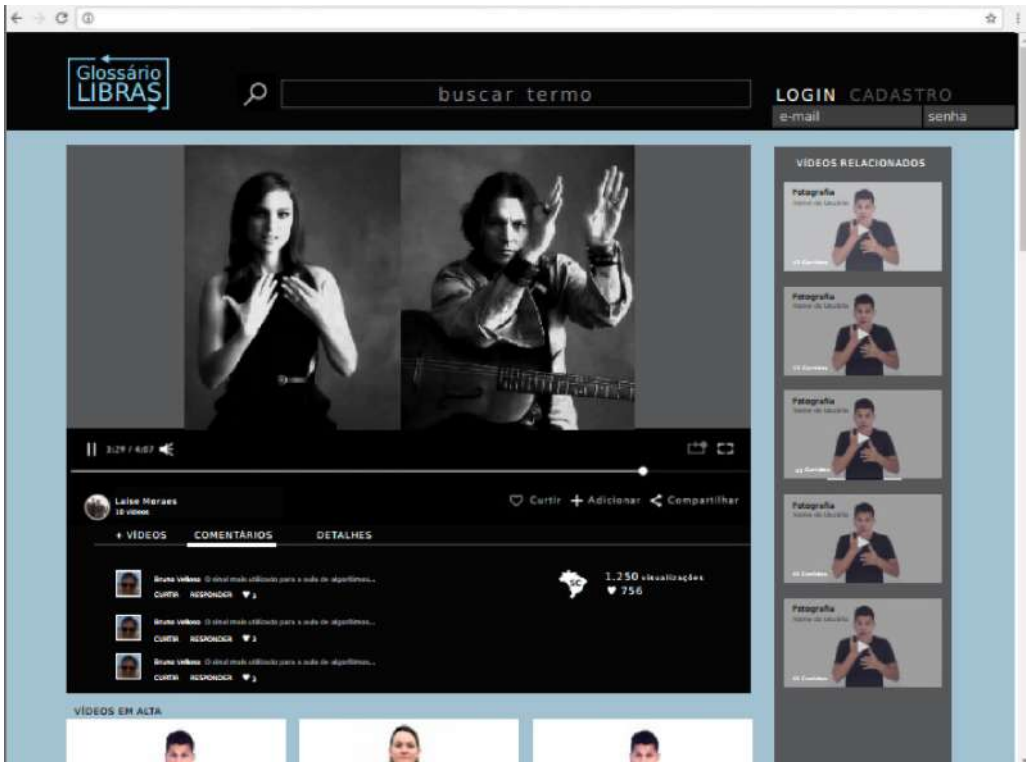


Image 1 - Interface design based on the visual identity created. Text and image are fictitious. Source: image by the authors.

⁵ The researchers who take part in the project were omitted for blind review.

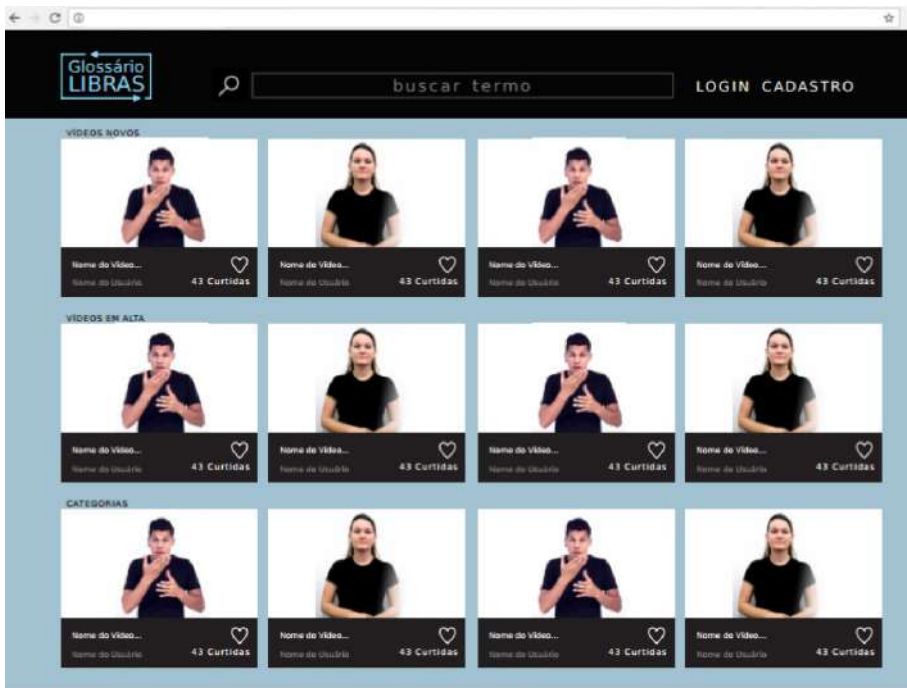


Image 2 - Home screen with links to other entries, the same design is used for search results. Source: image by the authors.

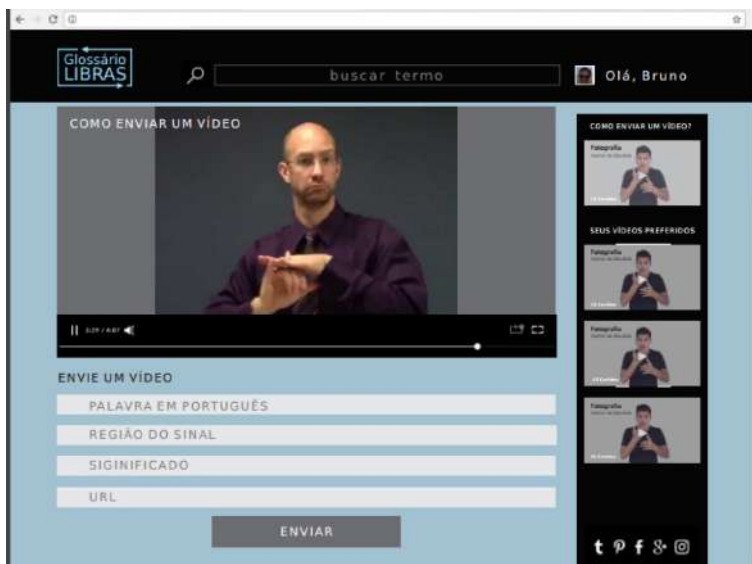


Image 3 - Loading screen (send video), with the upload instructions in Libras. Source: image by the authors.

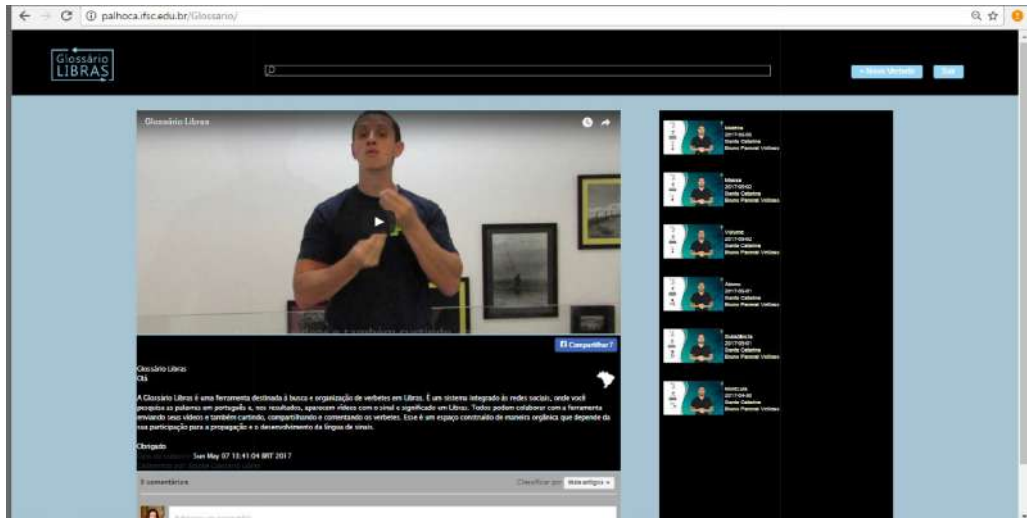


Image 4 - Prototype in testing phase. It can be accessed on: <http://palhoca.ifsc.edu.br/Glossario/>. Source: palhoca.ifsc.edu.br/Glossario.

Image 1 shows the main aspects related to the functional requisits: integration to Social Medias (Facebook.com), related entries, comments, entry region and textual explanation (meaning of the word). Thus, four types of screen have been defined:

- **Home Screen:** Image 2, the first screen accessed on the system, with links to other entries, it presents the most searched videos and the best ranked videos;
- **Entry Screen:** Image 1, a screen where an entry can be completely visualized. It is the same screen of a logged user;
- **Search Result Screen:** Image 2, a screen that shows the entries list as the result of a search;
- **Uploading Screen:** Image 3, a screen where an entry can be uploaded.

RESULTS AND DISCUSSION

The process of creating new platforms exists due to a social need and is related to the flow of images, texts, ideas, stories and relationships within the culture of convergence. On the other hand, the participative culture and the collective intelligence can be seen as an alternative to media power. Thus, the contextualized and interactive environments, rich in socio-cultural ties, in dynamic images associated to the possibility of navigation offered by the hypertext, have shown to be effective resources in building autonomous and collective knowledge.

In this context, the collective construction of the hypermedia glossary is shown to be relevant in the context of deaf users and in the learning-teaching process. Among the benefits brought by the hypermedia glossary, Nagata (1999) apud Bittencourt and Ribeiro (2016) highlight the following: (1) it is easier to use than a dictionary; (2) it directs the apprentice's attention to the keywords; (3) it helps to immediately connect the words to their meaning; (4) it contributes to perform correct inferences and to retain lexical knowledge, since the glossary encourages the student to go back and forth between the keywords and the multimodal notes, which generates greater engagement of the student in processing the information.

The Glossary project had, as the main purpose, to develop a graphic interface that met the semantics in other social media already used by the deaf public, Facebook and YouTube, for instance, being more intuitive and sensorial, corroborating what is highlighted by Carvalho and Pereira (2017), for "the mixture of languages provides the user a synesthetic reading", tied not only to the image volunteered, but also anchored to the user's repertoire of cultural and sensorial experiences.

The fact that a mediatic and interactive interface was chosen for the glossary facilitates the transmission of knowledge to mixed receiver groups, as pointed out by Storrer (2000) quoted by Koch (2007). Thus, regarding the deaf and hearing community related to bilingualism, each receiver goes through the web of modules and links in individual reception paths, in other words, each user decides, in accordance with their previous knowledge, interest and preferences, which modules they wish to access and in which order and combination: his freedom of choice is only delimited by the links installed by the author and by the functionality of the system (Storrer, 2000 apud Koch, 2007).

In accordance with the study conducted by Falsi (2008) on the construction of meaning in cybertext reading, in the Libras Glossary, the author (meta-author) and reader (receiver-participant) alter their places, not setting defined roles, since content production (the entries) in texts and videos is often originated by a person, who exposes their own information repertoire. This new entry will be read by another, who will then resignify it according to their own context; and from this, they can enlarge their knowledge or propose new meaning, producing a new entry, with a new hypertext.

It is important to highlight that feeding the Glossary depends on the meanings that it will have for its users (readers-receivers), since the author who programmed the platform has only foreseen the possibility of receiving content in videos and texts, therefore, the forms in which the contents will appear, which entries will come up first or which will be more accessed and popular, depend exclusively in the users' actions, guided according to each reader's repertoire.

Lastly, the construction of sense depends on the collaborative processes that will be generated by and between users. For a new entry to remain active on the platform, this new video depends on the following two conditions: first, that the readers validate, access and share this entry on their networks, through the “like” or “share” features. Secondly, that they collaborate with the platform, since it needs the participation of several users to evaluate and share the entries and feed it again with new contents.

Therefore, according to Falsi (2008), the narrative is in constant organization and reorganization, which does not need to be done in a material form. A new reader can build a new texture, a new narrative, as well as make it available as more than one possible configuration: “experimenting the work that arises according to his own combinations”.

FINAL CONSIDERATIONS

This research has highlighted the importance and the complexity of hypermedia, in view of the way the user interacts, a fundamental factor for the constitution of interfaces that are rich in meaning. The example adopted for the discussion meets the literature revision of this research, by showing that the interfaces with interactive and visual qualities enable environments that are rich in meanings and adequate to deaf users.

In this context, the digital interfaces are layers capable of establishing cognitive relations that do not depend on the linguistic perspective (dominant) for communication to occur. The richness of the construction of meaning in hypermedia is in the bilaterality of the production of information, carried out both by the “writer” and by the “reader”. Thereby, more interfaces with the possibility of producing collective knowledge can be designed, with organic development and more accessible to different users.

The publication of this Libras Glossary openly throughout the internet provides an almost endless dissemination and sharing, and the user is active wherever he may be, enabled by the hypertext and by the very own participative and collaborative model of the environment.

Thus, the approaches of the Construction of Meaning in Hypermedia are relevant in building multimedia interfaces oriented towards deaf users, here exemplified by the Libras Glossary, once they allow the user’s active interaction with other readers and with the platform/interface. Out of this interaction, the construction of meanings takes place through the construction of different narratives in the hypertext reading, as well as of the collaboration with the actual content production.

Lastly, the Libras Glossary is in the phase of prototype improvement for the final version. It is expected that this new platform can assist in the development of sign language, in the process of teaching and learning by deaf students, in the relationship between deaf and hearing individuals and that it might be capable of setting up a community of practice, developing in an organic manner, expanding its use and access to other communities.

For future researches, this theoretical referential can be used for new multimedia artifacts that go towards more accessible and user-focused designed interfaces. Moreover, the interaction of the deaf users with the Libras Glossary is to be evaluated and the dissemination of this tool is to be enhanced.

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Memory aids, information artifacts and aging: medication-taking strategies

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INTRODUCTION

Access to health information is not only a necessity for patients but also their right as citizens. This need reflects the desire for autonomy and citizenship, directly related to empowerment of the citizen. Leite and Ventura say (2011, p. 5) that empowerment is ‘the process by which those who hold power, in this case, health professionals, favor others (users) to acquire and use the necessary power (information empowerment) to make decisions that affect you or your life.’ In addition, there is a practical need that relates to the correct use of medications. Waarde (2010) comments that it is practically impossible to take medicines without information.

Waarde (2010, p. 42) further states that “The aim of providing information about medicines to patients is clear: to enable patients to make decisions about medicine use and to enhance appropriate and effective use.” In this sense, the patient needs to know the name of the medication, indication and purpose of the treatment, therapeutic regimen (dose, frequency, timing and duration of treatment) and how to administer the medication correctly. In addition, the elderly show concern about the adverse effects of medications (Zogg et al., 2012).

Some drug information is tightly controlled (Waarde, 2014) and made available through prescription, package insert and medication packaging. In Brazil the regulation is made by the Ministry of Health, through the National Agency of Sanitary Surveillance - ANVISA. Although subject to regulation, none of the three sources of information cited can meet the patient’s information needs, and are ineffective in some respect (Waarde, 2013; Dixon-Woods, 2001).

The more drugs involved the greater the risks of adverse effects caused by the interaction between the drugs and also the non-adherence, especially among the elderly public. The elderly population is one of the most used medicines. The aging process brings with it a greater probability of diseases and chronic diseases. Bernal et al (2011, p. 304) commented that in Spain the elderly “consume between 25 and 50% of the prescribed drugs and account for 70% of total pharmaceutical expenditure.” In Brazil, Cazarim and Araujo (2011) estimate that more than

80% of the elderly population takes at least one medication daily. Of these 80%, it is estimated that 20% is polymedicated, that is, it takes more than 3 medications per day. (Simões, 2012)

However, for polymedicated elderly the concern about using medications properly extends also when remembering. Many studies argue that the process of remembering is anchored both in the biological brain and in the use of the external world as a hybrid process. People reshape the environment and use objects (artifacts) to extend the mind. Artifacts become a functional part of the human being (Heersmink, 2013; Kristiansson, 2011). This discussion becomes relevant insofar as people are considered to use internal and external memory aids for their daily activities to remember and make decisions. In this sense, drug information artifacts are essential for the elderly to achieve their therapeutic regimen.

In view of the above, what is intended to be discussed here is the use of the information artifacts used by the elderly as external memory aids in their multiple take medication strategies.

According to data from the last Demographic Census 2010 conducted by IBGE (BRASIL, 2012), there was an increase in the number of elderly people over 65 years old and a decrease in the number of people aged up to 20 years. In 2010, the percentage of elderly people increased to 7.4% of the Brazilian population, against 5.9% in 2000 and 4.8% in 1991. Simões (2012) comments that in 2008 there were 24.7 elderly people aged 65 or over for each group of 100 children from 0 to 14 years. The forecast for 2050 is for this picture to change dramatically. The expectation is that for every 100 children from 0 to 14 years old there will be 172.7 elderly people. The main factors that contribute to these results are the increase in quality of life and decrease in the fertility rate.

If, on the one hand, the quality of life has led to an increase in the life expectancy of the population, on the other hand, aging leads to a reduction in cognitive and motor skills, as well as greater coexistence with a large number of diseases. Elderly people are highly likely to have many diseases (Banning, 2008; Gellad et al, 2011) and are more susceptible to chronic diseases such as hypertension, diabetes, chronic lung disease, cardiovascular disease, stroke, and osteoarticular disease (CASSONI ET AL., 2014) leading them to take 3 or more medications to deal with this condition. In the case of chronic diseases, this condition may require long-term treatment (BANNING, 2008). Cazarim and Araujo (2011) point out that the greater coexistence of the elderly with chronic health problems makes them great users of health services as well as medicines.

Considering that patients in general suffer from various diseases such as diabetes, hypertension, among others, they are like to use several medicines at regular basis. Thus, trying to memorize schedules and dosages of various medications,

as well as which ones should be taken at each moment, requires a great deal of cognitive effort, facilitating forgetting, confusing and changing medications and dosages. Take an example of an elderly person who takes 7 medicines under the following conditions: 4 medicines a day, 2 on alternate days (one day a medicine and the other day, another medicine) and another once a month. Of the four daily medications, 3 should be taken twice a day always 1 hour before or after a meal and 1 should be taken before bed. The two alternating medications should be taken soon after waking, also 1 hour before breakfast. Lastly, what should be taken once a month can be ingested at any time but not mixed with others. The scenery may seem surreal, but it is more common than it seems. The total of situations resulting from combinations of days, times, which medication, frequency of use, association with feeding moments make the therapeutic regimen very complex.

In this sense, in order to adhere properly to medical prescription, patients who take many medications, particularly the elderly, resort to external memory aids. Many of these aids involve the use of cognitive memory artifacts where visual elements such as color, size, position, spatial organization play an important role.

INTERNAL/EXTERNAL MEMORY AIDS AND TAKE MEDICATION STRATEGIES

Memory plays a fundamental role for the human species. Matos and Albuquerque (2014, p. 189) comment that “although it is more commonly related to past events, memory also implies the formation and accomplishment of future actions.” This conception has a fundamental importance in the task of taking medicines, especially for polymedicated autonomous elderly, where this task is daily, continuous and not eventual.

Concerning the study of memory, there are approaches that classify memories according to: [1] their content (declarative or explicit, procedural or implicit), [2] their duration (short duration and long duration) their nature (storage or work) (Vianna et al, 2000). An alternative classification used by some researchers, based on the temporal direction of memory, divides long-term memory into retrospective memory and prospective memory (Kristiansson, 2011). This was the classification adopted for this discussion.

Retrospective memory refers to recalling information learned in the past, while prospective memory refers to reminiscing the execution of an action that will be developed in the future (Werlang, Argimon, Stein, 2008). Prospective memory involves the recovery of an action intention that is stored in long-term memory, requiring a retrospective recall. According to Matos and Albuquerque (2014, p. 190), prospective memory can be defined as “the ability to recall an

action that is intended to be carried out in the future (intention), at a specific time or place, without any permanent instruction that reminds us of the action.”

Zogg et al (2012, p. 2) define prospective memory as

the neurocognitive capacity to successfully form, maintain, and execute an intention at a particular point in the future in response to a specific cue.

Werlang, Argimon and Stein (2008, p. 97) comment that the correct use of a medicine requires a prospective component and a retrospective component of memory on the part of the patient: “The first component refers to the mnemonic rescue to perform an action future, while the second covers remembering the instructions regarding the therapeutic plan.” According to Matos and Albuquerque (2014, p. 190), taking medications at specific times is an example of a prospective memory task. For the authors, in the “realization of an intention it is necessary to remember the appropriate moment or place for its realization (prospective component), but also its content (retrospective component)”.

Insel et al (2013) comment that there are good evidences of the relationship between medication adherence and prospective memory. According to the authors, studies have shown that the advancement of age, which can bring deficits to the prospective memory, and the accomplishment of complex tasks, lead to the overload of working memory and also attention. As a result, they recommend encouraging the use of environmentally supported associative (relatively spared) recovery processes (ie with clues and external cues) rather than prospective memory processes that rely heavily on memory and other resources cognitive resources that usually suffer decline with age. In general, the authors comment that memory deficits and distractions from the daily rush affect memory processes, which may imply problems in recalling information and performing day-to-day activities (Insel et al, 2013).

In relation to the use of medicine by the elderly, Bouazzaoui et al (2010) state that the use of external memory strategies increases with age, while the use of internal memory strategies decreases. Their study suggests that elderly preferentially use external memory strategies to cope with the daily deterioration of their memory due to aging.

Internal and external memory strategies involve the use of internal and external memory aids. Kristiansson (2011, p. 11) comments on a categorization made by Intons-Peterson and Fournier where they divide the memory aids into internal, external and combination between the two. He presents a list with different types of internal and external aid, and a combination of the two (Table 1).

Internal	
Alphabetic searching	Going through the alphabet one letter at a time to see if it sparks a memory.
Face-name association	Identifying a person's distinctive feature(s) and connecting the person's name with the feature(s).
Mental rehearsing	Mentally repeating to yourself what you want to remember.
Mental retracing	Thinking about something that happened before, or that may happen, step by step, in an attempt to remember something.
Method of loci	Sometimes called the "mental walk technique" Using an orderly arrangement of locations that you mentally associate with the items you want to remember. Then, when you try to remember, you "mentally walk" around the locations, remembering each item you "put" in the location.
No memory aid	Expecting memory to —pop up when needed.
Peg-wordsystem	Learning a series of number-word associations and then forming a vivid image of what you want to remember along with the number-word associations. For example, using the "one is a bun, two is a shoe, three is a tree.. ?' technique, you might imagine the first item you want to remember, say a book, as sandwiched inside a gigantic hamburger bun.
Rhymes	Using rhymes about what you want to remember (like using the rhyme, "Thirty days hath September... "" to remember the number of days in the months).
Story method	Linking items or memories together by telling a story about them, or by making sentences about them.
Tie to other life events	Remembering by associating with another life event (such as "right after lunch" or "just before a history class").
External	
Asking someone else to remind you	Asking someone else to help you remember or asking if she or he remembers.
Calendar notes	Writing down on a calendar, address book, etc., what you want to remember.
Photographs	Using pictures to remind you of something.
Putting something in a special place	Putting what you need to remember in a place where you will be sure to see it.
Reminder notes	Writing down what you want to remember on a paper that you can take with you.
Timer	Using a mechanical, electrical or other timing device.
Writing on hand	Writing what you want to remember on your hand.

Combination	
Saying out loud	Saying something out loud as a way to remember (for example, by telling another person or asking someone to repeat what you have said).
Trial technique	Trying to write out or imagine part of the information to see if it sparks a memory.

Table 1 - Memory aids classified in internal, external and combination of both. Source: Kristiansson (2011, p. 11)

Kristiansson (2011) comments that researchers have devoted more attention to internal memory aids than to external ones. He adds that internal aid is usually understood as normal memory operations and not as aids. They are usually studied in the laboratory, as opposed to external aids in which it is necessary to study people's daily lives. The author further comments that the role of memory aids is challenging and play an important role in our daily lives.

Considering the task of taking medicines, the complexity of the therapeutic regimen may require a greater number of memory strategies to take medications, as Boron, Rogers and Fisk (2013) point out. The authors present a list of options for what they call 'medication adherence strategies' (table 2). They provided these strategy definitions to participants in the survey of their research.

Pill Caddy	This method uses a pill caddy to help remember to take medical products correctly. A pill caddy is a medication organizer or any other device used to store medications (not in their original bottles).
Association	This method relies on using an activity or event to help you remember to take medical products. For example you take your medication every time you eat breakfast. Or you watch a certain TV show, brush your teeth, or drink a glass of water every time you take your medication.
External Reminder	This method uses physical reminders to remind you to take your medical products. For example, you may set a wristwatch alarm to go off when it is time to take a medication. Or you may place a sticky note on the bathroom mirror to remind you to take a medication before bed. NOTE: You should not base responses for this section on your use of pill caddies.
Location	For this method medication is kept in a consistent location that may or may not be visible. The location is used to help you remember to take your medication. For example, you may always keep your medical products in the kitchen pantry, in a medicine cabinet, or in a medicine bag. Note: Pill caddy does not count as a location. BUT, if you keep the pill caddy itself in a certain location to help you remember to take medication correctly, please indicate below.

Mental Planning	This method involves thinking ahead about when you will take your medical product(s). For example, in the morning, you may plan when the medication should be taken during that day. OR, throughout the day, you may mentally repeat to remember the medication(s). The planning makes it easier to remember to take the medication during the day.
Physical Pain	The method uses how you physically feel. For example, you do not think about your medication unless you feel pain or physical discomfort.
Visibility	This method uses placing medical products in a highly visible place. This is so you will notice the medications and be reminded to take them. For example, you may place your medications on top of a night stand, in the middle of the kitchen table, or next to a dinner plate. NOTE: The visibility of this location is important, not the location.

Table 2 - Description of Medication Adherence Strategies. Source: Boron, Rogers and Fisk (2013, p.13)

For polymedicated autonomous elderly, taking medication strategies involve internal and external memory aids, with the possible use of information artifacts. Werlang, Argimon and Stein (2008) cite some strategies that can be used to promote adherence to medications: packaging boxes, tablet diary, notes, calendars, pre-selection of medications which should be taken daily, calendars, use of alarm clock and mental schemes. In addition to the strategies listed by Boron, Rogers and Fisk (2013) and Werlang, Argimon and Stein (2008), many other strategies can be adopted/developed with the collaboration of health professionals, for example. The pharmacist elaborates a plan of care for a patient to prevent or solve problems in the use of medicines (BRASIL, 2014), especially when the patient is polymedicated.

TAKE MEDICATION INFORMATION ARTIFACTS

In order to define information artifacts, it becomes necessary to initially understand what artifacts are. Artifacts, in a broad sense, are “a physical object intentionally designed, made, and used for a particular purpose (HEERSMINK, 2013, p. 468). They are man-made technologies, therefore, anthropocentric and artificial.

Information artifacts may be considered, first of all, as cognitive artifacts because they are intentionally designed and made to aid human cognition (HEERSMINK, 2013). Their informational properties help in the accomplishment of

cognitive tasks. From the point of view of information design can be called information design artifacts. Such artifacts are pieces of design whose purpose is to deliver a particular message according to the user's needs: direct visualization of data, summarization of complex contents or large volumes of information, immediate non-verbal messages, simplification of complex concepts, contextualization, among others (O'GRADY, O'GRADY, 2008), and can be physical or digital. O'Grady and O'Grady (2008) list various types of information artifacts that can be developed by information designers: calendars, timelines, graphs, diagrams and schemes, and others. It can then be deduced that the information artifact about medicine is a cognitive artifact, with cognitive function and with the specific objective of informing and orienting about the medicine and its use, developed or not by information designers.

From this definition, it can be seen that medication information artifacts can consist of a wide range of artifacts, where medical prescriptions, package inserts and medication packages are the most common examples. These artifacts are subject to regulation by government agencies and their development is subject to compliance with strict principles and rules. On the other hand, pill holders, calendars and smartphone applications are examples of information artifacts whose development is not subject to regulation. Medication information artifacts are also used to aid in the process of medication taking, constituting, in this sense, external memory aids.

Regulated artifacts: Prescription, package leaflet and package of medication

The regulated artifacts for medication usage are: Prescription, package leaflet and package of medication. The effectiveness of these artifacts to communicate information on medicine usage has been questioned by several authors for their poor legibility and readability (Dixon-Woods, 2001; Spinillo, & Waarde, 2013, Waarde, 2014), for example. These communications drawbacks of medicines regulated artifacts have a more negative effect on elderly patients due to health conditions and number of medicines taken.

Prescription is one of the first artifacts of information about medications that the patient has access to. It is subject to regulation regarding some information that must necessarily be present (Brazil, 2010).

As for visual elements, only aspects of readability (relating to textual elements) and color are required. Written by hand or printed, the prescription must present the information legibly (São Paulo, 1999; Brazil, 2010), which does not always occur. No other typographic question is required. The color is only used to differentiate the type of prescription. The white ones are used for medicines with or without red stripe. The blue ones are for medicines with a black stripe

that can cause dependence (Brazil, 2010). Figure 1 exemplifies the two types of prescriptions.

The figure displays two examples of Brazilian prescriptions. The top one is a white 'RECEITUÁRIO DE CONTROLE ESPECIAL' form. It features a header with the title and a box indicating '1ª Via Farmácia' and '2ª Via Paciente'. Below this is a large box for 'IDENTIFICAÇÃO DO EMITENTE'. The form includes fields for 'Paciente:', 'Endereço:', and 'Prescrição:'. At the bottom, there are lines for 'Data' and 'Assinatura e Carimbo'. The bottom part of the figure shows a blue 'RECEITUÁRIO DE CONTROLE ESPECIAL' form, which is more detailed. It includes a 'RECEITAÇÃO DE MEDICINA' section with a number and a 'RECEITAÇÃO DE MEDICINA' section with a number. It also has a 'RECEITAÇÃO DE MEDICINA' section with a number and a 'RECEITAÇÃO DE MEDICINA' section with a number.

Figure 1 - Examples of white recipe and blue prescription (Brazil, 2010: 33)

Package leaflets and packaging of medication are the ones that suffer the most regulation in Brazil. However, Spinillo and Waarde (2013) comment on the deficiencies in the information visualization of medication use in Brazil and in

Europe. The regulations, both in Brazil and in Europe, present difficulties for the development of these artifacts due to a certain lack of design features, for example, requiring a certain font size without indicating which font should be used (Waarde, 2014).

In Brazil, the package leaflets are eminently textual. Some characteristics such as size, font type, readability are required by current regulations. However, the package leaflets may also present pictures (illustrations and pictograms) in order to guide the patient about the use of the medication. Figure 2 shows an example of package insert.

Medicamento Anvisa®	
Paracetamol	
APRESENTAÇÕES	
Comprimidos revestidos de: - 500 mg em embalagem com 20 ou 200 comprimidos. - 750 mg em embalagens com 20 ou 200 comprimidos.	
USO ORAL	
USO ADULTO ACIMA DE 12 ANOS	
COMPOSIÇÃO	
Medicamento Anvisa® 500 mg: Cada comprimido revestido contém 500 mg de paracetamol. Excipientes: ácido estearico, amido pré-gelatinizado, hipromelose, macrogol e povidona.	
Medicamento Anvisa® 750 mg: Cada comprimido revestido contém 750 mg de paracetamol. Excipientes: ácido estearico, amido pré-gelatinizado, hipromelose, macrogol e povidona.	
1. PARA QUÊ ESTE MEDICAMENTO É INDICADO?	
Medicamento Anvisa® é indicado para o tratamento de febre e de dores leves a moderadas, de adultos, tais como: dores associadas a gripes e resfriados comuns, dor de cabeça, dor de dente, dor nas costas, dores associadas a artrites e cólicas menstruais.	
2. COMO ESTE MEDICAMENTO FUNCIONA?	
Medicamento Anvisa® reduz a febre atuando no centro regulador da temperatura no Sistema Nervoso Central (SNC) e diminui a sensibilidade para a dor. Seu efeito tem início 15 a 30 minutos após a administração oral e permanece por um período de 4 a 6 horas.	
3. QUANDO NÃO DEVO USAR ESTE MEDICAMENTO?	
Você não deve tomar Medicamento Anvisa® se tiver hipersensibilidade (alergia) ao paracetamol ou aos outros componentes da fórmula.	
Usuários crônicos de bebidas alcoólicas podem apresentar um risco aumentado de doença do fígado se tomarem uma dose maior que a dose recomendada (superdose) de Medicamento Anvisa®.	
Este medicamento é contra-indicado para menores de 12 anos.	
4. O QUE DEVO SABER ANTES DE UTILIZAR ESTE MEDICAMENTO?	
Você não deve tomar mais do que a dose recomendada (superdose) para provocar maior alívio, pois pode causar sérios problemas de saúde.	
Você não deve usar o medicamento para dor por mais de 10 dias ou para febre por mais de 3 dias, exceto sob orientação médica.	
Você deve consultar seu médico se a dor ou febre continuarem ou piorarem, se surgirem novos sintomas ou se aparecerem vermelhidão ou edema (inchaço), pois estes sintomas podem ser sinais de doenças graves.	
Em casos de uso por mulheres grávidas ou amamentando, a administração deve ser feita por períodos curtos.	
Este medicamento não deve ser utilizado por mulheres grávidas sem orientação médica ou do cirurgião-dentista.	
Atenção diabético: este medicamento contém SACAROSE.	
Informe ao seu médico ou cirurgião-dentista se você está fazendo uso de algum outro medicamento.	
A absorção de Medicamento Anvisa® é mais rápida se você estiver em jejum. Os alimentos podem afetar a velocidade da absorção, mas não a quantidade absorvida do medicamento. Se você toma três ou mais doses de bebidas alcoólicas todos os dias, deve consultar seu médico se pode tomar Medicamento Anvisa® ou qualquer outro analgésico. O paracetamol utilizado com o álcool pode causar lesão no fígado.	
A interferência do paracetamol na metabolização de outros medicamentos e a influência destes medicamentos na ação e na toxicidade do paracetamol não são relevantes.	
Não use outro produto que contenha paracetamol.	
5. ONDE, COMO E POR QUANTO TEMPO POSSO GUARDAR ESTE MEDICAMENTO?	
Você deve conservar Medicamento Anvisa® em temperatura ambiente (entre 15°C e 30°C), protegido da luz e da umidade.	
Este medicamento tem validade de 36 meses a partir da data de sua fabricação.	
Número de lote e datas de fabricação e validade: vide embalagem.	
Não use medicamento com prazo de validade vencido.	
Para sua segurança, mantenha o medicamento na embalagem original.	
O comprimidos revestidos de Medicamento Anvisa® são ovitados de cor branca.	
Antes de usar, observe o aspecto do medicamento.	
Caso você observe alguma mudança no aspecto do medicamento que ainda esteja no prazo de validade, consulte o médico ou o farmacêutico para saber se poderá utilizá-lo.	
Todo medicamento deve ser mantido fora do alcance das crianças.	

Figure 2 - Example of medication package leaflet. Source: <http://www.blog.saude.gov.br/index.php/35211-bula-e-essencial-para-orientar-o-consumidor-sobre-uso-seguro-de-remedios>

Packaging, on the other hand, uses with more emphasis other elements besides the text. Figure 3 shows the general characteristics of an external package of medication required by Anvisa.

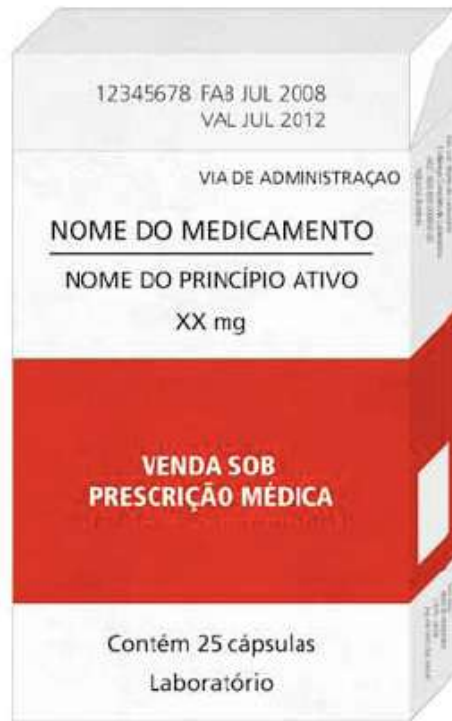


Figure 3 - External package of medication: general characteristics. Source: BRAZIL (2010, p. 19)

The medication in Brazil are classified for sale as Prescription-Free Medications (Medicamentos Isentos de Prescrição - MIP) and Prescription Medications (Medicamentos de Venda sob Prescrição). The latter is divided into two groups: no prescription retention and with prescription retention. The differentiation is made in the packaging by means of strips with specific colors and also with texts SALES UNDER MEDICAL PRESCRIPTION and SALES UNDER MEDICAL PRESCRIPTION | CAN ONLY BE SOLD WITH PRESCRIPTION. Figure 4 shows the distinctions of stripe for application in the packages according to the medicines.



Figure 4 - Application of marking on medication packaging. From left to right: No stripe - Prescription-Free Medications; Red stripe - Prescription Medications (have the inscription “SALES UNDER MEDICAL PRESCRIPTION” or “SALES UNDER MEDICAL PRESCRIPTION WITH PRESCRIPTION RETENTION”); Black Medications (have the inscription “SALES UNDER MEDICAL PRESCRIPTION - ABUSE OF THIS MEDICINE CAN CAUSE ADDICTION”); Yellow stripe (indicates a generic medicine - may be accompanied by another stripe). Adapted from: <https://familia.com.br/5587/how-to-think-the-treatments-instruments>

The packages must comply with the standardized identification and described in the Visual Identification Manual for Medicinal Packaging (Brazil, 2014b). The manual standardizes packaging of medication with commercial and generic names. Figures 5 illustrate one of the guidelines in the manual.



Figure 5 - Part of Identification of graphic elements guidelines. Source: BRAZIL (2014b, p. 16-17)

In general, it can be observed that the use of color as a distinctive element is limited to differentiating the types of medicines (reference, generic, intended for SUS), one drug industry of the other (they can opt for other than background white) and the degree of control (by the presence and color of the stripe). Neither color nor typography offers information to distinguish one drug from another, or the concentration of the drug (125mg or 500mg tablets). Figure 6 exemplifies a medicament with different concentrations but with substantially identical packaging.



Figure Figure 6 - Packaging of a medicine with difference in concentration

Source: https://www.revistafatorbrasil.com.br/imagens/fotos2/teuto_pregabalina

Non regulated medicine information artifacts

As mentioned earlier, some information about medicines is not subject to regulation, and the artifacts that carry them are not. From pill holder to smartphone apps, there are myriad of informational artifacts about medicines being

used by people who take some kind of medicine. The literature on these artifacts is sparse and scattered. Many are mentioned in studies, but are not studied from the point of view of information design.

The pill holder is one of the most common. There are hundreds of models available in the market, varying in shape, number of compartments and functionalities (lock, alarm, among others). Some models have been selected as examples.

The model of Figure 7 has 7 compartments, identified by the days of the week and allows to organize medications for a time of day. The model of Figure 8 has 14 compartments, allowing to arrange medicines for two times of the day.



Figure 7 - 7-compartment pill holder. Source: http://i111.twenga.com/saude-beauty/popula/plasutil-porta-comprimidos-tp_7182541201700943624f.jpg



Figure 8 – 14 compartments pill holder. Source: https://http2.mlstatic.com/20-porta-comprimidos-organizador-diario-de-medios-D_NQ_NP_22903-MLB20237765380_022015-F.jpg

The models of figures 9 and 10 allow to organize the medicines by 4 schedules during the day. The model of Figure 9 has 28 compartments and a locking system that only releases the compartment where the drugs are currently being taken.

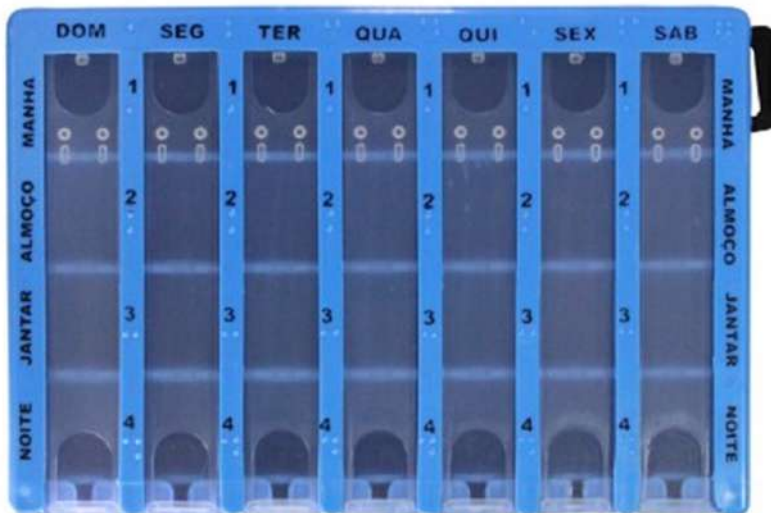


Figure 9 - Locked pill holder. Source: <http://www.lojadoavo.com.br/p/395/porta+rep+air+time+contact+with+travel+of+safety>

The model in Figure 10 also has 28 compartments, but is made up of 7 boxes - one for each day of the week - and a structure for storing them. The box below is that of the day and, once unoccupied, is replenished and placed on top of the stand. In addition, the box of the day can be carried individually by the person.



Figure 10 – Pill holder with individual box. Source: <https://shoppub.s3.amazonaws.com/primecirurgica/media/cache/f6/db/f6dba5b642f48eb686f880477185be0a.jpg>

The use of smartphones makes it possible to take medicine using apps. Figure 11 shows some screens of the Medisafe app. Once the medications, their schedules and dosages are scheduled, the app will notify the person and continue the alert until you click on the options ‘skip’, ‘reschedule’ or ‘take’. The medications are presented visually as if they were in a divided pillbox at four times a day

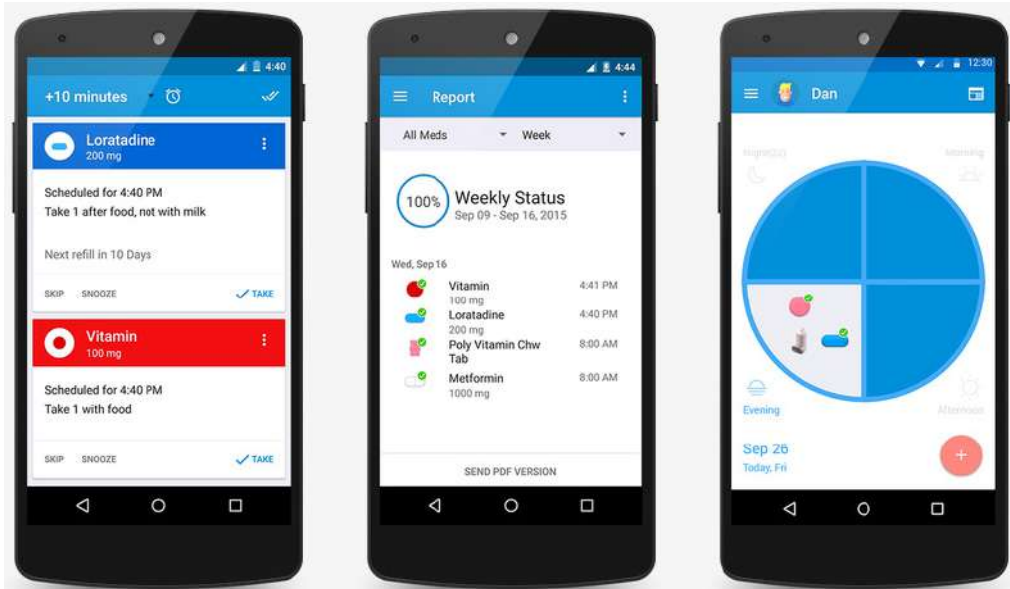


Figure 11 - Medisafe app screens. Source: <https://www.android-apps.us/medisafe-meds-pill-reminder-app/>

Recently the company launched Medisafe iConnect (Figure 12) which allows the integration of the app with medicine bottle with electronic lid and also with a compressed port. Figure 13 exemplifies the process of integrating the app with the medicine bottle christened iCap.

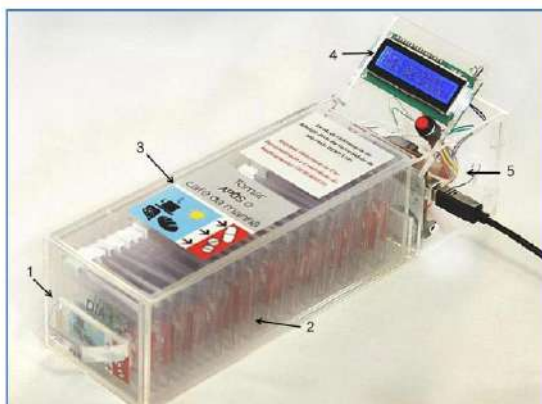


Figure 12 - Medisafe iConnect. Source: <https://www.medgadget.com/2016/04/medisafe-i-connect-an-affordable-smart-pill-management-system.html>



Figure 13 - Medisafe iConnect - integration app x bottle. Source: <https://canaltech.com.br/noticia/gadgets/startup-cria-dispositivos-para-auxiliar-a-rotina-de-quem-toma-medicamentos-74757/>

Health professionals have also been dedicated to creating information artifacts to assist patients in taking their medications. Among the artifacts with the highest degree of elaboration can be mentioned the Electronic System for Custom Use and Controlled Medication (SUPERMED). The goal of its development was ‘to contribute to adherence to medication treatment and to the safety of elderly patients.’ (Vieira, 2013, p.44) This is an alarm organizer to remind patients of the correct time (Figure 14).



1 - Medicine organizer box; 2 - Sachet of medicines; 3 - Labels with information for correct use; 4 - Alarm clock; 5 - Electronic system
 Figure 14 - SUPERMED - Source: VIEIRA (2013, p. 45)

The medications are separated and placed in sachets (Figure 15) with identification stating the day, time and dosage. Time and dosage are represented by the use of images (Figure 16).



Figure 15 - Medicated sachet. Source: VIEIRA (2013, p. 46)



Figure 16 - Labels with correct information for medication use. From left to right (up): "Take it as soon as you wake up", "Take before lunch", "Take after breakfast", "Take before breakfast". From left to right (bottom): "Take after lunch", "Take before dinner", "Take after dinner", "Take before bedtime". Source: VIEIRA (2013, p. 46).

Figures 17 and 18 present SUPERMED prepared for various moments of the day.



Figure 17 - SUPERMED prepared for patients with seven different moments to take their medication. Source: VIEIRA (2013, p. 48)



Figure 18 - SUPERMED prepared for patient with three different moments to take their medications. Source: VIEIRA (2013, p. 50)

Regarding aid provided by pharmacists to elderly patients, a common artifact is organized in the form of time tables whether using images associated with events of the day or text only. Figures 19 and 20 are examples of such sheets.

FICHA DE ORIENTAÇÕES AOS PACIENTES EM ACOMPANHAMENTO

ACONSELHAMENTO AO PACIENTE

Nome: _____ Data: ____/____/____

ANTES DE TOMAR OUTROS MEDICAMENTOS CONSULTE SEU FARMACÊUTICO OU SEU MÉDICO.

PERÍODOS DO DIA

MEDICAMENTOS	Horas	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	1:00	2:00	3:00	4:00	5:00
1.																									
2.																									
3.																									
4.																									
5.																									
6.																									

medications and times to take

Como Usar o Medicamento how to use the medicine

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____








Cuidados com o Armazenamento do Medicamento

1. _____	2. _____
3. _____	4. _____
5. _____	6. _____

care with storage of medicines

Figure 19 - Guidance sheet for follow-up patients. Source: MINAS GERAIS (2009, p. 87)

name and pictogram representing the time of taking the medicine

PERÍODO DO DIA	Amanhecer	Café	Intervalo 1	Almoço	Intervalo 2	Noite/Jantar	Dormir
MEDICAMENTO							
1. Medicamento 1	6h		12h		18h		24h
2. Medicamento 2		8h					
3. Medicamento 3	6h				18h		
4.							
5.							

medication name
time to take the medicine

Farmacêutico Digital

Figure 20 - Example of guidance sheet for patients on the use of their medications. Source: <https://i0.wp.com/farmacêuticodigital.com/wp-content/uploads/2016/05/tabela-horario-medicamentos1.png>

INFORMATION ARTIFACTS AND MEDICATION-TAKING STRATEGIES

It was observed that the visual elements are always present in the medication-taking process (Correr & Otuki, 2013; Sadowski, 2011; Waarde, 2005). The visual elements are mainly used to identify, recognize and differentiate medicines. They are also an important part of the decision to take medicine, that is, which to take. Several pharmacists have reported adopting strategies involving the use of color-coded drawings, pictures, envelopes, or stickers to guide the elderly in the use of their medications.

Werlang, Argimon and Stein (2008) recall the importance of the elderly to pursue their own strategies. It is necessary to consider that “regardless of the internal or external nature of the strategy to be chosen, when people seek these tools on their own, they are more motivated to use them, becoming more convinced of their effectiveness” (Werlang, Argimon, Stein, 2008, p. 98). According to the authors, the elderly become more motivated to use them and this can be observed as one of the results of the interviews. Thus, personalizing information is important to aid the elderly in able to adhere to their treatment.

Even with regard to memory, two questions must be presented. The first one refers to the fact that the process of memorization for taking medications includes medical prescription. In a study conducted by Silva (2017) on the use of medicines by elderly patients in Brazil, most participants stated that they first memorize the medicine prescription and then use visual characteristics/ elements of the medicine packaging, such as color, shape (carton, blister) and size, to remember which medicine they should take and when. Accordingly, regulated artifacts are used as external memory strategy to take medicines by elderly.

Another relevant aspect is the role of the medicine itself as an information artifact. Practically all the elderly interviewed use the color, size or shape of the medication as a visual element to aid their medication intake.

However, when memory declines in elderly patients, non-regulated artifacts are adopted by to aid remembering the therapeutic regimen whether created by the elderly, by pharmacist or by friends/family. It was observed that the complexity of the use and structuring of the visual elements increases according to the complexity of the therapeutic regimen, in order to guarantee that the visual information is sufficient for the correct taking of the medicines. It can be observed the use of more than one strategy, evidencing itself more used according to the research of Boron, Rogers and Fisk (2013): location, visibility, association and pill holder.

The strategy for taking medicines can also be developed by the elderly themselves. An example of this is a simple and effective strategy adopted by an elderly woman to take her pills In the morning, afternoon, and evening (Silva, 2017).

Some pills should be taken once a day, others twice and three times a day. Her strategy was to cut the pills' blister from a coding developed by her, to identify the tablets that should be taken in the morning (once a day), morning and afternoon (twice a day) and morning, afternoon and evening (three times a day). Figure 21 illustrates the customization developed by the elderly woman. The elderly woman did not create any new information artifacts, but she intervened in the blister that she already received with the medicines.

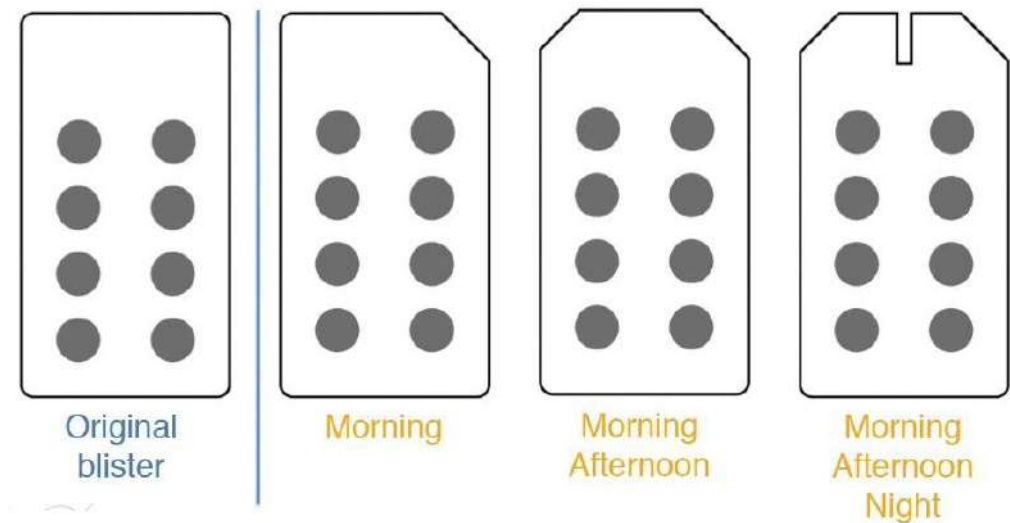


Figure 21: Cutting the blister to identify how much and when to take the medicine.
Source: Developed by the author (2017)

The development of these various types of medication information artifacts is a way to make the artifact personal so that it works specifically for that person and his or her context, especially for polymedicated elderly people.

It is evident that the strategies they found are the result of several attempts in order not only to take the medication correctly, but also to make everyday life easier. When it becomes difficult, it has been observed in some interviewees' statements that the rigor becomes smaller. One respondent commented that her husband decided to take all the medications at one time in the morning, contrary to the prescription he had received from the doctors. It was easier that way.

One of the elderly interviewed looked for in technology a way to correctly take their medicines, that is, of "managing the medication", term that he used. He programmed alarms for the hours but reported that several times he turned the alarm off without taking the medicine and ended up forgetting. Posting re-

minders or medical prescription in the refrigerator is a common practice among seniors as well as highlighting the relevant information in the prescription.

The oblivion, a point repeatedly reported in the literature (Who, 2003; Werlang, Argimon, & Stein, 2008; Insel et al, 2013), was also reported by some elderly people. By being away from home, or involved in many activities at home, they eventually forget to take the medications. On the other hand, most of the elderly reported that they memorize what they have to take. One of the participants, who previously remembered the medicines well, said he is now having trouble remembering and thinks about looking for some other strategy to help take the medicine correctly. In summary, it was observed that the elderly used memorization associated to the verification of the medication (color, size, shape) and location (where they are left) associated with events of their daily life. It should also be noted that memory strategies should vary with regard to where the elderly are (at home, at work, on the road, on the road). The grouping of the medicines, either in their original packaging, in blisters or individually (outside their packaging) also characterized several reports. They are grouped by schedule, usually in the morning, lunch, afternoon and evening, in plastic boxes and baskets (Figure 22) when the elderly are at home. When they go out to work or travel, it is common to use bags or pill holders.



Figure 22 - Example of container for storage medicaments. Source: <https://img.elo7.com.br/product/zoom/20125C0/cesta-necessaire-farmacinha-remedio.jpg>

Table 3 shows the main memory strategies, identified in Silva's study (Silva, 2017), used by elderly patients to remember.

Internal	External
Tie to other life events	Calendar notes
	Photographs
	Putting something in a special place
	Reminder notes
	Timer

Table 3 - The main memory strategies used by elderly patients to remember. Source: the author.

In relation to medication adherence strategies described by Boron, Rogers and Fisk (2013, p. 13), the following strategies were identified: Pill Caddy, Association, External Reminder, Location and Visibility. The use of prospective memory was evident among the elderly (Werlang, Argimon & Stein, 2008; Insel et al, 2013) and the visual elements serve as clues to start the planned action.

FINAL CONSIDERATIONS

The task of taking medications is complex, particularly for elderly who need to take many medications on a daily basis. Articulating information to create your drug use strategies is a challenge, especially because these strategies should ensure that they remember which medication to take and have also been taken properly. Information artifacts add to the process of memorizing - which is a kind of internal memory aid - insofar as they are visual clues to activate memory. Both regulated and unregulated artifacts can be considered in drug use strategies. Of the regulated artifacts, the package leaflet is the least used either for its informational complexity (technical information) or for its visual appearance (large volume of text, few Principles of Information Design applied). However, the regulation of these artifacts presents a challenge for designers, since it limits their interference in the sense of making them more efficient as cognitive artifacts of information directed to the use of medication by the elderly. The designers can discuss them, propose suggestions and influence the legislation, as was the case of the magisterial leaflets of Paraná.

As far as unregulated artifacts are concerned, a good part of those that are marketed present problems related to visual information as well as those that are developed by the elderly themselves, friends or relatives. Pharmacists also face difficulties in designing artifacts to guide the elderly in taking medications. Here the challenge for designers lies in the clear understanding of the task of taking

medications by the elderly, as well as their particularity for each elderly person relating memory and visual elements.

In any case, they are topics that deserve more in-depth studies and constitute a fertile ground for research in Information Design.

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The trajectory of design/education at UFPE and the actions of RIDE

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INTRODUCTION

This trajectory has stemmed from some of the inherent concerns within the political, economic and social contexts that have affected education in Brazil. All efforts made by previous governments – from 2002 to 2016, which even at the time were considered too late – have virtually been nullified by the current mis-governance since August 2016. With these efforts, it was believed that only a consistent, robust education project could overcome the daunting marks of historically constituted inequality, and thus of exclusion.

Currently, education is no longer treated as a priority on the national agenda, nor is there any sign of an emancipatory education project being presented, which thereby leads to the formation, in Freire's terms, of a libertarian education. Quite the contrary, in fact: we are now faced with a pseudo-retrograde proposal that aims to control the knowledge involved in the education of our children and the young. According to an OECD study (2017)¹, Brazil is one of the countries that invests the least in primary and secondary education, spending around one third of most other countries. The barriers created by this are such that we run the risk of not being able to meet any of the goals established by the National Education Plan (2014/2024)², since the problem, in all its dimensions, has not yet been diagnosed, nor has action been taken to solve those that have already been identified.

¹ OECD – The Organization for Economic Cooperation and Development. The study - Education at a glance from 11.09.2017. Forty-five countries were analysed and Brazil figured amongst the last, since the annual investment per pupil in primary education is US\$ 3,8000, while the average investment in OECD countries is US\$ 10.,500. For the complete study see <http://oecd.org>. Viewed 15-01-2018.

² Please see <http://www.pne.mec.gov.br>. Viewed 15-02-2017.

It is important to clarify that the investigative actions presented herein do not account for the severity, and increasing uncertainty, of the problem regarding education in Brazil, nor was this an objective. Nevertheless, the projects intend to contribute to an approximation between the fields of design and education in order to stimulate the debate, thereby exposing the limits and the possibilities that affect the links involved – particularly regarding the use made of graphic language (GL)³ within the educational environment (Coutinho and Lopes, 2011).

As a starting point, the projects address the dynamics of information design for education regarding that which is considered central: the effectiveness and efficiency of information systems, especially in the relationship between image and verbal production. Coutinho and Lopes (2011) have previously highlighted that this production implies two central processes: those that involve the formation of teachers and their development as originators and consumers of information; and those that deal with the formation of students and their strategies as originators and consumers of information. Ultimately, based on the assumption that students and teachers are originators⁴ of graphic information, we understand that the knowledge derived from information design is strategic for the process of expanding the visual experience and the configuration of educational artifacts that mediate knowledge.

In a broader approach, Fontoura (2002) defends design as a mediating activity, which gives material form to intellectual concepts, and is one way of solving contemporary educational conflicts. It is also the conceptualization of materialized ideas through the use of technologies. Thus, it is a union of its fundamentals, work methodologies, ways to interact in the formation of material culture, ways to proceed in the conception of objects, of needing to be familiar with technologies and materials, and of reinforcing the idea that design may be an essential tool for the field of education (Fontoura, 2002; Coutinho and Lopes, 2011; Lopes, 2014).

In this chapter, we aim to describe the efforts of a determined group of researchers at the Universidade Federal de Pernambuco (UFPE), with a view to consolidating experiences that have been developed in Pernambuco over the last fif-

³ For graphic language, we have adopted the concept proposed by Twyman (1979, p. 118), which understands graphic as '[...] drawn or otherwise made visible in response to conscious decisions' and language as 'the vehicle of communication'.

⁴ We adopted the terminology used by Twyman (1979, 2002) in his schema to study graphic language, in which he considers an 'originator' as the individual, specialist or non-specialist, who generates GL and a 'consumer' as the individual, specialist or non-specialist, who receives the information through GL.

teen years. The timeline below demonstrates the four key moments of this sequence, herein termed:

- 2003 – 2007 | Exploratory Phase (1), during which the preliminary actions in schools and in the field of education were developed;
- 2008 – 2011 | Teaching Design I (2), during which constitutional actions/processes were developed within the field of design together with an analysis of educational artifacts;
- 2012 – 2016 | Teaching Design II (3), during which studies were developed involving aspects and methods for formation proposals, as well as incorporating the paradigm of digital education and approaches such as in the field of sociology; and,
- 2016 – 2020 | RIDE (4), during which actions for formation and educational devices are being conducted in order to solidify the new field of design/education, concomitantly with the creation of the International Design/Education Network (referred to in Brazil as RIDE).

EXPLORATORY PHASE [2003/2007]

In this first stage, research was conducted within two major themes: (1) the study of the drawing process (observation and memory) as produced by pupils and teachers at schools in Recife⁵, and (2) the study of graphic language (verbal, pictorial and schematic) presented within the school context.

Five studies were conducted during this period, coordinated/supervised by Solange Coutinho with the following projects and participants:

- a) A graphic analysis of visual messages in schools in Recife – Patrícia Baía Vanderlei;
- b) Digital illustrations in children's books: an analysis of techniques and style – Thiago Lyra;
- c) The semantic function of images in children's textbooks in Portuguese – Verônica Emília Campos Freire;
- d) A graphic project: a collection of primary school textbooks – José Fábio Luna da Silva; and
- e) Design and Education: a discussion on introducing notions of graphic design as an activity on the arts education syllabus for Brazilian Primary

⁵ With regard to research on the process of children's drawing, during this period, please see Coutinho, 2006.

Education, and an initial proposal of contents for this activity – Olívia Morim de Melo.

The researchers visited twenty public (municipal and state) and private schools in the city of Recife to investigate visual discourse. They evaluated graphic artifacts produced manually by teachers and pupils with the use of a tool (photocopy/mimeograph), as well as printed material (textbooks, posters). The artifacts most commonly used as educational and informational support – in both public and private schools –, within the context of this period, besides the board, were grouped as follows: (a) what we classified as visual messages (murals, posters, notices, and others); (b) worksheets, conceived and produced by teachers (Figures 1a and 1b); and (c) the textbook, printed and produced outside the school environment by experts (including designers), although selected by coordinators and teachers.



Figure 1: (a) mimeographed colouring pages and (b) a notice to keep the classroom door closed. (Source: Coutinho and Freire, 2007a).

These visual messages were grouped by Vanderlei and Coutinho (2003) as: (a) birthdays; (b) characters from children's stories; (c) seasonal dates; (d) educational materials; (e) attendance list; and (f) educational and/or informative messages. On the other hand, lesson plans used almost daily to provide support for pedagogical activities developed in several disciplines are usually monochromatic and reproduced in low resolution (mimeograph or photocopy).⁶

As a result, a restricted use of images was observed in the compositional

⁶ The theoretical-analytical basis used as a parameter for the analyses were as follows: the principles /of the compositional laws of Fabris (1973) and Dondis (1999); and for the specialized analysis, Twyman's schema for the use of graphic language (1979) and Goldsmith (1980, 1984).

elements. The content of many illustrations introduced no additional meaning to the accompanying texts, thereby functioning simply as decorative elements, except in certain educational activities. It was observed that although there is a large quantity of visual messages in the school environment, those responsible for creating them make little use of the many possibilities available for production methods and modes of symbolization.

Research conducted by Freire (2005), examined the semantic issues of illustrations presented in three Portuguese Language textbooks for the second year of primary school.⁷ The images were analysed within the context of the books, seeking to understand the relationship between form and content, from the desired meaning for the demands of the exercise in question.⁸ These particular artifacts were selected since were being used by children who were learning to read, i.e., they were able to read and were in the process of acquiring language for reading and writing. We would emphasize that the textbook, even though it was supported by a whole set of communicational artifacts within the school environment, played a central role in the system, particularly in the case of reusable textbooks – where pupil fill in the answers to questions posed by the authors.⁹

When studying Portuguese, especially when learning to read, it is through illustrations that children recognize the “reference” image of the “first words”. This signifies that in the process of learning to read and write the correct association of the word, in its visual form, with a meaning, through an image, becomes key to comprehending the whole.

Figure 2 presents some of the illustrations found in textbooks, from which Freire (2005) constructed the following categories/semantic problems: (a) Incoherence between image content and the response requested by the author (reflection and navel, respectively could also represent mirror and belly, for example); (b)

⁷ *Língua Portuguesa 2, Viver e Aprender – Português 2 and Descobrimo a Gramática 2.*

⁸ It should be noted that children’s textbooks are chosen by educational agents (coordinators and/or teachers) from a list sent by the Ministry of Education, after evaluation by specialists in the areas.

⁹ In addition to being a profitable business for Brazilian publishers, as figures indicate for the period, for the academic years between 1995 and 2005 1.026 billion books were acquired and distributed to 30.8 million students per year, with an investment of R \$ 3,7 billion. Data demonstrates that for the year 2017 alone, R\$1,3 billion was invested in textbooks for 32 million students from 117 thousand public schools, thereby illustrating that the profits of the country’s major publishing companies continue to grow.

incoherence between the repertoire and the age group of users (beep, hydrangea, mint, coati – a type of “cat hunter”: horse/dog/cat, as termed by one of the children); (c) graphic imprecision, i.e., complex and/or very small representations and/or inconsistent perspectives and/or use of colour (hydrangea, sausage).



Figure 2: set of illustrations analysed by FREIRE (2005).

As a result of this phase,¹⁰ with regard to the use of graphical artifacts in schools in Recife,¹¹ we now understand that the informational system was (and still is) inaccurate and requires a process of rethinking. Practices, especially in public schools, seem stagnant and incompatible with information present in the external context, although at the same time, we encountered teachers who were receptive to adjusting their knowledge, and willing to understand the processes involved in selecting materials. From the results of this first stage, it was possible to structure Teaching Design I, as explained below.

TEACHING DESIGN I [2008/2011]

With this collection of projects, the intention was to provide a reflexive, exploratory investigation of the teaching practice biased towards design – particularly, the use of graphic language in schools, which as we have observed, is often inconsistent.

Fontoura (2002) has indicated that the task of a school is, and in the future

¹⁰ Results published in: Vanderlei and Coutinho, 2003; Freire, 2005; Coutinho, 2006; Coutinho and Freire 2007a, 2007b; Coutinho and Silva, 2007.

¹¹ It is important to remember that these books are adopted all over the country.

will be even more so, to provide a place in which to construct knowledge, taking into account the needs and capacities each individual learner. The aim therefore, should be to train professionals who are better prepared and more able to cope with the future changes brought about by the continuous advances produced by society. This is especially important within the current context where we encounter an imbricated process in which the various graphic languages are expanding and/or synthesising (as is the case of emojis), together with the innumerable communication variables, provoking a subjective current of cultural signs and providing support for an unprecedented informational ecosystem network.

By considering school as the locus of participatory learning between the various actors, where there is an exchange, sharing (or should be), and the production and reproduction of graphic information, we therefore understand that within this space, there is a continuous, dialogical living system of feedback. However, we also perceive that this system does not always evolve, and may appear stagnant or involuted, when we compare it to what is outside the walls. This realization is aggravated when we understand that the use to which we put GL is, at the very least, neglected in both educational environments and educational artifacts. The reasons for this are innumerable and indeed some of them became the subject of research conducted during this phase.

Teaching Design I, therefore, aimed to study the use (the understanding and generation) of the most common mediators of information in the educational environment (textbooks, workbooks, the board) used by pupils and teachers, in order to understand that contents, originating from graphic design, could be useful to primary education in Brazil. The specific objectives involved exploring the legal ambience and school practices by: (1) investigating the existing parameters of educational legislation (referred to as LDBEN and PCNs), and their appropriateness to contexts, both in and outside school; (2) knowing how the PCNs are adopted into school practice with regard to constructing visual language; (3) identifying which elements of graphic design (graphic language) may constitute appropriate curricular contents for the construction of a visual culture; and (4) developing a methodology to adopt these contents in the curriculum of Brazilian primary education. The schema of Figure 3 represents a cross section of the Teaching Design I project, indicating the focus of the proposal centred on the material and symbolic artifacts that were investigated while being used, as well as the teacher's participation as originator of visual information.

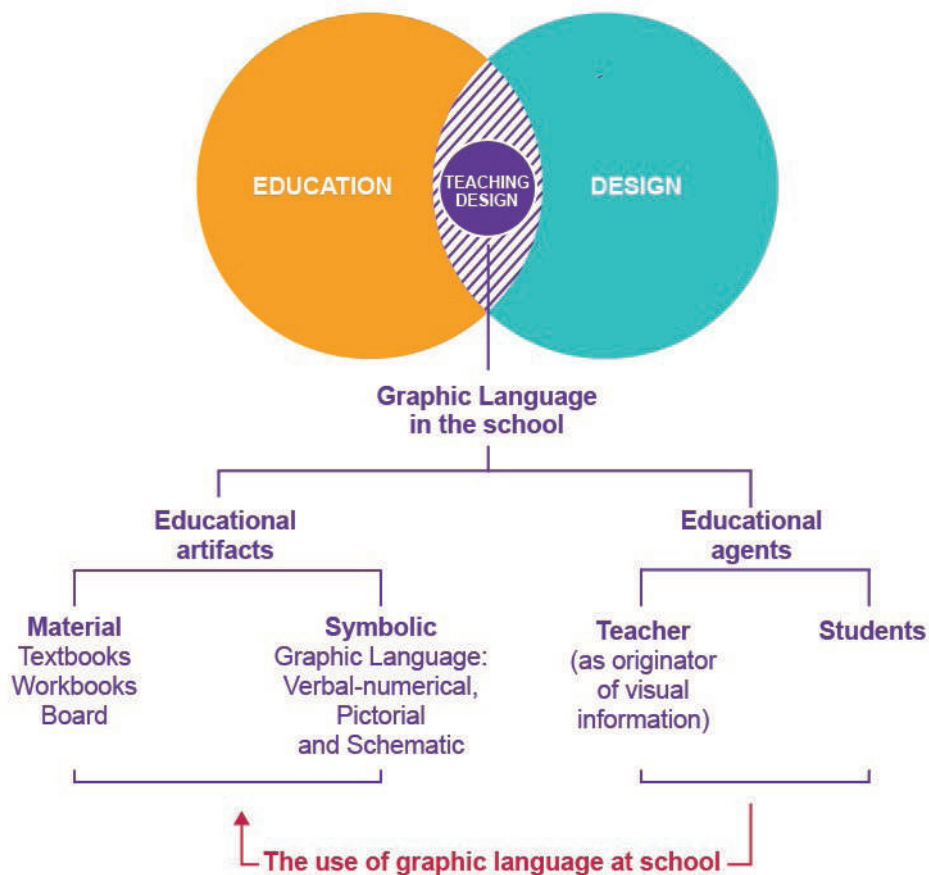


Figure 3: The study universe of Teaching Design I. (Source: the authors).

To this end, five studies were conducted, coordinated/supervised by Solange Coutinho, with the assistance of two scholarship recipients, Maria Cecília Barbosa and Bruna Andrade. The projects were:

- (1) Children’s workbooks (LIPd) – Elizabelle Costa;
- (2) Textbook Illustrations: pictorial graphic language (LGP) – Verônica Freire;
- (3) The schematic graphic language of textbooks (LGE) – José Fábio Luna da Silva;
- (4) The graphic language of ephemeral artifacts: the board (LGEf) – Renata Cadena; e,
- (5) The teacher as originator of visual information (PGIV) – Maria Teresa Lopes.

From the methodological viewpoint, the investigations adopted an eminently exploratory nature, since they sought to introduce new concepts into the primary school curriculum. As such, the approach involved transit through several areas of knowledge, and confronting policies that could integrate or obstruct the course of the investigations. Therefore, it was allied to methods derived from contemporary social and educational research. In order to undertake the search, analysis, reflection and proposal for the object of study, we adopted a qualitative approach, in order to accommodate the subjectivity of the proposed theme. This modality allowed a holistic view of the problem, which we considered a fundamental aspect of the research, since it provides the process with a dialectical character: we began the study of GL from a given problem of reality in order to attain its historical context. At this point, after becoming situated within its network of complexity – while maintaining a socially-centred viewpoint – we made a return journey, i.e., back to our starting point.

The studies included four inter-related general forms of data collection, as well as the bibliographical research, as may be observed below: (1) we experienced the teaching activities in the schools, while analysing the legislation that regulates it (LDBEN and PCNs) and examined the forms in which it was adopted within the educational environment; (2) we conducted interviews with teachers and researchers in art/education, education and design; (3) we formed a focus group with teachers, designers, illustrators and non-designers; (4) we undertook a graphic analysis and/or comprehension experiment¹², summarized in Table 1. However, for each study individual protocols were created.

Studies	(1) Teaching observation	(2) Interview	(3) Focus group	(4) Analysis/experiment
1. Children's workbooks (LIPd)				
2. Textbook Illustrations (LGP)				
3. The schematic GL of textbooks (LGE)				
4. The GL of ephemeral artifacts (LGEf)				
5. The teacher as originator of visual information (PGIV)				

Table 1: Inter-relation between the studies and data collection (Source: the authors).

¹² Digital photographic and video cameras were used to monitor the classes and focus group; as well as photocopies and digital reproduction to contextualize the artifacts (books, blackboards, student notebooks, etc.).

In the investigations where teaching observation was conducted, educational activities were monitored in eight educational institutions – two were part of the municipal public sector; two from the state sector and four from the private sector. The selection criteria were as follows: (a) located in the Metropolitan Region of Recife-PE; (b) considered a large or medium-sized institution; (c) with a target public from the middle class and the working class; and (d) offering a discipline involving art or, in the absence thereof, a similar discipline. Observations occurred according to the schedule of each study (2 to 5), giving preference to the school environment, and the selected teachers were those responsible for the subjects in each specific study. The studies took place in the school classrooms.

All the interviews were semi-structured and conducted with teachers and other participants in the school routine. In certain studies, the focus group technique was used. The focus groups occurred in a specific environment for each study, and involved teachers, art/educators, educationalists, designers, illustrators and non-designers (Studies 3 and 5). The analyses were based on the protocols of each study, mainly using as a theoretical-analytical basis: Ashwin (1979); Goldsmith (1980, 1984); Mijksenaar (1997); Twyman (1979, 1981, 1982, 1985, 2002), supplemented by literature specific to each research problem.

One of the main diagnoses obtained through the research from the Teaching Design I¹³ project is that the use of GL in the school universe is problematic and there is little diversification. One of the causes is that teachers proved unable to use the available wide-ranging configurations and symbolizations of information as a possible educational resource for creating educational artifacts that are more appropriate for the teaching/learning process.

This difficulty arises because teacher-training courses do not provide these professionals with any form of visual formation (Coutinho, 2008, 2011; Lopes, 2009). Based on the premise that teachers use graphic artifacts on a daily basis – books, notebooks, board, computer – the inability to deal with graphic language thereby affects the visual culture of the school. Thus, there are several consequences because of this limited visual repertoire, amongst which: (a) it affects formal knowledge, by not recognising that the configuration of information is part of the content; (b) it hinders the development of pupils as originators of visual messages, which is an increasingly intense need due to the automation brought about new ICT tools; (c) the formation of visual culture as a socializing entity and associable with other disciplines remains unrecognised; and (d) there is a conflict with the imagery of reality in the outside environment of school, with which pu-

¹³ Coutinho, 2011; Coutinho and Lopes 2011; Lopes, 2009; Costa and Coutinho, 2009; Cadena, 2010; Cadena et al., 2010, 2011.

pils do not therefore identify or become interested in. Although these consequences may seem insignificant in the face of the complex reality of education in Brazil, in the daily routine of school, they are influential through essential postures for the performance of educational activities, such as engagement and pleasure.

We briefly present below some of the results we obtained, based on nine diagnoses,¹⁴ and organized into subgroups of knowledge that indicate the assumed epistemology (Coutinho and Lopes, 2011; Lopes et al. 2012):

- a) There is need to train those involved in the teaching profession, such as teachers on undergraduate courses that deal with content that is relevant to information design, since this knowledge will constantly be used during their professional life;
- b) To understand graphic design as knowledge that operates when mediating the teacher/learner relationship at school, since it structures the visual messages that circulate within this universe;
- c) To formulate the problematics concerning school artifacts, determining them as material agents for mediating both learning and school behaviour through: teaching, school artifacts, teacher and pupil;
- d) To establish the rationale that teachers, amongst several other professionals, have enfolded into their social role the baseline condition of being a constructive agent in forming Brazilian visual culture, inasmuch as it is within their mimetic approach to graphic expression that pupils will consequently construct their own expressions;
- e) To denote that ephemeral graphical language, supported by the board, is the most recurrent expression of the teaching/learning relationship and of school regulation, and that ephemeral visual messages are the basic process of this graphic expression in schools.

Teaching Design I encouraged discussion regarding information design in the human behaviour/school dimension, which affects visual culture, i.e., by analysing the collective graphic behaviour of a specific social group with a broad and basic configuration within society and not involving designers: the primary school. It is important to note that this community belongs to: school coordinators and administrators; graduate teachers; educational agents; and expressly the pupils.

At the same time however, visual school culture is dynamic, and new devices are introduced and activated on a daily basis within in this environment, the most

¹⁴ Such diagnostics are presented together with the specific objectives of Teaching Design I and may be found in their entirety in Coutinho, 2011.

evident being the paradigm of adopting new technologies, the discourse of which oscillates between two poles: either attraction towards what is new, including the desire to improve practices or another concerning appropriateness and modernization, which does not consider the actors involved in education.

It is not only essential for teachers to be aware of the technological devices and their functions, but, especially of how to organize and structure information so as to achieve their position as originators of information. It was from this understanding that we formulated the Teaching Design II project, where the focus was concentrated on the formation of graduate teachers, from the perspective of information design as a tool, this time considering digital artifacts – gradually being inserted more into schools.

TEACHING DESIGN II [2012/2016]

We may infer that teachers, by appropriating knowledge on information design, are thereby susceptible to the creation of an expanding field within their training and, thus, within its visual culture. We specify those derived from verbal graphic language – typography, lettering, calligraphy; pictorial – drawing, photography, collage, comics; diagrams, maps, tables, as appointed by Teaching Design I. They make part, therefore, of contents that may assist in expanding the ways of seeing and creating messages. Allied to the intrinsic knowledge of GL, items from information design – planning, categorizing, organizing, hierarchy, forms of emphasis and visual configuration – form a set of editorial, instructional and graphical knowledge which is also a useful reference for teachers and their pupils, serving as a starting point to enhance the use of GL.

We proposed an analysis of school, based on contemporary thinking regarding the plurality of languages as a cognitive tool for establishing the teaching/learning relationship. Our premise is that we are under the aegis of technological development, which thereby leads us to understand the revolutionary role that knowledge currently plays.

In this perspective, the set of projects that constituted Teaching Design II: the introduction of information design content in the formation of teachers aimed at proposing guidelines and parameters of content and methodologies from information design (ID) for primary education in Brazil, especially the use of graphic language (GL) in digital educational artifacts by teachers. The hypothesis is that the generation of guidelines and parameters of content and methodologies from information design directed towards the formation of teachers would assist in improving the visual culture of the educational environment.

Therefore, the following specific objectives were proposed: (a) to map the

uses of the graphic language (GL) **in digital educational artifacts** as mediators of knowledge (digital board, PowerPoint, tablets); (b) to assess the weaknesses and potentialities of teachers during the process of creating and using digital mediators of knowledge; (c) to identify with designers and educationalists which information design (ID) contents and methodologies are the most useful for teacher formation; (d) to provide face-to-face (distance-learning) courses that present ID/GL content applied to digital educational artifacts for teachers and undergraduate teachers; (e) to generate the online platform of Teaching Design for: information, management and follow-up of courses, contents, methodology and evaluation; and (f) to analyse the levels of assimilation/retention of these contents in generating new information for digital educational artifacts.

In order to undertake such a proposal, eight studies were developed, under the supervision of Solange Coutinho and Teresa Lopes. However, the project also relied on the co-supervision of other researchers, who joined the project at the time it was coming into effect and through academic experiences such as monographs, dissertations and theses, and were as follows: (1) Training the eye: information design as content for teacher formation on Brazilian degree courses – Maria Teresa Lopes; (2) the initial construction of a Matrix of Contributory Methodologies for designing pedagogical practice in the classroom – Natália Cristina Pereira Barbosa and co-supervised by Teresa Lopes; (3) The development of a new proposal for generating a methodological process in line with the needs of teachers regarding the use of visual messages in teaching materials (MetDInfo) – Natália Cristina Barbosa and co-supervised by Teresa Lopes; (4) Projected Ideas course designed for graduates on the use of Digital Slide Artifacts (ADS) – Renata Cadena; (5) An analysis of graphic artifacts produced by teachers with ICT tools in primary education – Sayonara Bittencourt and Bruna Andrade, co-supervised by Renata Cadena; (6) Graphic Training: the influence of the teacher in constructing the graphic language of pupils in basic education – Renata Cadena; (7) An analysis of the use of digital educational objects (OEDs) – Gregório Baccalar; and (8) Constructing the online platform for Teaching Design – Erika Simona Ferreira, co-supervised by Teresa Lopes. The last two studies were completed at the beginning of the next project, RIDE.

The schema in Figure 4 represents a cross-section of the Teaching Design II project, indicating the focus of the proposal centred on teachers and their formation and, in grey the material and symbolic artifacts that were the target of investigation whilst being used.

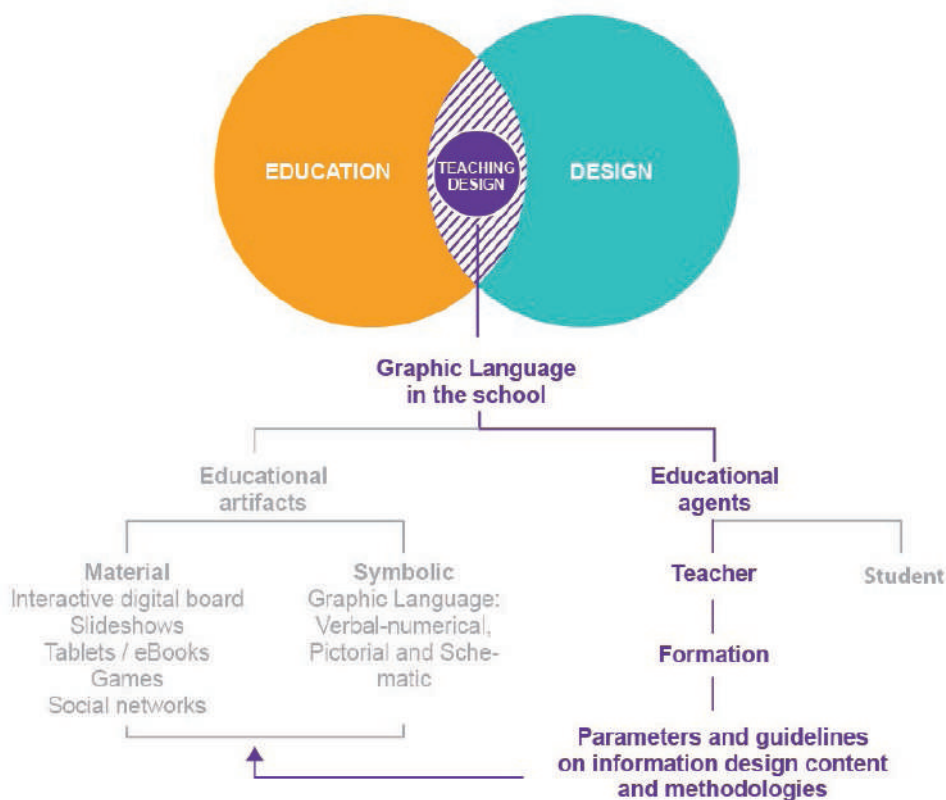


Figure 4: The universe of the study Teaching Design II. (Source: the authors).

Teaching Design I resulted in a series of diagnostics and indicated one central practical problem. In an adaptation of the schema by Booth et al. (2000), used as a methodological tool, this practical problem motivated the question for the second research, which in turn assisted in defining the problem of Teaching Design II, and in turn helped to find a possible solution, in our perspective, for creating guidelines and parameters in order to introduce ID contents and methodology into the curricular pedagogical project for graduate teachers in Brazil, expressed in Figure 5.

In order to undertake some of these possible transformations in this investigation, as with its predecessor, there was an exploratory nature, however experimental studies were also used. Thus, the approach involved transit through several areas of knowledge, also allying it to methods originating from contemporary social and educational research.

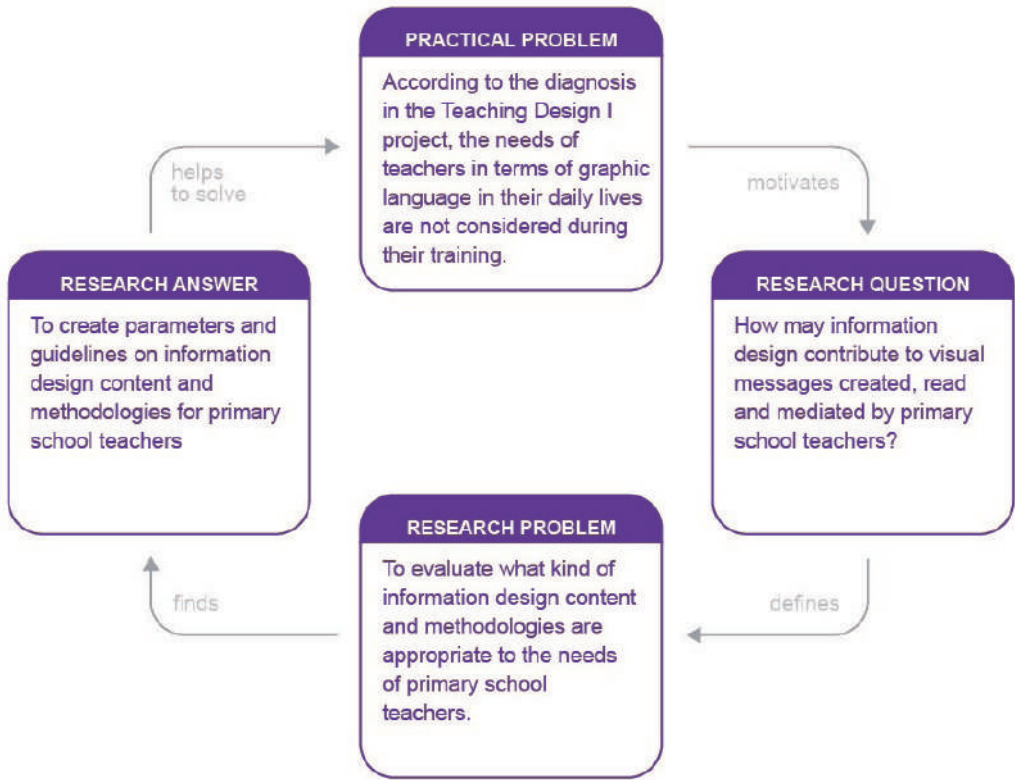


Figure 5: The Booth et al. (2000) chart applied to Teaching Design II. (Source: Coutinho, 2012).

In general terms, the research possessed a descriptive nature, located in educational practice. Five forms of general data collection were undertaken, in addition to the literature review: (1) mapping the GL activities used by teachers and undergraduates in digital educational artifacts through direct observation in the classroom; (2) analysing the process of constructing GL by non-designers through educational experiments; (3) face-to-face distance-learning courses introducing ID/GL content applied to digital educational artifacts; (4) analysing the discourse (verbal/visual) of the levels of assimilation/retention and new creations of the contents worked on during the courses; and, (5) experimental use of digital artifacts by pupils, as summarized in table 2.¹⁵

¹⁵ Digital photographic and video cameras were used to monitor the educational experiences and focus group; as well as digital reproduction to contextualize the artifacts, for each study individual protocols were established.

Studies	(1) Mapping digital GL	(2) Analysing the process	(3) Courses	(4) Analysing the discourse	(5) Experimenting
1. Training the eye through information design.					
2. Matrix of Contributory Methodologies in Design					
3. MetDInfo methodology of Infodesign for the formation of teachers					
4. Digital Slide Artifacts - ADS					
5. Graphic artifacts created by teachers with ICT					
6. Graphic Training					
7. Digital Educational Objects					
8. Online platform for Teaching Design					

Table 2: Forms of data collection from the studies. (Source: the authors).

We observed that the familiarity of teachers and undergraduates with the artifacts is a relevant factor regarding the manner with which they choose them for school practices and that, due to the unsystematic character of teacher formation in creating educational resources, these practices remain based on empirical professional experience. In order to create a formative experience, the inclusion of discussions on the design of artifacts during teacher formation courses was one way of dealing with the aspect of being a creator. This allowed teachers to become more comfortable and autonomous in performing this dimension of their professional activities, and in approaching the contemporary languages and possibilities that pupils experience and demand both in and out of school (Cadena and Coutinho, 2016).

At the same time, by means of a survey, it was possible to reinforce the need for schools to keep abreast of new graphic languages that increasingly appear in educational artifacts, and which are extremely important for ensuring that pupils assimilate content appropriately, accompanied at the same time, through technologies that conveys this diversity of visual messages, the intrinsic social changes.

Research in the field of epistemology (design and education) demonstrate the close relationship between graphic language and education in that design contents are present not only in educational artifacts, but in every school environment. We may infer therefore, that it is increasingly more necessary, ‘for teachers as mediator agents of knowledge, to have a basic understanding of this relationship thereby enabling them to pass on the contents more effectively to their pupils/students, and also to put them in contact with every visual potential that the new pedagogical resources are able to generate’ (Barbosa, 2015, p.11).

As a response, we obtained the following diagnoses from the constituent surveys of the Teaching Design II Project (Andrade et al., 2012; Lopes et al., 2012; Lopes 2014; Cadena, 2014; Barbosa, 2015; Bittencourt et al., 2015; Cadena and Coutinho, 2016), and discovered that:

- a) Teachers display a social disposition¹⁶ towards the field of design, because they recognize design not only in its visual aspects, but also as a creative process;
- b) There is a need for an approximation to occur between design as knowledge and the teacher, ‘in order to seek out an epistemological dialogue so that right from the time of their formation period, teachers may obtain an understanding of themselves as an active subject, as a communicator, developing and expanding graphic and visual thoughts’ (Lopes, 2009; p. 42);
- c) Actions are needed in the school environment to train and monitor schools with regard to technological changes related to communication and information;
- d) Design contributes to ICT training, since teachers already understand that graphic design is a decisive component in the use of these technologies, and is able to help them understand and manage the appropriate production of visual messages present in educational artifacts;
- e) Design contents must be incorporated into teacher formation on degree courses, given the success rate of the experiments with MetDInfo (Barbosa,

¹⁶ We adopt the perspective of Social Disposition from the Dispositional Theory belonging to the field of sociology that relates to the Action Theory, herein employed from the perspective of Lahire (2004).

2015) during the Design for Teachers course developed and taught by Lopes (2014), and the Projected Ideas course that examined the use of digital slide presentations by Cadena (2014).

During the concluding phase of Teaching Design II, the authors of this article formulated a number of reflections on the set of results from Teaching Design I and II, which recommended the adoption of actions that promoted the construction of a new field of knowledge, herein termed Design/Education. Further motivated by more effective actions and by the institutional internationalised relations of the Research Group in Information Design at UFPE¹⁷, they decided to create RIDE as a network, project and research group, as set out below.

RIDE – THE INTERNATIONAL DESIGN/EDUCATION NETWORK [2016/2020]

Coutinho and Lopes (2011) argue that when the fields of design and education are brought together we architect the construction of a social perspective, centred on the formulation of design principles that contribute to educational practices. Understanding teachers as active actors in the field of communication and visual expression presupposes a breakdown of certain pre-established paradigms through the role they play in society. There is a need to break with the recurrent idea of public education policies, and even certain academic epistemologies, that within the methodological universe of teachers and their practices there is a prism whose vertex is verbal language (written and spoken) through which a major part of their formation knowledge is dissipated and focused.

The required paradigm shift reflects the need to discuss design through the prism of its logic, of its actions and practices, and of its discourses¹⁸ and methods, thereby moving away from the idea of it being an educational support (as mediator), to that of being an action intrinsic to education (as agent). This debate arouses ontological and epistemological questions to the field,¹⁹ inherent to the social transformations in which design is the protagonist, whereby its largescale action

¹⁷ In 2013, Maria Teresa Lopes, participated in a sandwich doctorate course at Université Paris 1 – Pantheon Sorbonne, co-supervised by Prof. Berrnard Darras.

¹⁸ See Foucault (2013). The order of discourse: inaugural lecture at the Collège de France, on December 2nd, 1970.

¹⁹ Field, proposed by Bourdieu (2012) is a theory of sociology, which is expressed as a symbolic space, where agents determine, fight, validate and legitimize representations and negotiations based on symbolic power relations, where signs and meanings determine belongings, languages, codes and values (Bourdieu, 2012, p. 9).

is an intervention within our material and symbolic culture.

In order to structure RIDE, we have looked to the emancipatory actions of the field of education and to the discourses, practices, actions and methods brought by the field of design. Thus, the network is based on two fundamentals from the field of design/education: (1) formation [or actions of formation], and (2) the production of educational devices. Linked to these fundamentals, the network will also contain four dimensions²⁰: (a) discourse; (b) agents; (c) agencement; (d) setting.

In the system of meanings that RIDE assumes, we have adopted the term ‘device’, in accordance with the cumulative dimension cited by Lopes (2014, p. 286) in which a device is discourse (from Foucault’s perspective) as well as action and intentionality (from Argamben’s perspective) while it also remains an artifact (from Darras’ perspective). In other words, an educational device presupposes the existence of a given artifact, which in turn is formulated with a certain intention, onto which a discourse has been constructed.

Implicit in the field of design/education, as a **practical problem** of the research, is the practice of the information agencements in the Brazilian education environment, which thereby motivates the **research question**, “how do agencements in the field of design/education contribute to the Brazilian education environment?” From this question, the **research problem** is formulated and constitutes the very definition of the field of design/education, from the actions of formation and the production of educational devices. The aim, therefore, is to propose the creation of RIDE in order to discuss and suggest **responses** to the challenges posed within the scenario of formation in design. This methodological tool – the adapted schema by Booth et al. (2000) is presented in Figure 6.

²⁰ The term ‘discourse’ is attributed to the intellectual synthesis linking speech and thought; ‘agent’ presupposes an action in the field of design/education (DE); ‘agency’ refers to actions, events, phenomena, in the same field; ‘setting’ is understood as visual and object landscapes.

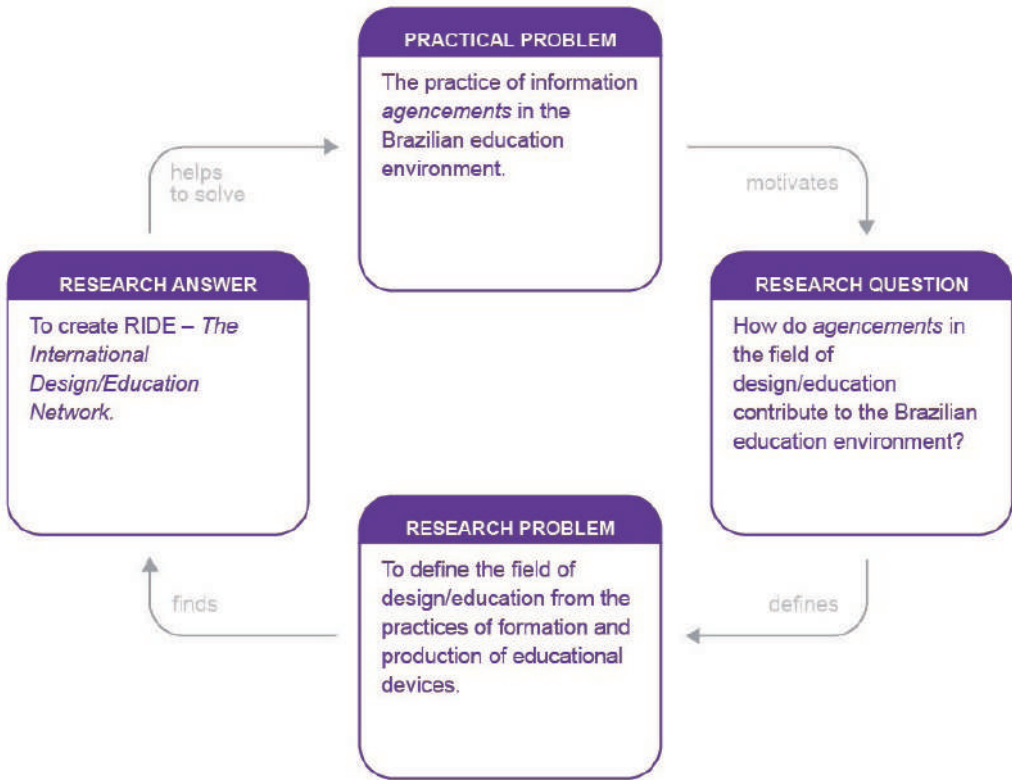


Figure 6: Chart proposed by Booth et al. (2000) applied to RIDE (Source: Coutinho et al. 2016).

At the intersection of the RIDE network, there are certain specificities, inherent to their respective questions of practical and/or theoretical research, founded upon three grid axes of fundamentals, and consisting of fourteen actions/projects.

The first axis focuses on the fundamentals of formative action, amongst which are included the following actions/projects: (1) Teaching Design [TD], aimed at generating guidelines and parameters in information design (ID) for the formation of primary school teachers in Brazil; (2) the formation of non-specialists²¹ [FNS], consisting of formative actions for non-designers, through training the eye with the support of design content and logic; (3) Agents of Innovation [AI], which outlines the fundamental characteristics that enable teachers as agents

²¹ Non-specialists', in the area of research, are those professionals who are not designers.

of innovation and design as knowledge capable of potentializing these qualities; and (4) the Model School [MS], in which the non-linear and innovative pedagogical models of training pupils will be investigated, discussing school-society-technology incompatibility and, as a consequence, in Illich's (1976) perspective, the process of institutionalization across the world.

The second axis presents projects involving the fundamentals of educational devices: (1) Heuristics and Methodologies [HandM], containing as studies, the question of the imagery and verbal efficiency of information in educational devices proposing new methodological paths, whilst at the same developing heuristics for their production by specialists for primary education; (2) Digital Educational Objects (DEOs) (already completed), also recognized as Learning Objects [LO], aiming to evaluate the impact on the performance of high school students using these objects in devices such as hyperbooks versus those using the printed book. These two studies evaluated the reception or the agencements of these devices by users; and (3) ReDE (Device), this action involved creating the International Design/Education Network environment to support all the actions of the researchers as well as facilitating the actions of training and the production of educational devices (graphic project already executed, but remains offline, in the testing phase).

Finally, those projects that aim to discuss the fundamentals of formation associated with those of educational devices so that they may collaborate to modify the institutionalized logic of agents that produce a broad typology of educational devices – teachers, coordinators, school administrators, designers, illustrators, content writers, designers, to name a few. To that end, four activities are in progress: (1) Formation with Devices [FwD], forming new modes of formation for teachers through educational devices based on design actions; (2) A convivial viewpoint [CV], in which information design has been discussed as a convivial learning tool, starting with the philosophy of Ivan Illich; (3) The RIDE paradigm, which aims to establish the international network, solidify the field of design/education, while at the same time, intending to formulate the new paradigm of design as a support for design as a transforming and emancipatory action of agents, environment, discourse and educational agencements; and (4) recently included in this network is the formation of specialists [FS], i.e., graphic language content, such as drawing, typography and calligraphy for design students.

Therefore, the object of study are the actions of formation and educational devices for specialists and non-specialists in design/education. In order to achieve its general objective, the following specific objectives were formulated: (1) to define the relationship between design and education in the field of design; (2) to map actions and key actors in the relationship between design and education; (3) to propose guidelines for formation in Design/Education; (4) to propose guideli-

nes for the production of educational devices; (5) to provide formation for specialists and non-specialists in Design/Education (Figure 7).

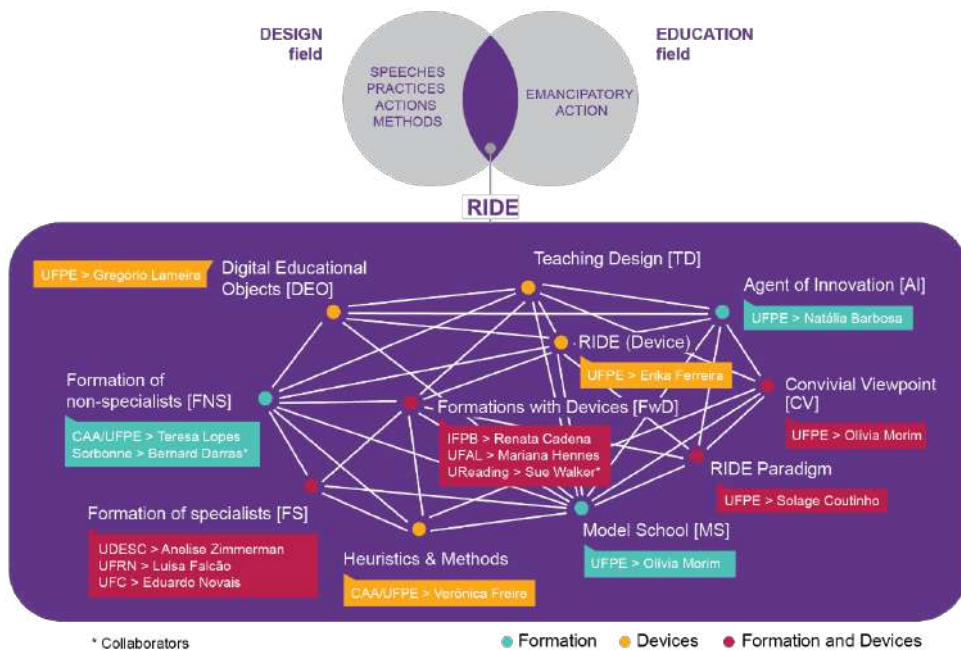


Figure 7: The structure of RIDE. An intersection between the fields of design and education representing the action/projects that are/will be developed as a chain, comprising three large grid axes of fundamentals: Formation; Devices; and Formation and Devices. (Source: the authors).

In this respect, the network metaphors have served to describe a series of phenomena or relations of reality. They have become a new social morphology of our societies and the diffusion of their logic has substantially modified the operation and the results of the processes of production, experience, power and culture (Rossetti-Ferreira, et al., 2008; p.152). For RIDE, the definition that has most contributed to our network concept, from the perspective of the Network of Meanings, is defined by the authors, as:

There is a dialogue between the network and the theoretical and methodological references that support the systemic, complex and interdependent nature of the processes under investigation. Referring to human development with the use of this dialogue signifies incorporating, into the research, a viewpoint that contemplates otherness and that always considers its character situated in historical-cultural contexts (Rossetti-Ferreira, et al., 2008; p.150).

Therefore, the transformation of Teaching Design into RIDE (Design/Education) signifies an update in its methodological process by considering the social complexity of our contemporaneity and of the new social dispositions for implicit learning. In this perspective, the importance of the network metaphor lies in the 'idea of interlacing relationships, in the multiplicity of interconnecting threads in multidimensional combinations' (Rossetti-Ferreira, et al., 2008; p.152).

Thus, the projects and researchers that integrate RIDE – linked by values, objectives and fields of common meanings – do not develop in isolation, they are always interrelated and with collaborative practices, functioning as supports that guarantee the integrity of the whole. Each study has its own space of experience, outreaches and agencements of symbolic power and thereby through the process of exchanging knowledge establishes the design/education field of action as reality.

Here, it should be emphasized that the information flow within RIDE with which it becomes a field of academic knowledge as well as its pragmatic measure, provide a free and equal performance for all its members, thereby organising equal proportions of responsible, collaborative research. Its operation is in a state of centrifugal expansion (where each member is a nucleus of individual knowledge), which in turn demands greater effort from the associated researchers. This radial relationship evokes an open system in a state of equilibrium, providing a dynamic environment in which innovation may flow, design may act and where the outreach of RIDE is glocal.

Due to the diversity of projects, data collection will take place through various procedures, supported by qualitative, quantitative and qualitative-quantitative analyses (Table 3). Thus, RIDE will function as an incubator of academic projects supported by the UFPE, where its researchers have the opportunity to develop their studies helped by the interaction of a network of professionals and their respective knowledge, as well as investments in technology and physical structure. Thus, the incubated research studies will have a greater opportunity to grow and expand, especially in the initial phases, where there is generally a need for greater supervision. However, these projects, even after being completed and/or matured, would continue to be part of RIDE, by archiving and transmitting the knowledge developed by their researchers, thus acting as a form of support for future projects. Each of the dimensions (discourse, agents, environment and agencements) will be the object of specific studies, each with their own objectives, but based on the same paradigm, constituting the creation of RIDE – the International Design/Education Network.

Responsible	Fundamentals	Dimensions	Approaches		Subject
			Qual.	Quant.	
Solange Coutinho	Formation/ Device	Agencement			[TD] Teaching Design
Teresa Lopes	Formation	Discourse			[FNS] Formation of non-specialists
Natália Barbosa	Formation	Agents			[AI] Agents of Innovation
Olívia Morim	Formation	Environment			[MS] Model School
Verônica Freire	Device	Agencement			[HandM] Heuristics and Methodologies
Gregório Bacelar	Device	Agencement			[DEO] Digital Educational Objects
Erika Simona	Device	Agencement			[REDE] D/E Device Network
Olívia Morim	Formation/ Device	Environment			[CV] Convivial Viewpoint
Renata Cadena	Formation/ Device	Agencement			[FwD] Formation with Devices
Mariana Hennes	Formation/ Device	Agencement			[FwD] Formation with Devices
Solange Coutinho	Formation/ Device	Agencement			[RIDE] International D/E Network
Anelise Zimmerman	Formation/ Device	Agencement			[FD] Formation > drawing
Eduardo Novais	Formation/ Device	Agencement			[FC] Formation > calligraphy
Luiza Falcão	Formation/ Device	Agents			[FT] Formation Model > typography

Table 3: The correlation between the ten studies connected to RIDE, those responsible for each, the guiding fundamentals, and dimension of action, research approaches and subjects treated. (Source: the authors).

The expected results we would propose are: (1) to establish the Design/Education field; (2) to generate the network device for linking the agents and contents produced; (3) to consolidate the Design/Education network; (4) to hold the first Design/Education conference; (5) to hold the first international Design/Education event; (6) to encourage the involvement of visiting teachers; (7) to encourage the mission of researchers to other countries [events/studies]; (8) to produce international publications; and, (9) to create the Brazilian Society of Design/Education.

SOME PRELIMINARY CONSIDERATIONS

With the main aim of aiding the construction of an educational environment conducive to stimulating and developing the cognitive potentialities that a visual channel (Twyman 1979, 2002) incites, the intention of RIDE, through the action of design, is to stimulate the relationship that it develops with graphic expressions of language, either images, texts or schemas, and the various levels of associated visual perception, thereby providing the potential for “training the eye”, as proposed by Lopes (2014).

The concept of Training the Eye through design, as proposed by the author, offers a new way of perceiving the world to those who participate in this process, where the focus is on the visual discourse of the devices that organize their world. The objective is to help them understand and use the marks of meaning presented in the appearance of objects, in their subjective, objective, and contextual discourse, the purpose of which is to create a graded description of the distinctive expressions of this object, both in itself and in relation to others, so that it may thereby educate itself and others. It involves isolating the nucleus that individualizes this manner of formation depending on a particular group, which, in this case would be information design. This nucleus has the purpose of displacing the manner of formation, hitherto subject to the reality of graphic communication, and moves it into the field of symbolic power for the dimension of the individual, i.e., emancipation through developing the skills and abilities to author the production of devices (in this case, educational) and the possession of visual discourse that removes it from a position of submission thanks to a certain degree, to the field of design. However, it is important to note that we understand that information design exists at school, and that teachers do in fact make use of the graphic language dimension, although they do not recognise it as such.

Lopes (2014) believes that the term discourse is attributed to the intellectual synthesis between speech and thought, which compromises the act of creating with the cultural values of the individual who utters it, and yet made visible mainly through the abilities of those handling the fundamentals of graphic language. She also adds that Training the Eye aims to assist this individual in minimizing

the problematics that occur between the discourse of speech and the discourse of graphic representation, with special focus on the educational environment.

Linked to this understanding, in order to broaden the basis of an educational episteme, we have adopted presuppositions from psychology, where the guiding principle will be the social interactionist theory of Lev Vygotsky (2009), from which we will initially focus on one important concept: symbolic mediation, i.e., the understanding that human beings relate to society through the intermediation proposed by signs, starting from the assertion that man deals with his daily tasks through the use of instruments. Therefore, the concept of symbolic mediation is based on the fact that currently, producer/consumer agents of information use instruments that have been produced through a process involving thoughts on design.

The roles of the student, the teacher, the educational administrators, and the definition of knowledge itself are being reconsidered, in that as portable visual devices, and expressly in the way they are used – both through software and social networks – they have invaded traditional educational spaces, offering new cognitive possibilities. This does not only concern new devices, but also new forms related to knowledge and, therefore, new forms for creating interdisciplinary projects, besides new modalities of education mediated by technology.

Our concern is centred on the use that is made of the language/information generated in educational devices, both the traditional and the new.

We take as examples the investigations conducted by Cadena (2010) and Bittencourt et al. (2015), focused on the use of graphic language (GL) on both the board and the digital board. Cadena (*op. cit.*) assessed the use of GL on the board, termed Ephemeral Graphic Language (EGL), which enabled her to monitor visual messages produced by primary school teachers. Although these compositions are widely used during classes, teachers have been hesitant in diversifying their content, both form and function, often insisting on the use of ineffective models and on less reflective, mechanical activities.

The aim of Bittencourt et al. (2015), in turn, was to investigate whether teachers used the same GL and the same functions with both the digital board and the traditional board. The investigation was undertaken in both public and private schools in the city of Recife. However, it was verified that although the digital board is a technological apparatus with great potential for institutions, it is relatively underused in the Metropolitan Region of Recife due to the budgetary confines involved in its acquisition, technical training and maintenance. In both public and private schools, the structural apparatus was a factor that strongly influenced the relationship of teachers with the device, discouraging them from using it. Associated to this, despite their formation, it was observed that teachers

generally use those software to which they are most accustomed in order to produce classroom content. Thus, the interactive aspect of the digital board, which is the main differential in relation to slide projection and the traditional board, becomes lost.

Through the given arguments, it may be surmised that the problem is not centred on the objects or the technologies, but rather on the lack of basic knowledge or information regarding the practice of teaching, together with those originating from the field of design. Thus, discounting any idealized view of everyday school life – since we recognize that teachers have to deal with various difficulties, such as lack of time, resources and motivation to carry out their pedagogical activities – we may state, however, that the two studies stand as an example of how the available classroom resources are extremely underused.

It is a fact that society is rapidly migrating from a cognitive relationship polarized in text and speech to one that is more varied, in which the image is naturally incorporated as a constructive entity of communication, information and instruction for learning. For this, it is important to discuss the formation process, which includes, for example, the dimension of design, drawing and cinema, according to a classification that specifies the types of knowledge that people may move towards, compelled by a continuous formation system, so that education does not just become an exclusive process. It should rather be a contemporary process of constructing forms of knowledge that indeed act towards formation and transformation, thus enabling people to become part the complexity and plurality that shapes the spirit of the postmodern contemporary subject.

With the course that our work has taken so far, we have sought to provide a brief overview of the context of RIDE, based on the research that preceded it; its objectives; its justification for the area of design; some preliminary concepts and the philosophical and intellectual conditions it has taken on. The outline of this scenario is of importance to the argument that design, as a field of theoretical and practical narratives, may contribute to contemporary learning, acting as an intrinsic intellectual activity for educational devices and in the formation of non-specialists in the field, thereby promoting improvement in the mediation of knowledge, increasingly more specific and at the same time more complex.

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Reading images for telling narratives

an analysis of the Discursive Operations made with a story-telling game

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INTRODUCTION

Initiatives that inspire the development of children's language skills appear more and more these days. Within the schooling systems these skills may be conceived as a System of Language Acquisition Activity.

At an institutional level, we may name the Programa Manuel Bandeira de Formação de Leitores (PMBFL) of Recife, PE, as one of these initiatives. The PMBFL has selected stories, which were made and illustrated by students, to be published through its editorial line. There is also the project Nas Ondas da Leitura that is part of the Recife Literacy Program (ProLer). The Program offers all the pedagogical support to stimulate the engagement on reading and writing activities, having also a line that publishes students' best stories.

According to the Ministry of Education of Brasil, MEC, in the early years of Elementary School the child develops the capacity for representation. This is viewed as indispensable for learning to read, grasping basic mathematical concepts and understanding the reality that surrounds her/himself. This kind of knowledge is therefore assumed as postulates for this period of schooling. Indeed, the development of language allows the child to reconstruct her/his actions by memory and to describe them. It also makes possible to plan actions. All necessary skills to the level of learning expected for this age.

It is in this context that the research Atividades de Leitura nas Escolas (Reading Activities at Schools) appears. The objective of the research team had been originally set as to map the systems of reading activities at school and is currently pursuing the development of artifacts and protocols to contribute to the writing of fiction narratives at the Elementary School. Considering the school context as a complex environment, which is affected by several social factors, it was decided to use analytical instruments that might inform about both design requirements and usability levels. The Activity Theory (AT) (Leont'el, 1981; Engeström, 1987)

was chosen as such a methodological instrument. The AT is based on Vygotsky's Sociocultural Psychology principles and has been used in the Design field for the past 25 years or so, mainly in the HCI field. AT suggests that, among others things, understanding the system of activities in which an artifact will be later introduced is fundamental for the correct establishment of the design requirements.

Initially, the research selected 3 public municipal schools and identified the Reading Activity Systems in groups of different ages. In this way, the components of these systems – such as the subjects, the main artifacts used, the objectives driving the activity, the rules governing it and the division of labor among the subjects – were identified. At that early stage of the research, the greatest insight came on realizing the real objective of the Reading Activity within the schooling system. Instead of students practicing to read children's books on their own, having the book as a central artifact, we found a set of pedagogical actions happening around those books. Teachers conceived their reading activities as a starting point to develop a set of pedagogical actions aiming specific outcomes. Nothing more according to the theory since at an AT perspective the human actions are not directed to the artifact itself but to the objective associated with its use.

The second required conclusion was that other activities of language acquisition have few or none supporting artifacts, contrasting with the fair amount of titles of children's books for reading. In fact, it was noticed a lack of pedagogical tools for language skills such as fictional writing. This reality suggested the opportunity to research and act in the Writing Activity Systems instead of what was initially designed. The research team, then, designed a game board and a deck of cards for fictional writing and used it to produce children's books written and illustrated by the own students. The game is very simple, consisting of a board figuring 12 sequential places and a deck of 46 cards representing characters, objects, scenarios and actions.

On this article we extended the text published in the Proceedings of the 8th International Information Design Congress (CIDI 2017), adding new information collected after its submission to the event. In addition, there is also a more detailed description of the design process of the board game and the deck of cards. Finally, an analysis of the sentences created by the children while interpreting the images of the cards was performed, resulting in 4 discursive operations proposed.

INFORMATION DESIGN (ID) AND EDUCATION

Currently, in a World overwhelmed by data and all kind of information, there is a need for organization and orientation in order to the messages to be understandable and well used by people. On the education arena it is sometimes

crucial. The configuration of a pedagogical artifact has impacts on the way it is perceived, managed and interacted, facilitating or obstructing the achievement of learning outcomes. This is part of the task the field of Information Design has when dealing with the school environment.

Bonsiepe (2011) sustains that the Information Design is based on the concepts of data, information and knowledge, where the primary data (raw data), the elaborated data (information) and the validated information (knowledge) exist. According to the author, in order to transform data into knowledge, the information must be well structured to be understood by the users who share its meaning. However, one may argue that simply decoding the information does not lead necessarily to knowledge as defined by Bonsiepe. In order to occur this transformation, users need to interpret the information and make use of it. In other words, when aiming to achieve certain goals, users need to turn information into actions. Therefore, the way information is designed may be crucial because its configuration interferes in the way information is perceived and interpreted, allowing or hindering a more efficient action and consequently satisfying or not a need.

The same author also states that in the future ID can become an important and autonomous field, especially since it is also connected to education. Along this trend, Coutinho and Lopes (2011) discuss two aspects: the first regards the Design's main concern of solving problems applied to mediating learning artifacts; while the second refers to its epistemological and methodological conception as a way of knowing, deeply related to the individuals development process.

These issues suggest the relevance of studying the role of ID within the educational context, enhancing the relation between information designers and educators. Among several examples of an interesting use of information design as a mediating learning artifact inside the educational context we may point out one observed by the research team in the J.P.G. Municipal School, in Recife, Brazil. The teacher have just read the book "The Little King and the Royal Park" along with the students, holding the book on her hands. The book deals with the importance of respecting the differences between people and also about real and fake feelings, issues that the teacher explored with the class while reading. At the end, she handed out small paper crowns set as bracelets around their arms and sent them back to their classrooms. With this simple device, produced by whatever means she had, she increased the chances of getting the children to retell the story whenever someone asked them why they were wearing a crown as a bracelet in their fists.



Figure 1: The book *The Little King and the Royal Park* and the crown bracelet produced by the teacher (research documentation archives).

THE NARRATIVES PROCESS

People are always telling stories and to do so they use the language as an instrument to communicate with each other, to express themselves or to report information.

Eisner (2005) states that all stories are an account of events specifically arranged in a way to be told. Every story has a structure. They have a beginning, an end, and a line of events placed under a structure that holds them together. It is not important if the story is told through texts, movies or comics. The story may suffer variations in the way it is told, but the basic structure serves as a guide, providing certain control. Although they may vary in many details, the basic principles of a narrative are often the same, whether it is told orally or visually.

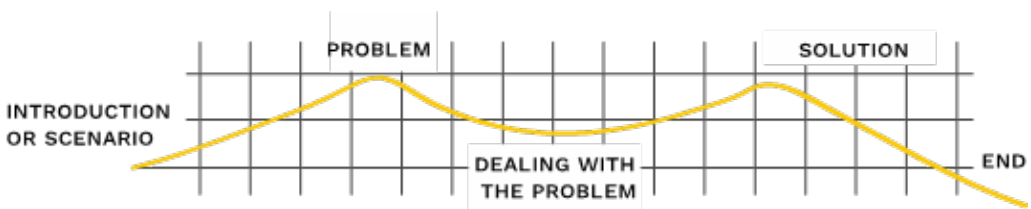


Figure 2: Structure of a story (Adapted Eisner, 2005).

Still according to Eisner (2005), there are different ways for telling stories, but fundamentally only two exist: by words (oral or written) and by images, which are often used in combination. It is likely to mentally visualize images when reading and it is also common to produce texts from contemplating images, creating a cognitive circuit that cannot absolutely separate these experiences (Gamba, 2013).

These basic elements of a narrative are often present in a variety of artifacts and situations. They may be found in Movies, TV Series, Picture Books, Comic Books or even in Analogical or Digital Games, where the user acts as narrator by “controlling the history”.

ACTIVITY THEORY (AT)

The Activity Theory (AT) has roots dating back to the eighteenth and nineteenth centuries, although nowadays the most discussed version comes from the soviet historical-cultural psychology founded by Vygotsky and carried out by his followers Leont’ev and Luria (Kuutti, 1996). AT itself is not a methodology. Kuutti (1996) states that it is a philosophical framework that serves to study different forms of human praxis as a process of development, considering individual and social levels as interconnected.

Building on the ideas of Leont’ev about human activities and based on Wertsch (1981), Kaptelinin and Nardi (2006) have proposed these basic principles: (1) object orientation, that is, subjects interact with artifacts (tangible or not) in order to satisfy their needs; (2) activity hierarchical structure, which assumes that the Activity is formed by Actions that, in turn, is formed by Operations. The Activity is linked to a Motive, the Actions to the Achievement of Goals, and the Operations to the Conditions; (3) mediation, that is, the need that orients subjects toward the object of activity is satisfied through mediating artifacts that may be material (hammers, knives, etc.) or immaterial tools (concepts, ideas, etc.); (4) internalization and externalization, in the first process, subjects appropriate information and in the second, produce information; (5) development, because to understand how the object of the activity has being transformed through time contributes to understand its current state.

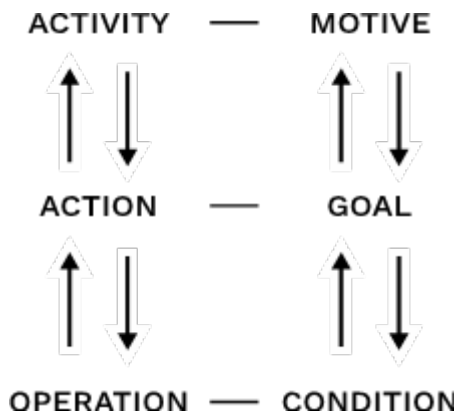


Figure 3: Activity Hierarchical Structure (Adapted Kuutti, 1996).

The relationship between the subject and the object of the activity is not that simple because human activity is not a sole individual outcome. It is surrounded by a social superstructure that gives it meaning and purpose. Most activity involve different artifacts made in so many other activities that make it practically impossible to cover every detail. Human activity always occurs within a community, driven by a certain division of labor and by certain rules (Engeström, 1987).

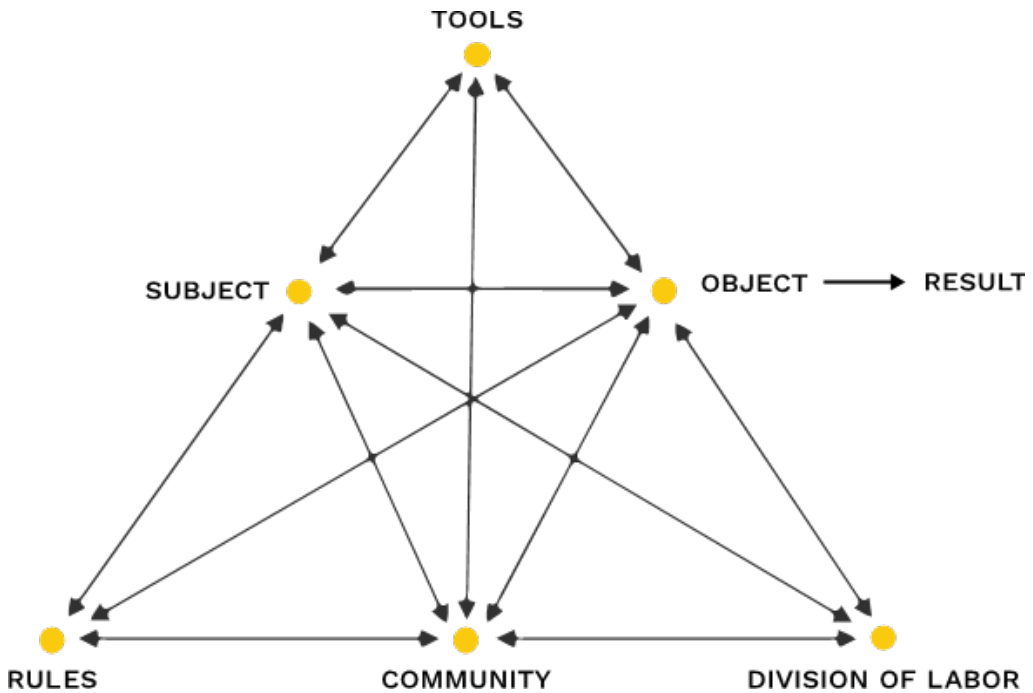


Figure 4: Engeström Activity System (Adapted Engeström, 1987).

Thus, in addition to the subject and the object, a third main component is added: the community (which shares a common object). Then, two new relationships are formed: subject and community and community and object (Kuutti, 1996). The relationship between subject and object is mediated by the tools, the relationship between subject and community is mediated by social rules and the relationship between object and community is mediated by the division of labor. A tool (both material and immaterial) can be anything used in pursuing the object. The rules may be explicit or implicit and cover norms, conventions and social relations within the community. The division of labor refers to the implicit or explicit organization of the group in the process of transforming the object into result (Kuutti, 1996).

THE STUDY: METHODOLOGY, GAME DESIGN, ANALYSIS AND RESULTS

Methodology

This study was conducted at J.P.G. Municipal School, an elementary public school located in Recife, Brasil, during 3 phases. In the first one, during the first semester of 2016, 9 students took part. In the following semester of 2016 a second one took place with the first 9 students plus 3 new ones. All the students were enrolled in the 5th school year, which age group within the system is of 11 years old.

The third phase occurred in the first semester of 2017 with another group of participants. These include 1 teacher and 20 students of the 4th school year, which age group is of 10 years old. During all 3 phases, the school librarian, who was responsible for several Reading Activities at that school and actually introduced us to the children, was present and helped in addressing to them. The study consisted in the use of an artifact for creating fictional narratives (a board game and a deck of cards) followed by a workshop to illustrate the stories made. After that, the stories were published as children's books. At each phase there were small modifications in the protocol that will be described later. Observations and semi-structured interviews were performed after each study and the stories analyzed.

The data were analyzed based on Leont'ev's (1981) Activity Theory, focusing on the principle of Hierarchical Structure of Activity in order to understand the motive drawing the activity, the goals each action pursues and the conditions in which the subjects performed the operations. The data was also analyzed through the Engeström's Diagram (Engeström, 1987), which extends the activity to a collective context, making it possible to relate and discuss each component of an activity system.

The game design

The Board

The game board is very simple, consisting of 2 A3 papers printed in a solid background color, figuring 12 numbered places linked by a path that goes up to bottom. The first version of this board was created in 4 colors: green, red, blue and yellow, with the purpose of making it easy to identify the different groups of students and their stories. Because of managing a large number of students seemed unwise it was decided that 6 people should use each board at most. The numbered places on the board's path as well as the path itself serve to indicate the

sequence and flow of the story.

Each one of the 12 places on the board will represent an event within the story. Therefore, it is likely to be turned into a scene of the book. The number of 12 places was established then, thinking on how many pages the printing resources and the research budget would permit.



Figure 5: Game prototype being tested by the researchers.

The mechanic is as follows: each player lays down a card chosen from the deck on the next free numbered place and tells a passage of the story, relating it to the card; the next player must do the same, continuing the story already started. At the end, a story is created collectively.

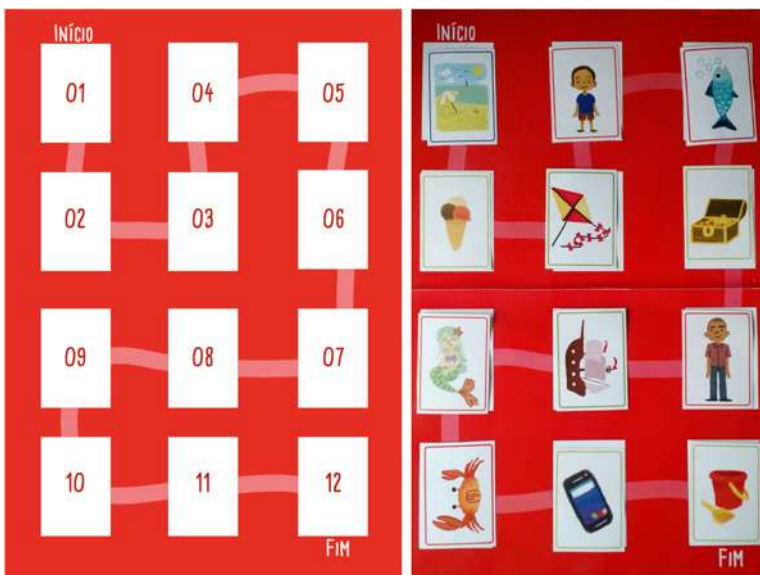


Figure 6: Board's first version design (left) and board with the applied cards (right)
After the first phase, the board was redesigned because some students, and

even the librarian, mistook the flow of the story when reading the scenes. It was probably because the path did not always represent the flow from left to right. In an age that all are being trained on reading Portuguese it was not a exactly a surprise. In addition, the places were all in rectangular shapes and laid out vertically while some of the cards were better arranged in the horizontal orientation. In the second version of the board the places were drawn as circles to indicate where the card should be inserted, regardless being vertical or horizontal oriented. The reading flow of the path has also been adjusted, but it did not yet fully comprise the traditional Western reading system, and can still be improved.

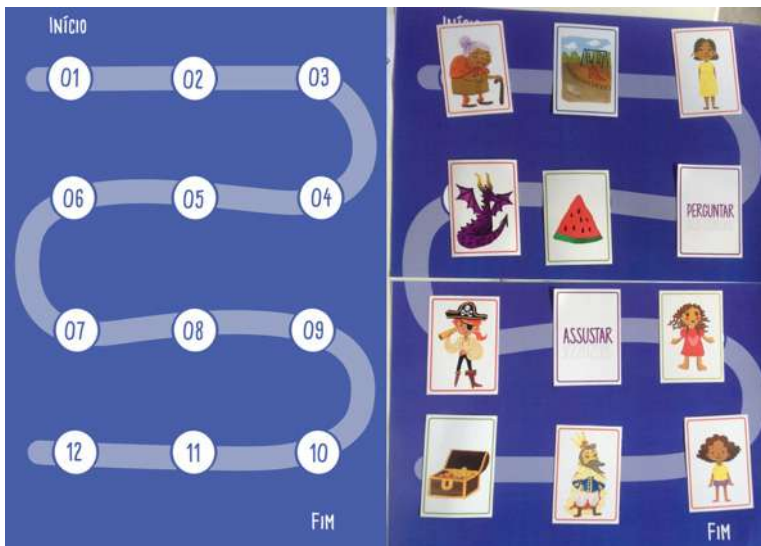


Figure 7: Board's second version design (left) and board with the applied cards (right).

The Deck of Cards

According to Reis and Lopes (1988) to analyze a narrative structure, at the story plane, one must consider the actions, the characters, the locations and their interdependence relations. One must also take into account their specific structural weight for the narrative (the decisive actions for the intrigue flow, the subsidiary actions of an indicial nature, the distinction between the main characters, the minor characters and the extras, the connections between characters and locations, etc.).

Gancho (2002) corroborates with Reis and Lopes' view of the narrative structure and adds two new elements, which according to her are essential for

creating a story. She basically states that without events (actions) one cannot tell a story, pointing out that the characters are the ones who live these events, in times and determined locations. Finally, she preconizes that the presence of a narrator is necessary – a fundamental element to the narrative – because it is who transmits the story, mediating the relationship between the narrative and the listener, reader or viewer (Gancho, 2002).

The common categories of narrative structure between these authors are “event/action”, “character” and “location”. They suggest that in any kind of story “something happens to someone, somewhere”. There is still the role of objects as a fundamental element to concretize the subject’s actions. Kaptelinin and Nardi (2006) based on Leont’ev’s ideas, say that the interaction of the subject with the world is structured and organized around objects, which have attached to them an objective purpose and a potential to satisfy human needs given that the subject acts in accordance. Objects may be tangible (like a bull’s eye on a target) or intangible things (like “I want to be a brain surgeon”).

Considering all those elements that may compose narratives or are related to them, a deck of 46 cards was developed. This deck contains 20 figures of characters, 04 of scenarios, 16 of objects and 06 verbs. The 2 others elements of Gancho (2002) are satisfied by the players that take in turn the role of narrating a story and realize its time. In our case, aiming to produce children’s literature, the fantastic background attempted to grasp in the cards may set time at some undefined point.

The design of the cards was elaborated based on 2 strategies. Initially, a collective structured interview was conducted aiming at a better understanding of personal interests of each child in regard to hobbies, activities and wishes. Table 1 shows the questions made and the answers quantified by the number of occurrence:

What do you like to play? (Playfulness)		What did you do on your last vacation? (Concrete fact)		What would you like to get for Christmas or a birthday gift? (Wish)	
Hide and seek	3	Watch Television	2	Smartphone (6 mentioned the smartphone Moto G 3rd generation)	9
Bike	1	Go to the beach	7	Tablet	2
Kite	1	Amusement park	1	Skate	1
Soccer	8	Play with ball	1	Video game	3
Tag	3	Travel	1	Notebook	1
		Go for a walk	1	Doll	1
				Bike	1

Table 1: Mapping of the student interests.

The data show live games and outdoor activities most frequently mentioned. Terms such as “football”, “tag”, “hide and seek” and “beach” are found in all 3 types of questions. On the other hand, technological artifacts were mostly remembered on the wish list. Artifacts such as “tablets”, “video games” and “smartphones” seem to be of great importance as objects of desire.

After that, another survey was made about the themes and graphic styles of the most requested books from the school library. The themes and the number of times a book in that category was borrowed is shown in Table 2 below:

Book themes	Amount
Animal	16
Fantasy	10
Environment	04
Body parts	02
Celebrities (ex: Ronaldinho Gaúcho)	06
Romance	02
Routine situations	03
Sport	01
Toys	01
Religion	01
Regional	01
Music	01
Transportation	01

Table 2: The themes and their frequency identified among the most requested library books.

The data displays a noticeable predominance of “animals” and “fantasy” themes. In several of these children’s books, the animal is considered the main character, sometimes associated with human characteristics and humanmade environments. An example is shown on the figure 8, in which the main character is a fox that steals the chickens and goes to typical human environments, like living rooms with fireplaces.



Figure 8: Record of the book “The thief of chickens” by Béatrice Rodrigues. Book of the PNBE 2014 collection.

The design of the cards and their color palette was also conceived taking into account the analyzed books. The design of illustrations is intentionally childish and the palette contemplates several vibrant colors, providing a playful aspect to the deck of cards. In addition to the 46 original cards, another one illustrating a microphone was latter introduced aiming at organizing the turn-taking, suggesting that only the player that holds the card may speak.



Figure 9: Complete deck of cards: characters (red outline), objects (green outline), scenarios (blue outline) and actions (purple outline).

Since the stories were orally told, transcription sheets were designed to record them. During the first and second phases of the study, a research member mediated the activity on each group, including writing the stories down to the transcription sheets. However, at the third phase, children became the writers, making thus the activity autonomous, eliminating the researcher’s active role as an editor. This however, raised an issue of better designing these transcription

sheets, making them more suitable for this type of user. One of the possibilities is to consider in what type of papers students use to write down their school activities.

Figure 10: Examples of the transcription sheet used to record the narrative.

The board game in the educational context

The data collected in the first phase refer to two groups of players: yellow and red groups. The yellow group created the story “The lost girl in the forest” and the red group created the story “A wonderful day at the beach”.

In the second phase the data refer to another two groups: red and blue. The red group created the story “The Adventures of Arthur” and the blue group created the story “The Witch in Disguise”. Once again, both the first and second phases were performed with the 5th year classmates of the JPGMS.

The most significant differences between the first and second phases are the introduction of an initial round for testing the game and the addition of the 6 verbs cards, adding the action category to the deck. The purpose of these changes was to make the narrative more structured and dynamic.

The data of the third phase of the study refer to the 3 groups: yellow, green and red. The yellow group created the story “The Children and the Fairy”, the green group created the story “The discovery of a book” and the red group created the story “The Best Mother’s Day”.

At the third phase there was no initial round, but as the start of the game was unimpeded, many children explored the cards before beginning to play. An important change in the protocol of this phase is related to the researchers' role: they only observed the activity because the children themselves became the editors. The purpose of this change was to make the activity autonomous in a way that it could be replicated in other schools.

The following table summarizes the main characteristics of each phase of the study:

	First phase (2016.1)	Second phase (2016.2)	Third phase (2017.1)
Subjects	9 students from the 5th year Elementary School	12 students from the 5th year Elementary School	15 students from the 4th year Elementary School
Board version	1 ^a version	2 ^a version	2 ^a version
Used cards	Objects, scenarios, e characters.	Objects, scenarios, characters and actions.	Objects, scenarios, characters and actions.
Story editor	Researcher	Researcher	Students
Initial test round	No	Yes	No
Setting the game	All cards face up.	Face-up cards separated by category (one stack of cards for category).	Random, each group decided how to start the game.
Stories created	The lost girl in the forest A wonderful day at the beach	The Adventures of Arthur The Witch in Disguise	The children and the fairy The discovery of a book The Best Mother's Day

Table 3: Summary of the research protocol for each phase of the study.

Records of the stories, both visual (cards placed on the board) and verbal (the story narrated orally and transcribed in text by the researchers or students) may be seen in the following figures:



Figure 11: Visual and textual record of "The lost girl in the forest" story.



Figure 12: Visual and textual record of "A wonderful day at the beach" story.

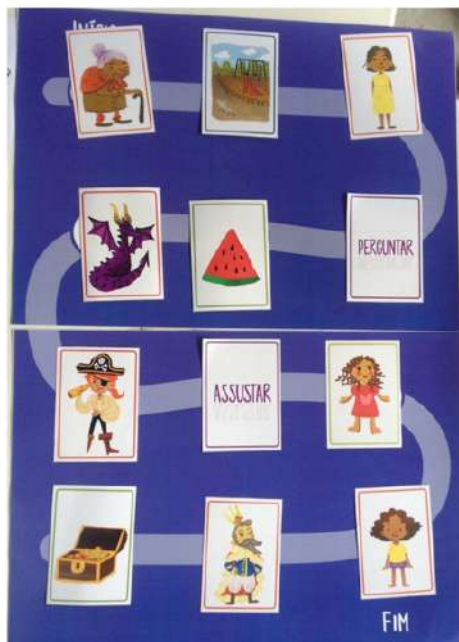


Figure 13: Visual and textual record of “The witch in disguise” story.

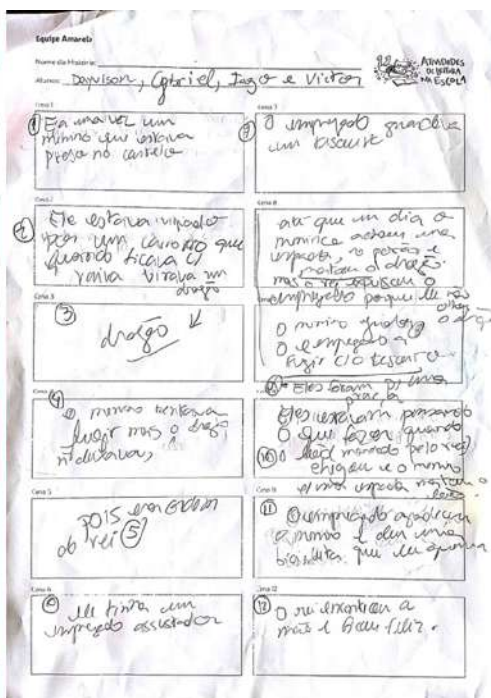


Figure 14: Visual and verbal record of “The adventures of Arthur” story.

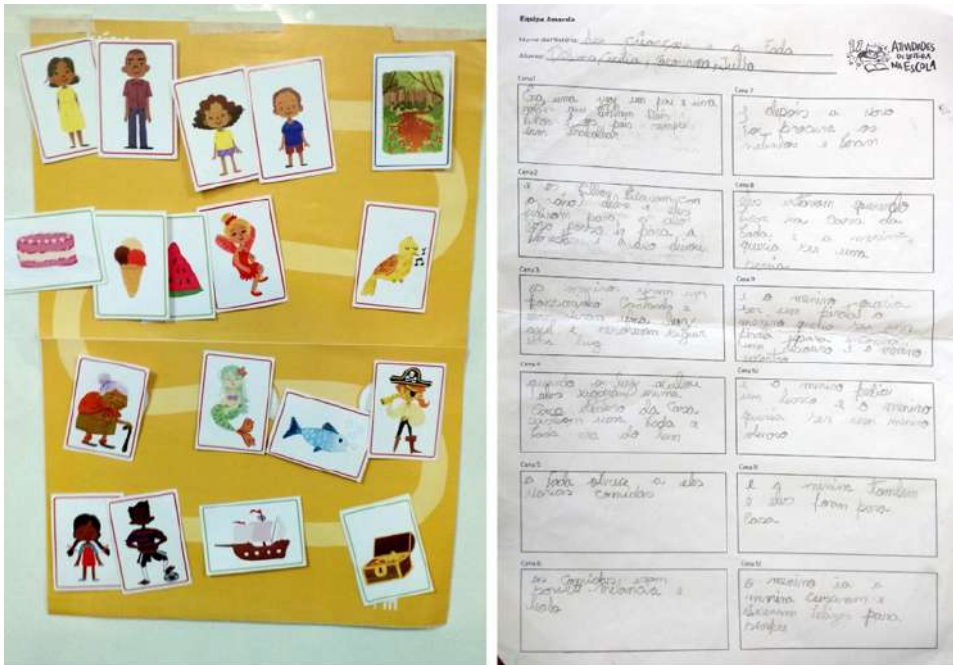


Figure 15: Visual and verbal record of “The children and the fairy” story.

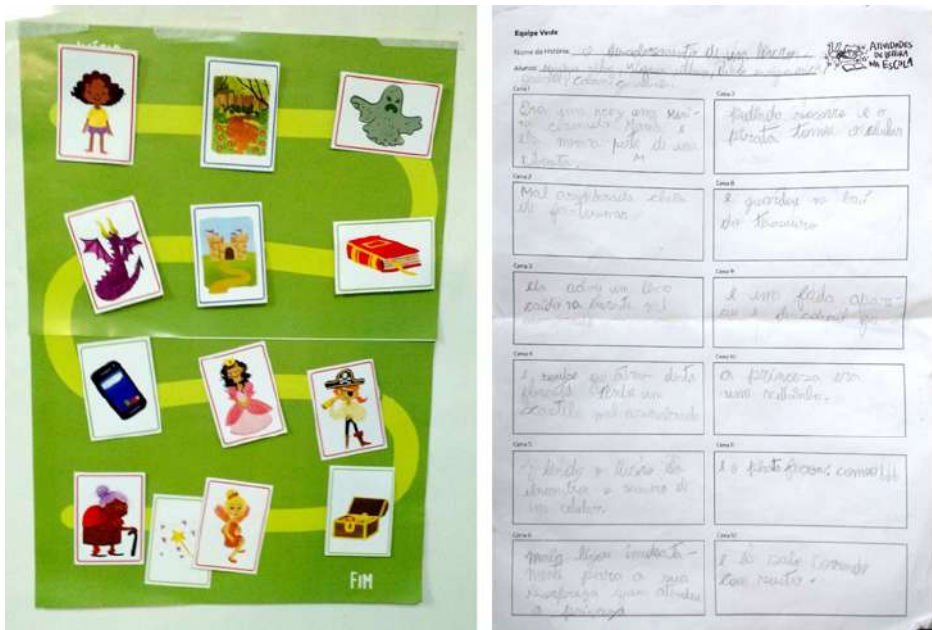


Figure 16: Visual and verbal record of “The discovery of a book” story.



Figure 17: Visual and verbal record of "The best Mother's Day" story.

Analysis and Results

Analysis of the activity at individual level

It was possible to understand the process of using the game to create a story, from its conception until the small details, basing the analysis on the transcribed story, on the observations made during the activity and on the semi-structured interviews performed after it. Using the principle of hierarchy comprised in the activity, action and operation triad, the activity was separated into these 3 hierarchical levels as can be seen in the figure 18 below:

ACTIVITY	ACTION	OPERATION
Creating stories for a children's book	To understand the game rules	<ul style="list-style-type: none"> - To listen to the researcher introducing the rules - To ask in case of doubts
	To choose a card	<ul style="list-style-type: none"> - To look for the available game cards - To look at the cards already placed on the board - To select one card from the available game cards
	To construct a narrative using the figures displayed on the cards	<ul style="list-style-type: none"> - To look at the card - To speak out the thoughts - To look around - to look at the other cards on the board - To listen to what your colleagues say <div style="border: 1px solid black; background-color: #ffff00; padding: 5px; margin-top: 10px;"> <p>To narrate a passage of the story</p> <p>(1) To narrate using only the figure on the card; (2) To narrate using the figure on the card and another element already present in the narrative; (3) To narrate relating the figure on the card to one or more elements of the imagination; (4) To narrate through the association of ideas, without mentioning the figure on the card.</p> </div> <ul style="list-style-type: none"> - To position the card on the board's correct place
	To write the narrative	<ul style="list-style-type: none"> - To listen to the narrative - To absorb content - To write on the transcription paper sheet

Figure 18: Hierarchical levels of activity (prepared by the author based on Leont'ev, 1981)

The purpose of the activity consisted in collectively creating stories to make children's books. In order for this to happen, specific actions connected to specific goals had to be performed. Each action, in turn, had a set of operations in order to happen.

The first action: to understand the game rules, is crucial. Students must grab that they need to select a card and relate its figure to a story-telling event. In a way that is consistent with the narrative being told.

The action of choosing a card, when happening in the first round, was cause of internal conflict for the children. More than half of them reported that it was the hardest part and one even said, "There was a lot of thought in my head". Another relevant aspect related to this action is the adjustment needed when cards are already set on the board from the previous rounds. The goal then must include associate a next card to the previous ones so the narrative makes sense.

The action to construct a narrative using the figures on the cards relates to several operations but it is plausible that to narrate a passage of the story has a central role for the activity. We identified that this particular operation may take the form of 4 Discursive Operations and used them as categories for discourse analysis. They are as follow: (1) to narrate using only the figure on the card; (2) to narrate using the figure on the card and another element already present in the narrative; (3) to narrate relating the figure on the card to one or more elements of the imagination; (4) to narrate through the association of ideas, without mentioning the exact figure on the card.

The last action to write the narrative happened only in the third and final phase, when students became the story editors.

Analysis of Discursive Operations

The first discursive operation, (1) to narrate using only the figure on the card, happened in simpler and direct passages, as did the player who narrated the following sentence when choosing a boat figure: “To go boating” (C08H02).

The second discursive operation, (2) to narrate using the figure on the card and another element already present in the narrative, happens when the story has already started. The child chooses the figure and associates it to another one already set on the board. For example, a player seeing the card “king’s servant” that was already placed on the board and choosing the treasure card to add, narrates the following passage: “The servant kept a treasure!” (C07H04).

The third discursive operation, (3) to narrate relating the figure on the card to one or more elements of the imagination (not present in the narrative), is associated with the child’s imagination. This operation takes the figure displayed on the card, but relates it to external elements. For example, a player selected the lady figure and narrated the following: “Once upon a time there was a witch disguised as a lady and her name was Lucrecia” (C01H03).

That is, she imagined that the figure of the lady could be a witch and introduced that idea into the narrative. Another example was when the player associated the figures of the cake and the ice cream to the context of a party, narrating the following sentence: “For a surprise party with cake and ice cream” (C05H07).

The last discursive operation, (4) to narrate through the association of ideas, without mentioning the figure on the card, is related to the child’s ability to interpret. She observes the figure and associates it with some completely different fact or other element, without even quoting the figure itself. It happened with a player that selected the figure of the wand and narrated the following: “Julia asked for help to the fairy Milena, who said that could only grant a single wish” (C08H01).

That is, the player interpreted the figure of the wand and associated with the action “to grant a single wish”. Another case occurred when the player selected the figure of a cell phone and narrated as follow: “But the boy did not see because he was using WhatsApp!” (C11H02)

Here one can see the influence of the contemporary media elements at children’s daily lives by relating the cell phone to the instant messaging application “WhatsApp”. Another example of interpretation was when a player associated the figure of a queen to the girl in the story, creating a leap on time by telling that she had already aged and married the king’s son. This works on the temporality issue, in the question of time within the narrative: “The girl lived for a long time and then, after 10 years, marries Prince Lucas, with whom she lived happily ever after!” (C12H01).

The table below summarizes the analysis by the number of times each Discursive Operation appeared in the narratives:

(1) To narrate using only the figure on the card	03
(2) To narrate using the figure on the card and another element already present in the narrative	42
(3) To narrate relating the figure on the card to one or more elements of the imagination	32
(4) To narrate through the association of ideas, without mentioning the figure on the card.	07

Table 4: Frequency of Discursive Operations.

All the quoted characters, objects, scenarios and actions objectified or not into the cards were considered. The actions (verbs) that are naturally associated with a certain word and/or characteristics of these words (adjectives) were not considered as new elements.

An example is “afterwards, he was playing with a kite” which was accounted to the first category. This is the simplest way of thinking. The subject only quotes the figure in a basic action (usually associated with it), without relating it to another element.

The 2nd and 3rd discursive operations are those with the highest number of occurrences. The first place of the 2nd can be explained by the fact that the subject naturally associates the figure on the card with something already present in the narrative. In second place appears the 3rd operation, when the player associates the figure on the card to external elements, usually through the child’s imagination or something that has been heard and/or seen where the activity is happening.

The last operation had fewer occurrences, although it is quite interesting. The player does not mention the figure itself or associate it to any element of the narrative or in the deck of cards and interprets the figure. It may refer to actions, as in the “wand” example in which the subject associates to “grant a wish” or even elements of contemporaneity, such as the figure “cell phone” referenced to the WhatsApp application.

Analysis of the collective level

In order to understand the efficiency of an artifact in a school environment the Engeström Activity System Diagram (1987) was used for the analysis of the collective level. In other words, it was verified how each element of the system relates to each other. The study main insights are described below:

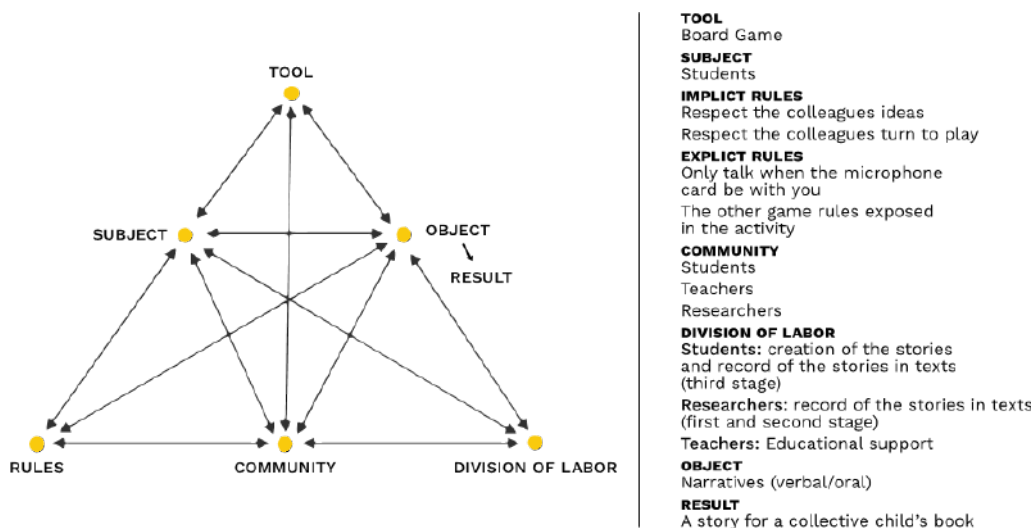


Figure 19: Narrative production activity system (created by the author based on Engeström (1987)).

In the first phase of the study, the subjects became curious about the tool because it was a new thing in the school. In the second phase, the students had already used the game and were familiarized to the board, the cards and the idea of collectively producing the story. The new board design (second version), which aimed to clarify the flow of the stories, helped in its reading, but some students and even the teacher were confused sometimes.

In the third phase the players changed, so, as it was the first time they were participating, some students reported that only seeing the finished book they actually understood what the stories would be for. Initially, they dealt with the

board game and the cards just as an object to play with. They also reported that at first they wanted to copy existing stories, but later as the game was played they understood that the stories needed to be original and that the cards would help suggesting ideas for them. A teacher pointed out this fact when said that even children who have never had contact with textual production could create a story in this way, by choosing the figures, changing their positions, suggesting alternatives, etc. Another fact that drew attention at this phase was the selection of multiple cards (up to four) to express a single idea placing them together on just one of the board's places. The game designers did not foresee this strategy, but it was immediately incorporated into the rules. For example, a player selected the cards displaying the figure of a woman, a man, a boy and a girl and associated them to the idea of a family.

The activity's explicit rules are the ones about how to use the game and they were basically the same for the 3 phases of the study. After the researchers explained the rules and the activity's object (goal), which were to produce narratives for a children's book, the dynamics began. Usually the player responsible for starting the story showed more difficulties when choosing a card. This fact was reinforced by the post-activity interviews, where the children reported that actually starting the game was harder than finish it because of the variety of options available. That difficulty was so intense that in the second phase of the study, there was a change in the protocol and the cards were positioned face up in four different groups, by categories: objects, scenarios, characters and actions. This was seen as positive by some interviewed children, since by limiting the visual field, the choice of cards seems to become easier.

In the third phase of the study the explicit rule of "writing the stories by a single student" was broken, as some children did not respect the role of the student editor. Some children argued about how the story should be and ended up taking the transcription sheets notes from their colleagues. Another student editor, unsatisfied with the course of the story, stopped writing on the transcription sheets and started to use her lined notebook.

This fact can also be justified due to the peculiarity of the transcription sheets, which have no lines as the ones they are used to use at school. It was also noted that a child who had the editor role was somehow acting as a group leader, perhaps feeling her/himself empowered by the task of writing down the story. The students reported that the action cards helped in the process of constructing the narratives, although the teacher pointed out that the card were often quoted, but not included on the board. Some students also wondered if because of these cards they could only use those specific actions when creating the story. The teachers even suggested a new use for these cards: the definition of themes, for example, the "scare" card would create a horror story, etc.

In the second phase of the activity, the students already had a better sense of the final objective, so, aspects such as textual coherence, characters uniformity and the notion of the story's beginning, middle and end were well understood and fixed by the children. The teacher reported that she noticed on some of her students a decrease in the usual worry about achieving the "minimum of lines" in the writing classwork, as well as constructing a better notion of the structure beginning, middle and end of a story. This fact may reflect a better alignment between the teacher's objective and the student's objective when working on a writing activity. At the end, the creation of the text became more natural.

In the first and second phase of the study, the community organized itself regarding to the division of labor in a way that researchers recorded the story while the students narrated. In addition, the researchers also had the role of asking questions that could stimulate the development of the plot story when it was needed.

In the third phase the community was organized according to the previous stages: a group of students and the teacher; but there was a change in the division of labor: the students became the editors, replacing the researchers role. It was realized that for the activity to become autonomous and apt to replication in other schools this role change would be of crucial importance, since researchers could not be present in all of the writing activities in different schools. This modification altered some aspects of the activity such as the concept about the writing activity itself. Some of the players kept asking how to write specific words while some misspell the sentences. The teacher took this as an opportunity to work on these grammatical questions.

Finally, the result of the activity in all the three phases was the production of the children's books. One of the concerns faced in this study was that the writing level should be in accordance to the subjects' age, what was confirmed by one of the teachers. One parameter used to evaluate this was a list of elements that according to the teacher should be included in every student writing: (1) Characters and their characteristics (adjectives); (2) Characters' names (nouns); (3) Objects (nouns); (4) Scenarios (local context of the stories); (5) Actions (verbs); (6) Punctuation Marks (dash, question mark, exclamation, etc.); and (7) Text Structural Elements (paragraphs, sentences, etc).

FINAL REMARKS

The individual and collective analysis of the activity allowed to understand how an information design artifact, in our case the board game and the deck of cards, may contribute to the mediation of the writing activities. The board game, an artifact associated with fun, allows creating a dynamic activity, generating engagement and, thus, facilitating learning.

The study makes it possible to explore several questions related to language skills development, such as the construction of narratives, including the notion of beginning, middle and end of a story and the idea of time and space. The interpretation of the images of the cards also helps to stimulate the creative and imaginative capacity of the children, besides helping the teacher to notice some social issues, when there is a relation with some external element to the narrative itself. The action of writing the text of the stories in transcription paper sheets, when attributed to the students, also contributes to the writing practice, stimulating the spelling and the capacity of textual representation in itself, in a coherent and objective way.

There is also the possibility of changing the activity system configuration depending on the teacher's objective. For example, it is possible to organize a collective activity with the whole classroom instead of dividing into groups, resulting in a single story.

Despite the advantages and flexibility of using the artifact, some details of the game design and its mechanics may be adjusted in order to enhance the narrative structure and facilitate the use itself. There are some issues that can be verified in future researches: (1) the possibility of reorganizing the graphic line indicating the flow of the narrative on the board to better comprise with the western reading orientation in order to do not confuse the users (fact validated by two teachers); (2) the possibility of inserting specific points on the board to indicate the beginning, middle and end of the story, as well as points of climax among other narrative resources. For this intervention it would be interesting more studies into narrative theories, their elements, procedure and structure; (3) the creation of new cards or a specific rule that would facilitate the connection between them, since it was verified that sometimes the narrative appeared to have blocks of disconnected texts; (4) the development and testing of new transcription paper sheets which may be like lined notebooks, for example, a format widely used in writing exercises at schools.

The Activity Theory made possible to collect and analyze structured data, besides being useful in the schematic representation of the results. The Principle of the Activity Hierarchical Structure, based on the Activity - Action - Operation triad was used in the analysis at the individual level, focusing mainly on the relationship between the subject and the artifact involved. This analytical instrument was the basis for the identification of the 4 Discursive Operations used in the discourse analysis: (1) to narrate using only the figure of the card; (2) to narrate using the figure of the card and another element already present in the narrative; (3) to narrate relating the figure of the card to one or more elements of the imagination; (4) to narrate through the ideas association, without mentioning the figure of the card. For future researches, it might be important to name each category

aiming at summarizing their meaning in an objective way. In addition, the concept of discursive operations may be deeply explored, e.g. relating them to the Vygotsky's ideas about the role of speech in planning actions, when oriented to solving problems.

On the other hand, the Engeström's Diagram of the Activity System (1987) proved useful in mapping the components involved and their connections, as well as identifying changes in the system when changing one of them, as has happened when there was a change in the division of labor and some students began to write the text of the stories while others narrated; or when it changed some specific dynamic about the artifact usage, such as how to start the game; or even when issues related to the artifact itself were altered, such as the change in the design of the board's path or the insertion of the action cards.

The research had some difficulties due to the teacher and school's narrow schedule, which have many pedagogical activities and obligations to the Municipal Secretary of Education. The context of the field research, being as authentic as possible without researchers controlling the environment, generates a necessity to adapt to the reality and objectives of the subjects involved. For this reason, the whole dynamics of the activities and the objectives were previously aligned with the teachers involved, so the research could be aligned with the pedagogical objectives of the school.

This research analyzed the contribution and impact of an artifact (board game and deck of cards) for the creation of narrative writing in the context of elementary school. However, the research protocol and its artifacts, besides the two analytical instruments from the Activity Theory may be used for future studies, in a similar context and with a larger audience. The group *Atividades de Leitura nas Escolas* (Reading Activities at Schools), in which the research is inserted, continues to develop other studies, such as the whole process to create a children's book, including the graphic representation of the stories and the final publishing of the books, exploring other skills with the children and exploring other kinds of learning.

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Vernacular urban communication and ephemeral educational materials

the possible link between design and education during the process of literacy development in children

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INTRODUCTION

Primary education in Brazil is the most extensive cycle of basic education and is characterized as a period during which children experience great transformations and discoveries. Throughout these nine years of learning (aged 6 to 14), pupils undergo one of the most important processes in their school lives: literacy development.

Although we would agree that learning to read and write, as well as interpreting assimilated information, is one of the great watersheds of the school period, we also believe that the concept of literacy is much broader than simply reading, writing and understanding a written text. For Bissoli (2006), this process begins at the very start of human life, when children come into contact with a large universe of graphic information, striving to understand it, even before they have become literate. For the author (op. cit.), the effort to assign meanings to visual messages may be considered a form of reading.

In this respect, Bissoli (2006) explains that the literacy process also encompasses understanding non-linguistic codes found in different support materials and that may enhance the learning process of children. This is undertaken by exploring the visual codes arranged in media and artifacts that are part of the visual universe outside the classroom.

By considering that the process of visual assimilation and interpretation occurs more naturally than textual literacy and allows each individual to relate to the image object in a very particular way, we are in agreement with Smith (1999 apud Bissoli, 2006, p. 2) in considering that ‘written texts represent only a small part of our daily reading, since not everything we read comes from the language code.’¹ Thus, we understand that maps, clocks, engravings, musical notes and

¹ This and all citations hereafter from Brazilian sources have been translated by the

schematic instructions, for example, may also represent “texts”, and make part of people’s cultural and daily visual reading repertoire.

According to the educator and intellectual Paulo Freire (1967), a revolutionary in proposing new reflections for the Brazilian educational process, the simple recognition of a local culture enables important experiences involving dialogues between individuals and their sociocultural references. In his work *Education: The Practice of Freedom*, Freire (1967) argues that humanized education, unlike what he terms as “banking” education, infers the recognition of learners as part of the educational process, producers of their culture and history. This proposal is not restricted to the classroom, but seeks to incorporate, within its methodology, the social relations present in people’s everyday lives.

Maciel (2011), in her article entitled *The thoughts of Paulo Freire along the trajectory of popular education*, complements this question, explaining that the practice of education should not be limited to the institutional walls of schools, but rather, should dialogue with the socio-cultural movements that are part the learner’s surroundings. Following the conception of Paulo Freire’s theory for the term *Popular Education*, Maciel (2011) further emphasizes that the intercession between the contents which are compulsory, observed in traditional classrooms, and those that are part of the learner’s experiences and identity, should be linked within the process of acquiring knowledge. The rationale is that such a proposal would allow individuals to broaden their understanding of life in society, together with the social roles they occupy within it, thereby favouring the development of critical thinking. Thus, it is understood that Paulo Freire’s methodology for literacy, by including the cultural values of a given community in the teaching-learning process, rather than just reading the word itself, enables learners to read the world and recognise their own culture:

In this aspect, the pedagogical proposal of *Popular Education* repudiates the traditional education of school, i.e., it repudiates the official education of the system, which rigidly maintains a set of disciplined knowledge in decontextualized contents, lifeless and meaningless to the learners, and submitted to an unthinking hierarchy within the organization of school curricula to be deposited (as in banks) into the heads of learners, which Paulo Freire termed banking education (Maciel, 2011, p. 341).

Thus, we encounter in the urban fabric, particularly in big cities, an environment formed by various types of graphic manifestations, rich in colour, shapes,

textures, images and letters of the alphabet, arranged in a variety of visual compositions. Such a scenario – which includes signs, paintings on walls and public highways, commercial signs, mud flaps for trucks, street trader trolleys, billboards, bill posters (known in Brazil as lambe-lambes), amongst others – is described by Hennes and Coutinho (2014) as a library of tactile, visual experiences, democratic, and freely available.

These local graphic manifestations form complex urban information systems, which coexist in a given spatial structure, organized according to a diversity of sociocultural contexts. However, there is one particular type of artifact that, due to its graphic and semantic peculiarities, is rooted and legitimized within the identity of its inhabitants. Here we refer to popular signs, composed of vernacular verbal, pictorial and/or schematic² elements of graphic language (GL), which continue to draw attention due to the iconographic, symbolic wealth of elements (Figure 1).



Figure 1: A cross-section of verbal and pictorial elements from popular signs registered in the city of Recife (PE) (included with the permission of Hennes and Coutinho, 2014).

For Hennes (2012), popular signs may be understood as urban graphic manifestations that retain, within their essence, characteristics that belong to popular culture. They are crafted artisanally, either with intuitive manual processes or through the use of techniques passed down from generation to generation or from master to apprentice.

² The classification of elements of graphic language (GL), proposed by Twyman (1979; 2002).

Although there has been a tendency to replace these popular signs with printed artifacts, current literature on the subject indicates that this practice is still far from becoming extinct. This is due to the democratic character of production, since ‘potentially anyone with minimal artistic ability is able to produce them cheaply’ (Hennes and Coutinho, 2014, p. 3). For Rodrigues (2014, p. 29), the vernacular characteristic of these signs may be understood as ‘that which is quotidian, which belongs to the streets, which is autonomous’, and the products that originate are made by non card-carrying designers, since, even with no academic training, they produce communicational artifacts with their own language, improvising solutions in their own habitat.

For the author (Rodrigues, 2014), discussions on the existence of a vernacular design need to become free from certain forms of nit-picking and stick to more relevant aspects on the contemporary understanding of what actually characterizes this field of activity. Thus, Rodrigues states that

Design exists regardless of whether there are professionals who have received academic training or learned the theory and methodology of designing. It exists [...] with the few resources that are within its reach (maintaining the facility of artisanal production economically much more in keeping with its reality), informing, signalling and, most importantly, communicating as they can. When we observe these graphics on signs or other information media, we may state that within their environment or microcosm, they are as or even more efficient than the work of a graduate professional [...] (Rodrigues, 2014, p. 57).

According to research in the field of information design, which have taken these elements as the object of study, authors such as Finizola (2010, 2015) and Hennes (2012) suggest that such inscriptions are an important part of Brazilian material and immaterial popular culture, and are to be most commonly found in cities of the North and Northeast. They permeate the repertoire and the graphic memory of people from all walks of life, because they reflect the soul of the region, with their colours, graphics and discourses. Thus, with regard to their importance as an object of study for the field of design, Finizola (2015) states that

[...] the theme of popular graphics is studied with different approaches: as an aesthetic and typographic object; a communication element of the urban landscape; a representative object of our popular graphic memory; or as a social practice, a living tradition that must be preserved and renewed. (Finizola, 2015, p. 60).

For Rodrigues (2014, p. 105), the act of looking at the world around us from the perspective of discovering new references in everyday elements leads human beings to develop their individual creativity. Consequently, these people tend to

‘differentiate themselves from the commonplace promoted by the incessant use of formula-patterns, which become monotonous and repetitive’ as opposed to the inexhaustible, dynamic sources of inspiration observed on the streets – marked by spontaneity, humour, religiosity and fun. It therefore makes sense to consider that the elements of vernacular graphics, which are able to situate us in time and space, may also contribute to the generation of multidisciplinary contents by linking the fields of material and immaterial culture, of identity and of the graphic memory of a given community with research involving Design/Education.

LEARNING TO READ AND WRITE AND LITERACY: BROADENING THE MEANINGS IN CONTEMPORANEITY

Although Brazil’s National Education Plan (PNE) still includes the term learning to read and write (*alfabetização*)³ when presenting the educational objectives for the nation’s primary schools for the period 2014-2024, the understanding of how this process takes place has nonetheless been widely discussed across the field of education. In the very document itself (PNE 2014-2024), there is an important clarification:

Learning to read and write today may no longer be considered a mechanical (de)codification of letters and syllables; it must be understood in relation to the effective participation of children in the practices of literacy to which they are exposed, both in and out of school. Thus, it is necessary to take the uses and functions of written language based on the production of meaningful activities of reading and writing within the contexts in which children live (PNE 2014-2024, 2014, p. 85-86).

With regard to this aspect, Santi (2014) explains that the new reflections on literacy deal with this process from a cultural viewpoint, in which children begin to master not only reading and writing, but to relate this learning to the social context in which it is inserted. Thus, this new understanding of learning to read and write implies changes in how reading and writing is taught in schools, and the adoption of another term capable of better representing this moment of school life: literacy – the term that we will adopt hereafter.

The author (Santi, 2014) explains that, for an efficient process of literacy, children need to interact with other individuals involved in their daily lives – classmates, teachers, family, etc. – as well as having access to information of different

³ A type of ‘alphabetical’ learning.

natures capable of producing their own texts and acting autonomously in the activities proposed both in and outside the classroom. As the concepts of literacy are broadened, so the school begins to play an increasingly more important role in this process, requiring the constant renewal of educational practices and teachers trained and engaged with these new ideas.

However, contrary to this expectation, children are still often led towards playing a passive role in the knowledge they are being prepared to receive in the classroom, especially concerning a number of postures that favour the hierarchical relationship between the master and apprentices, wherein there is no space being provided for exchanges of knowledge. For Duarte et al. (2008), until recently it was customary for children to think that ‘whatever exists to be known has already been established, as a closed set of items that cannot be modified’ (Duarte et al., 2008, p. 5). In this situation, children behaved as mere spectators or mechanical receivers of what the teacher was teaching, especially in literacy practices involving the simple joining together of syllables, or memorizing sounds, deciphering and copying.

In the twenty-first century, witness to so many changes in a diversity of human social relations, this reality is gradually on the change, through initiatives that seek to integrate the quotidian themes of children and cultural references from their places of origin with teaching basic subjects such as Portuguese and Mathematics. One good example of these initiatives has been implemented in the Arraial Novo de Bom Jesus School, located in the metropolitan region of the city of Recife (PE). According to information available on the TV Escola website – the TV channel linked to the Brazilian Ministry of Education –, the cited school is public and, since 2014, has developed a children’s literacy project around the construction of the personal, family and community identity of the pupils.

In one report that revolved around the theme of literacy (TV Escola, 2014), educators from the school explained that one of the educational methodologies is based on the selection of thematic connections of cultural references, as a guide for the educational practices on the school timetable. Thus, local personalities, such as Luiz Gonzaga, a well-known musician in North-eastern culture, famous for spreading the rhythms, customs, vocabularies, clothing, scenarios and ways of life of hinterland people, are worked on in the classroom, thereby expanding the local cultural repertoire of the pupils while at the same time contributing to the development of literacy.

While recognizing the fundamental transformations that the field of Basic Education in Brazil experienced between 2002 and 2016 (currently however, in

total disarray⁴), and although research that links design and education has been developed over a long period of time by groups led by Antônio Martiniano Fontoura (in memoriam), Rita Maria Couto, Solange Coutinho, and Silvio Barreto Campello, to name just a few, they have demonstrated that there still exists a vast unexplored territory – especially related to the production of ephemeral teaching materials by primary school teachers –, which is subject to research and development⁵.

THE PRODUCTION OF EDUCATIONAL MATERIALS BY PRIMARY SCHOOL TEACHERS: IMPORTANT TOOLS IN THE PROCESS OF DEVELOPING CHILDREN'S LITERACY

One of the greatest problems related to educational material produced by teachers is the negligence with which this practice has been treated in the field of education. While recognizing the efforts of professionals to conduct their activities with dedication and competence, it is still a considerable challenge for teachers to bring elements into the teaching-learning process from the socio-cultural context of the city or region in which the children live. For Cadena and Coutinho (2015), the lack of discussion on new tools and content results in teachers repeating teaching techniques, often choosing traditional alternatives. Thus, debates on the production of ephemeral educational artifacts are as necessary as they are urgent in that they are brought closer to 'the language and possibilities that pupils experience and demand contemporaneously both in and outside the school experience' (Cadena and Coutinho, 2015, p. 8).

Considering the relevance of the teacher inside the classroom, as the main mediator and link within the teaching-learning process, Cadena and Coutinho (2015), emphasize the importance of introducing the study of graphic language into the formation of educators. For the authors (op. cit.), this is essential content for the formation of professionals, much more in keeping with contemporary

⁴ It is important to explain that since August 2016, Brazil's National Common Curricular Base has been updated, based on proposals that are disconnected from the local reality of schools and the situation of the education system as a whole. According to the document, children must be fully literate by the age of 7, at the end of the second year of primary school, not the third, as stated in the PNE 2014-2024. Such a proposal must still be approved by the National Council for Education Council, and then officialised by MEC.

⁵ There are some exceptions such as studies by Cadena (2010); Cadena and Coutinho (2015, 2016); Cadena, Coutinho and Lopes (2010, 2011) amongst very few others.

educational needs and practices, which require the use and creation of complex visual messages from a sociocultural viewpoint. On this aspect, the authors (op. cit.), explain that

Discussion on the production by teachers in terms of using graphic language for educational purposes is also to ensure the importance of the artifacts as active devices and mediators of the teaching/learning process, which may facilitate the understanding of certain issues and also motivate pupils to be more engaged in school activities. This perspective also recognizes the role of teachers as habitual creators of artifacts of a graphic nature and, thus, there is a need for them to study graphic language during their formation (Cadena and Coutinho, 2015, p. 4).

When addressing specific educational practices aimed at children's literacy, it is common to come across ephemeral educational materials produced by teachers themselves, using traditional techniques for teaching the alphabet, with no local or expressive cultural references to the social context of the children. Thus, the elements of graphic language used (verbal, pictorial and schematic) are chosen with no great reflection on their morphological properties and informative character, since these decisions are almost always taken empirically by the educators.

By observing this perspective, it was found that references to foreign mass media are commonly used as didactic content, which from the teacher's viewpoint is considered to be attractive for children. This may be observed the graphic panels entitled Calendar and Language Corner (*calendário* and *cantinho da linguagem*) (Figure 2), decorated with Disney characters, made by a primary school teacher at a privately-owned school in the town of Moreno (PE). Although it may be recognised that there is a coherent, pleasant aesthetic sense in the composition of colours and in diagramming the graphic elements, the lack of dialogue and of a local social context in these artifacts fails to expand the image repertoire of children as well as the valorisation of local cultural references as educational content.



Figure 2: Panels using ephemeral educational materials in the classroom, decorated with Disney characters, in a private school in the town of Moreno (PE). (Source: image taken from the blog *Ideia Criativa*, included with the permission of Gi Barbosa and Davi Barbosa).

One of the traditional educational materials for children's literacy adopted in Brazilian classrooms is the so-called illustrated alphabet.⁶ In this material, the connections between verbal (letters) and pictorial elements (illustrations) almost always occur using references from a relatively unvaried graphic repertoire, with styles of representation that have no clear semantic value and no empirically chosen typographical sources. Moreover, no consideration is given to aspects of specific knowledge such as form, legibility and hierarchy of information.

In the Arraial Novo de Bom Jesus School, Recife (PE), cited above as a good example of an institution that has implemented initiatives aimed at renewing school practices, the illustrated alphabet (Figure 3) is one of the ephemeral educational materials used in the class that stands disconnected with regard to the cultural meanings of the graphic elements used.



Figure 3: The illustrated alphabet, used as a teaching-learning tool for literacy in the Arraial Novo de Bom Jesus School, in Recife (PE). (Image taken from a televised report broadcast by TV Escola in 2014).

In this example, the letters are arranged in two distinct typographic fonts – sans serif (in the upper part) and cursive (in the lower part) – with upper and lower-case characters. Although this diversity is interesting, from the viewpoint of

⁶ The illustrated alphabet, a term used by educators, presents the letters of the alphabet arranged on posters positioned in alphabetical sequence. By the side of each letter, there is an associated figure, the name of which begins with the corresponding letter.

expanding children's typographic repertoire, the composition of the elements on the posters presents several problems: little emphasis is given to the pictorial elements (too small to be observed from a distance), some words appear vertically (making reading difficult since it does not follow a horizontal pattern, from left to right), no characteristics of sociocultural reference are used in the artifacts – neither in the meaning of the elements nor in the style of representations.

Although the illustrated alphabet is widely used in Brazilian schools, because it is simple and objective, the Ministry of Education (MEC) has issued no guidelines or graphic standards regarding the selection of elements, materials, layout and other specifications, such as the minimum/maximum size of posters. Therefore, responsibility falls upon the teachers to physically produce these artifacts themselves, thereby adding to their workload, often already quite high.

From items made available by schools – such as white glue, coloured paper, hydrocolour brushes, rubberized materials (Ethyl-vinyl acetate - E.V.A.), etc. – educators apply creative techniques in combining materials and processes of graphic production (often artisanal), generating a great variety of configurations for these artifacts.

The fact that many have no time available to make ephemeral teaching materials nor even a basic knowledge of diagramming, graphic composition or graphic production, has resulted in the need to search for references, mock-ups and templates, together with other primary school educators, who also have the same demands and, therefore, because of this also have to make similar educational materials. This reiterates the need to include content on information design, especially graphic language, in the formation of teachers, as affirmed by Coutinho (2006, 2008, 2011, 2012) and Coutinho and Lopes (2011), for example.

Therefore, motivated by the shortcomings of their formation courses, plus the need to exchange knowledge on educational practices, associated to a desire to disclose work developed in the classroom, culminated in the appearance of virtual blogs, run by primary school teachers. These web pages are intended to establish a direct dialogue with other educators, as well as to act as a database, in which models of graphic artifacts are available and may be copied or downloaded for printed reproduction. Amongst the blogs encountered during the mapping stage, conducted using the words 'fundamental education blog' and 'models for educational materials', the most outstanding were the *Ideia Criativa* blog, run by the educators Gi Barbosa and Davi Barbosa, and *Meu Cantinho de Ideias* (My Corner of Ideas) by the educator Glauce Iraniele.

On both of these virtual pages it is possible to find examples of illustrated alphabets, presented as a reference, which may be copied or reproduced free of charge, such as the *Shooting Star Illustrated Alphabet* in Figure 4, and the illustrated alphabet in E.V.A, artisanally produced (Figure 5).

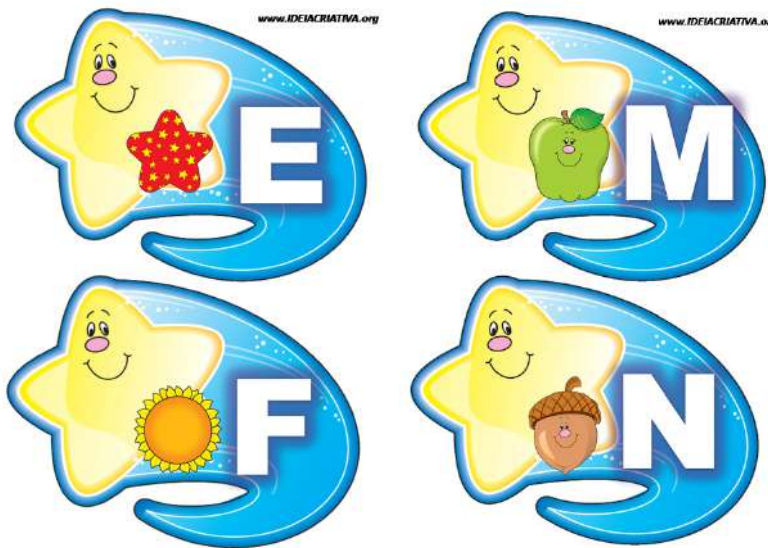


Figure 4: The Shooting Star Illustrated Alphabet, from the Ideia Criativa blog. (Source: image downloaded from the Ideia Criativa blog in 2017, included with the permission of the educators Gi Barbosa e Davi Barbosa).



Figure 5: The illustrated alphabet artisanally made in E.V.A. (Source: image downloaded from the Meu Cantinho de Ideias blog, included with the permission of a teacher from the municipal education system in Teresópolis (RJ), Glauce Iraniele).

In these examples, it is possible to verify the strong compositional consistency of the figures, successfully achieving both a decorative function (in the case

of the shooting star element) and an informative function (in the case of illustrative pictorial elements associated with the alphabetic characters). In addition, the verbal elements appear in just one typographic font style – sans serif – with upper-case letters.

While it may be recognized that the contents are interesting, in that they enable pupils to acquire general and foreign knowledge, the non-inclusion of references and scenes from the day-to-day lives of the pupils is evident from a deficiency perspective. It is therefore not possible to identify the local surrounding socio-cultural context as educational content, which could then have been worked on in the classroom.

In a similar manner to what occurs in the production of educational materials for children's literacy, Guerra and Gusmão (2004) presented a case study, the objective of which was to investigate how environmental education is included during the first years of school. In an article entitled *The production of material for instructional activities to include in environmental education in public schools*, the researchers (*op. cit.*) describe their experiences with producing material for instructional activities for public primary school education in João Pessoa (PB). The results demonstrate that the graphic elements present in these materials, which represent certain situations in the educational context, were not part of the quotidian identity and visual repertoire of the pupils. It was observed that the materials contained illustrations of people with physical characteristics different from most North-eastern people (blonde, with blue eyes), who lived in regions where the four seasons are well defined, and children have fun under apple trees (even though this particular fruit tree is more common in cold climates). In another case cited by the authors (*op. cit.*), the approach to themes related to the teaching of the food chain was often introduced through illustrations of African savannas, in which lions fed on zebras.

These observations provide us with clues as to how actions in the field of Design/Education are still premature regarding learning practices that are capable of effectively introducing Brazilian primary school children to the sociocultural context in which they live. These findings are proven to be of an even greater urgency when it comes to the literacy phase, when students should begin to participate more actively in the life of society.

Also reflecting on these aspects, a study developed by Richard Huerta (2010), a professor in the area of Art Education at the University of Valencia (Spain) and director of the Instituto de Creatividad e Innovaciones Educativas, provides a good example of linking educational content and references from outside the classroom. For Huerta (2010), the study of letters and other graphic elements encountered on the urban landscape enables inquiries into how education professionals may contribute to the creation of educational spaces that aim to

motivate, teach and expand the repertoire of images and socio-cultural aspects of children.

In his article *I Like Cities; Do You Like Letters? Introducing Urban Typography in Art Education*, Huerta (2010) indicates that big city streets are full of graphic signs, where letters and symbols occupy a central focal point, not only in the sense of what is being announced, but for the graphic form they present. The author (op. cit.) believes that by performing what he calls 'walking as an aesthetic practice', in order to perceive and record the urban environment, we experience an involvement in perception, which may be compared to the experience of visiting a museum. Its premise assumes that a museum is not just a container with pieces of art, protected, institutionalized and geographically localizable – even though virtual galleries may be viewed on the web. It is a place of fun and learning.

By conceiving city streets as a kind of open-air museum, Huerta (2010) proposes to reduce the sociological barriers that often keep traditional museums isolated, which, for the most part, do not allow photography or filming. Thus, for the author (op. cit.), the urban environment has certain advantages, since it reveals a place of great visual and cultural diversity, with no aesthetic restrictions.

In an exercise entitled *Landscape: letters from the city* coordinated by Huerta (2010), 40 undergraduate students from several different courses – mostly unrelated to the arts – were invited to explore and discover the city in which they lived, preferably on foot, seeking to record traces of local identity, peculiarities, weaknesses and innovations. Huerta (2010) commented that placing students into the role of tourists, in the place where they lived, was responsible for revealing a paradox: we often do not perceive the peculiarities of our own habitat.

Thus, Huerta (2010) believes that the sources found in the urban space help us to reinterpret the cultural heritage of the city in which we live, and that the use of typography and figures of local reference allows educators and visual artists to use graphic resources with a much greater linking power than graphic elements without this symbolic load.

With regard to the perceptions of children towards the variety of compositions and graphic elements, one interesting study was conducted by a group of researchers at Oxford University Press, from 1999 to 2005, led by Professor Sue Walker (2005). One of the objectives of the study was to establish the parameters related to the graphic design of children's reading books that could facilitate learning and stimulate children to read. For the investigation, different textual elements and configurations such as typeface, line, letter and word spacing, layout and others, were evaluated and applied in an object of study – in this case, the English children's reading book *A Sheepless Night*. The versions generated from

this object, containing graphic variants, were tested on primary school pupils, who were just beginning to read, in the city of Reading (UK). The errors children made were categorized, numbered and analysed statistically.

According to Walker (2005), the analysis did not involve numerically significant data, but the recorded comments of pupils during the tests contributed to obtaining important results:

[...] the comments the children made about the typographic variations they saw suggested that typography may have considerable effect on their motivation to choose and engage with a book. It is these comments through which the children discussed their understanding of letterforms and space that provide the main focus of this booklet (Walker, 2005, p. 4).

The pamphlet to which Walker refers (2005) is entitled *The songs the letters sing: typography and children's reading* (op. cit.) and describes the results obtained in her research. Because it is considered a kind of tutorial, the pamphlet today serves as one of the main support sources for the graphic design of English children's reading books.

Therefore, studies on the elements of the graphic language, applied to the educational context, lead us to believe that children, in the literacy phase, perceive and dialogue with the various visual stimuli, in a particular manner. Even though they are not yet fully able to read and write, these children recognize the morphological differences of the elements and are able to perceive their intrinsic semantic discourses.

INFORMATION DESIGN AND THE CONSTRUCTION OF CHILDREN'S SOCIO-CULTURAL IDENTITY FROM WITHIN EDUCATIONAL PRACTICES OF LITERACY: POTENTIALITIES OBSERVED IN THE POPULAR SIGNS OF RECIFE

Information design, an area intrinsically linked to graphic design, is responsible for investigating the syntactic, semantic and pragmatic aspects of the various information systems available in our environment. According to Simlinger (2007), coordinator of the International Institute for Information Design (IIID), information design is associated with both planning and formatting the content of a message and its definition within the context in which it is presented. Thus, the role of the designer is to propose a dialogue between the informational needs identified in the message and the needs of the user in interpreting them (Simlinger, 2007, p. 8).

Souza et al. (2016), when investigating contemporary epistemological alternatives for information design, believe that the message itself is considered an essential component of its content, since it plays a fundamental role in the communication exchanges between the transmitters and receivers of messages. On this aspect, the authors suggest that form 'should not be understood as a blur of content, but rather as a way of structuring reality, making the designer's activity an active process of forming the world' (Souza et al. 2016, p. 108).

By interfering in the message through its contextualization, planning and organization, the designer not only facilitates the understanding of content, but also acts as a co-author, finding different ways with which to interpret the message, and create fundamental 'new narratives and graphic experiences' in communication with the user (Camargo, 2011, p. 128).

Considering that communication exchanges occur through an understanding of the cultural identities of the individuals and the codes that govern the various intelligible languages, it is possible to affirm that the graphic information aspect in messages may have a significant impact on the way that users understand, assimilate and commit themselves to a given content. With an individual in early life, at the stage of forming their visual repertoire and cultural references, this aspect becomes even more expressive.

Bissoli (2006) mentions that there are several sensorial stimuli that participate in our daily life, and that the very nature of these things – colours, shapes, textures, etc – enable their perception, irrespective of whether they are the result of human intervention or a conscious intention to convey a given message. However, sensory stimuli coming from external cultural environments are perceived differently from those communicational stimuli presented in an educational context, and which need to be decoded and understood through learning.

Souza (2007) explains that until the sixteenth century it was believed that a child's learning and assimilation capacity was equal to that of an adult, except less developed. For this reason, teaching methods applied in the classroom were directed to 'correct the deficiencies or defects of the child' (Souza, 2007, p. 112), through the mere transmission of knowledge.

A child's learning was passive, consisting primarily of memorizing locally organized rules, formulas, procedures, or truths. In this environment, the role of the teacher was to transmit ready-prepared, complete content, so that the use of materials or concrete graphic materials was considered an activity that disturbed the silence or class discipline (Souza, 2007).

Today, the relevance of studies in design in the field of education may be perceived when we understand that they are establishing a new way of looking at the world and thereby directly affecting human relations and their social and

cultural scope. In this regard, several initiatives have emerged, emphasizing that the role of the designer is fundamental in the process of stimulating visual experience, and is able to contribute to the enrichment of the textual, imagery and socio-cultural repertoire of children. Such collaboration is able to bring benefits to learning linked to motivational and cognitive issues, which seek a dialogue between the school and out-of-school environments.

For Harland (2011), graphic design – a field of study belonging to the field of information design – is traditionally associated with the generation of ideas through the study and development of areas of specific knowledge, such as typography, illustration, photography and printing. But while these areas contribute significantly to the practice of graphic design, they do not holistically represent what graphic design is and what graphic designers do. By working on the production and improvement of communication structures, designers decode messages before translating them into words, images and schemas, reinterpreting them, reformulating them, and providing more efficient directions for users, by considering – using a Stuart Hall concept and definitions – “the codes which govern the relationships of translation between” the shared “conceptual maps” and “language systems” of a culture’ (Harland, 2011, p. 22).

Investigating the morphological and semantic characteristics of popular signs in the city of Recife, especially the verbal and pictorial elements, Hennes (2012) revealed relevant aspects that make part of the popular graphic universe of the state capital of Pernambuco. From a morphological viewpoint, the most outstanding aspects were: (a) the predominance of signs made without the aid of forms or moulds, emphasizing the original character of the inscriptions painted and decorated by freehand; (b) the possibility of identifying graphic patterns, despite the wide variety of elements, colours, decorations and other visual components; (c) the authorial character of the drawings of letters and figures, based on the creativity and skills of the specialist and non-specialist sign painters; (d) the diversity of pictorial representations – at times with a wealth of details, and at others syntactic and minimalist; (e) the playful and/or comic character of many announcements, made explicit through both verbal and pictorial elements; and (f) the value/semantic references that the graphic compositions may impute to the marketed product or service provided, as shown in the example of the sign for Cia do Guaraná (Figure 6).



Figure 6. A sign for Cia do Guaraná, registered at the market in Casa Amarela, in Recife (PE), in 2011 (included with the permission of Hennes).

From a semantic point of view, Hennes (2012) observed in this composition that the letters seem to be melting under the typical heat of Recife and that the guaraná fruits are performing physical exercises, highlighting the health/fitness characteristics of the product and thereby reinforcing the relation between the meaning of the textual message and the graphic form of the announcement.

All these aspects, investigated and validated by research, lead to associations with other sectors within the local context, such as the irreverence and playfulness present in carnival and folklore, the authenticity of popular language and the formal characteristics present in other artifacts of the material culture, such as the multi-coloured colonial constructions and the originality of the local handicrafts. All these connections contribute to strengthening the cultural identity of Recife and to expanding the visual repertoire of its inhabitants and visitors.

In imagining possible dialogues between the theme of vernacular urban graphic artifacts and the teaching-learning school context, it may be seen that the literacy technique itself, called the illustrated alphabet, mentioned above, could give rise to the use of local graphic references as a manner of representing the letters of the alphabet.

With a brief search through the image database that makes up the research corpus of *Letreiros Populares do Recife* (The Popular Signs of Recife) (Hennes, 2012), we encounter a series of verbal and pictorial elements in their graphic characteristics (shapes, colours, textures decorations, etc.) (Figures 7 and 8). In the

midst of so many visual and sensorial stimuli, the most outstanding have been included in Figure 7 that only presents pictorial elements, the names of which all begin with the letter “C”.



Figure 7. Pictorial elements, taken from photographs of popular signs in the city of Recife, representing the letter “C”: coconut (seven different graphic representations); chicken snacks (coxinha) (three different graphic representations); confeito (a local term to describe sweets or candies); chapéu (hat) and colher (spoon); copo (glass) and canudo (straw) (included with the permission of Hennes and Coutinho, 2014).



Figure 8. Verbal elements, taken from photographs of popular signs in Recife (included with the permission of Hennes, 2012).

Thus, adopting the conception of Huerta (2010) and Hennes and Coutinho (2014) regarding the possibilities that the city streets have to offer and which may be observed within the perspective of an open-air museum, the sociological barriers linked to the urban environment could be reduced, since it is a place that presents great visual and cultural diversity, with no aesthetic restrictions.

FINAL CONSIDERATIONS

By linking social sectors considered as priorities in Brazilian actions of teaching, research and extension – Education and Culture –, the present study has touched on both the universe of ephemeral educational materials, essential to teaching-learning practices during the literacy phase, and the study of language in local socio-cultural contexts, taking as a reference the popular signs observed in the city of Recife.

Due to the morphological variety of graphic elements presented and their relevance as important cultural artifacts in the construction and valorisation of a local graphic memory, the proposal of this study has been to examine the new possibilities of inserting elements from the graphic memory of local communities into educational contexts.

Focusing on the process of children's literacy, it is logical to imagine that the insertion of these contents into classroom teaching-learning practices could contribute to the development of children's visual culture, enhancing learning and encouraging children to become engaged in reading and interpreting messages both inside and outside the school, thereby contextualizing them socially and culturally and encouraging the development of critical thinking.

Thus, it is believed that many strategies may be extracted from the imagery and textual elements of the urban fabric, in order to communicate aesthetic and cultural values to children. This is possible inasmuch as we understand that any child that creates some kind of graphic work will need to make decisions on the form of the letters, the type of pictorial representation and the visual composition of that content – even though, since the late twentieth century, children have become familiar with computer keyboards and multifunctional cell phones before beginning to develop their skills with a pencil and paper.

The reflections undertaken in this work have stood alongside some of the initiatives developed in the field of Design/Education, with particular emphasis on production linked to the Design Department of the Universidade Federal de Pernambuco. Amongst the main research groups, we highlight InfoDesign, which presents, as one of its proposals, the investigation of educational practices from the viewpoint of information design, and RIDE – the International Design/Education Network, which addresses the contextualization, planning and production

of graphic interfaces of information, as well as the acquisition of information and formation of teachers and students.

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Drawing or Design? Contribution to the definition of designology¹

Francisco Providência

PRESENTATION

As far as transforming data into information and information into knowledge are concerned, design adopts a relevant mediator role. Data lack interpretation in order to ascend to information. Interpreting means to take control over data, understand them and, consequently, extrapolate new knowledge.

Drawing is interpreting. Whenever drawing overcomes representational dimension to a projectual one, there will be knowledge. Actually, representational drawing does not exist without interpretation; choosing what to draw by selecting a tiny part of what we observe, is a good example. Therefore, it is the knowledge of a thoughtful practice on drawing that I would like to convene here.

WHAT IS DESIGN?

While attending the Communication Design degree at the Fine Arts Faculty of the University of Porto (1980-1985), nobody questioned the meaning of Design, although there were many producing it. Design justified itself with the need of bringing order into the disorder of reality, contributing to solving problems in a user-centred manner. Designers believed they could discipline, functionalize or even “cure” society. This preventive idea that design can (or should) intervene to cure, (to cure bad taste or social inequalities), would persist until nowadays, as a social functionalist model.

At that beginning of the 1980s, the first signs of post-modern revolution appeared, bringing new questions to the ontological definition of the subject, seeming to blur boundaries between anthropology, art and design. We can say that the need to establish boundaries (simple and solid) seems to justify a status of seizure towards the future _ as stated by Worringer in his “abstraction and empa-

¹ Communication delivered in Natal (Congresso CIDI, Congresso Internacional de Design de Informação, Universidade Federal do Rio Grande do Norte, Natal 2017). Translation by Rita Afreixo Silva (2018).

thy” theory, regarding the emergence of the expressionist aesthetics (starting from abstraction), product of a time threatened by war, counter to Portugal economic and social optimism on the eve of entering the European Community. To Worringer, in opposing the abstract and critical expressionism, uncritical and empathic realism from prosperous societies at times of peace emerged, as one could perceive in Europe at the end of the 20th century. But I must confess that that need of “circumventing”, of delimiting, would remain in my spirit, searching for the ontological boundaries of design, although constituting a theme outside the agenda, by opposing the dominant idea that design will accomplish itself in the utmost hybridisation with many, if not all, subjects. One design liquefaction (as Bauman would say), bringing ambiguity to speech, to teaching, to organizations and media. Without the fundamental knowledge on designers’ identity and what they can, specifically, offer, it will be difficult to define and to state this professional and scientific area, either towards academy or towards society.

If in the 1980s of last century one was already doubting Design, nowadays its definition seems even more distant, associated with countless domains and concepts, at times conflicting, that seem driven more by economic, cultural and social speculation of that root than by the clarification and benefit of its worth. The word Design has been disposed by the market. For that reason, Design, in Spain, as Anna Calvera said full of humour, is the name one gives to something expensive that we do not know yet what it is for.

Through history Design has acquired a long track of aesthetic, technical, social and commercial associations. If, on the one hand, design is mentioned about almost everything, on the other hand it is also true that the extension of its domain seems to mean less and less in depth, exposing itself to a certain inoperative ambiguity. Margolin also recognizes, with concern, a general crisis in Design “[...] The fact is there is a crisis in design because of its multifaceted activities on practice, research, speech and education” (Margolin, 2013, p. 404). In Design Dictionary (Erlhoff and Marshall, p. 2008), we can count more than 40 design supspecies² (such as Eco design, Social design or Food design...). If design has

² Design Dictionary (2008), 48 declinations from Design: design against crime, design and politics, design criticism, design education, design history, design management, digital design, eco design, engineering design, environmental design, ergonomics design, fashion design, food design, furniture design, futuristic design, game design, social design, gender design, graphic design, green design, industrial design, information design, interface design, interior design, jewelry design, landscape design, lighting design, mechatronic design, media design, packaging design, participatory design, public design, radical design, registered design, retail design, retro design, safety design,

been encountering in science extraordinary reasons of multidisciplinary association, giving origin to new production formats, science has also found in design a transdisciplinary means of accomplishment, conception and communication as it is possible to observe through the multiple Design thinking applications, serving innovation management. Design thinking, nowadays diffused in every design schools, seems to be the best recipe to ensure creativity amongst academy and organizations, collectively integrating teachers and students into a process led by management, with the purpose to distil (tacit) knowledge.

DRAWING AS A METAPHOR

In the course of my professional activity, either as a designer or as a teacher (activities that always have crossed), I soon searched for answers to the definition of this activity with deep roots in drawing. I understood, afterwards, that Design's etymology came from Drawing. But I also understood that the main source of entropy in the representation of Design derived from the Anglo-Saxon division between its representational and projectual dimensions.

Design stands for project (in english) although, with a latin origin from *disegno* (drawing and plan or project), an italian term appropriated by english language, between the 16th and the 17th centuries. A part of design's Tower of Babel, of the confusion generated by so many different languages, comes from that ambiguity created by the english division between draw and design (drawing and project).

When Francisco de Holanda (1517-1585) was sent to Rome to learn Drawing (between 1538 and 1541) as a D. João III fellow, he did not simply go to understand the masters' drawing (enjoying Michelangelo's inaccessible company), but also to become aware of "Da Sciencia do Desegno", on which he would theorise later on, as a resource for invention, as a means to materialize ideas and build the artificial: "invent, figure or imagine what does not exist yet, so that it is and it will be³", acknowledging in this the announcement of what we now designate by Design. For that (according to neo-platonic thinking) it was necessary to be in harmony with the Creator (from where all novelty comes) and to master the speed of drawing in scratch capable to register the lightning in each creative spark.

screen design, service design, set design, slow design, sound design, strategic design, streamline design, textile design, transportation design, universal design, urban design, users design, web design.

³ HOLANDA, Francisco de (1985). *Da Ciência do Desenho*. Lisboa, ed. Livros Horizonte.

“The first lines or strokes done (...) drawn with great mastery and quickly, (...) that) incorporate the idea (...) of what we want to do, and organize the drawing”⁴.

Back then, *scratch* was seen by Holanda, as nowadays by Álvaro Siza, as an instrument to register synthetically the ephemeral idea (the origin of poetic science⁵) where the resolution of the complexity of the project is founded. It is, though, this drawing (or *diseño*) that gave origin to Design, achieving what previously only existed in imagination (representation and project).

It is possible to identify, between the latin languages that have in *desenho* (portuguese), *diseño* (castilian) and *disegno* (italian) a common etymology that has distanced itself from the remote origin of Design, rooted in the intentionality of the plan that, through the Anglo-Saxon approach, assumed the exclusive meaning of “project”. Drawing, that reunited representation and anticipation, poetic language and technical project, the author (autobiographically conditioned) and his will (morally projected), was divided and partially represented through the project (design).

But if to the Project it is possible to ignore or exclude its operator subjectivity, it will be harder when talking of drawing. As Alberto Carneiro⁶ noted, “who draws, draws himself”. In this self-reflective possibility of drawing there will be also the potential of self-interpretation to which design should not resign. On the other hand, I understand that it is in the Drawing phenomenon that stands Design’s ontology. Drawing is the result of the action of a draughtsman (operator agent), driven by an intention (or will), materialised through a representation instrument (pencil on paper or other). That is why there is always an author, an intention and an instrument in drawing, through which articulation of meaning circulates: “There is no drawing without will, nor drawing that does not carry a plan” (Francisco Providência).

Drawing practical intentionality acquires a form and that for is a communication (rhetorical) value in itself. For that reason it constitutes a plan. As I learned from Adorno, form is the true content of works of art; form, in itself, not what they convey. That is to say, what one understands as true content in the painting “*Les demoiselles d’Avignon*” by Picasso will not be the reference to african art or catalan prostitution, but cubism in itself obvious in its morphology.

⁴ Idem, *ibidem*, page 45.

⁵ Poietica, related to the production or the arts of creative production (from the gr. “*poie*” or *eclosão*). (Dagobert D. Runes, *Dicionário de Filosofia*, Lisboa, Editorial Presença, 1990).

⁶ Alberto Carneiro (1937 - 2017), portuguese plastic artist and sculptor, teacher of Drawing at Faculdade de Arquitetura da Universidade do Porto.

The identification of a trilogy grounded on the agent (author), the intention (programme) and the means (technology)⁷, that I have been defending as an ontological proposal for Design, correlates with the one sustained by Vitruvius⁸, when proposing architecture as founded on beauty (*Vetustas*), on functionality (*Utilitas*) and resistance (*Firmitas*) (RUA, 1998, p. 16)⁹.

Beauty, to the architect of the imperial military regime, was mainly the stylistic canonical domain (the domain of laws and models); Functionality related to the adequacy of the architectural object to the expected uses and performances; and Resistance, to the techniques and construction processes, upon which the durability would depend. These conditions were universally accepted by the subject are still an evaluation requirement to the awardees of Pritzker family¹⁰ (in Pritzker Award, recognised since 1979 as the “Architecture Nobel”).

Born twenty years later, Seneca¹¹, establishes (from Aristotle) what Vitruvius, in a practical way, particularized for Architecture:

“The cause (of things) may be considered from three points of view (...): matter itself without which nothing can be produced (...), the craftsman (who works

⁷ Francisco Providência, “Algo más que una hélice” in CALVERA, Anna (ed) (2013). *Arte? Diseño? Nuevos capítulos em una polémica que viene de lejos*. Barcelona, ed. Gustavo Gili, pp 195-214.

⁸ Marcos Vitruvius Pollio, engineer / architect of the roman army, was born in the 1st century BC leaving as legacy the first theoritical treaty on architecture, designated by him as *De Architectura*, compiling in 10 volumes texts and drawings arguing that “such constructions must seek for safety, utility and beauty...”. This work, probably written between 27 and 23 BC, was re-edited in Rome in 1446 and, from then on, released and translated into several languages, mainly since the 16th century, as a support to the Renaissance. His architecture treaty is edited in portuguese by Maria Helena Rua.

⁹ RUA, Maria Helena (1998). *Os dez livros de arquitectura de Vitruvius (Corrigidos e traduzidos recentemente em Português, com notações e figuras)*. 1. ed. Lisboa: Departamento de Engenharia Civil, Instituto Superior Técnico. ISBN: 129.248/98.

¹⁰ Pritzker Architecture Prize, awarded to brazilians Oscar Niemeyer (1988) and Paulo Mendes da Rocha (2006) and portuguese Álvaro Siza Vieira (1992) and Eduardo Souto de Moura (2011).

¹¹ Lucius Annaeus Seneca, stoical philosopher of Iberian origin (born in Córdoba), lived between 4 BC e 65 AC, having an important impact throughout his life on Rome, mainly from Nero’s government on, being his preceptor and who later on would be invited to commit suicide.

on it ...) and the imposed form to each object” (Seneca, 64 AC)¹². Seneca finds in the primacy of causes similar principles to those dictated by Vitruvius.

Firmitas (solidity and durability) to which built things must be obliged to, derives from the domain of matter; utilitas (utility or convenience of things) will be in the functional form imposed to each object; venustas (beauty and pleasantness), qualities undoubtedly resulting from the artist’s (or craftsman’s) transformation work, enunciate beauty as the transformation of rough into refined. We can thus identify a certain similarity between Aristotle’s causes (translated by Seneca) and Vitruvius’ conditions, the first ones referring to the object identification (craftsman, form and matter) and the second ones to its qualification (beautiful, appropriate and safe).

DESIGN’S ONTOLOGY VITRUVIUS, SENECA, BONSIEPE AND PROVIDÊNCIA

Assuming architecture as a design’s ancestor and observing it from an ontological point of view, we can infer the design practice as resulting from three intervention orders:

The one from the draughtsman (that presents himself as an individual or collective author); the one from the programme expected by the target (presented as a set of expectations concerning the functional performance, by eventually adjusting it to the market); the one from the available technical means (presented as the material and technological domain necessary to its production).

2000 years later, one does not glimpse a radical difference ancient and modern artifacts. What is the meaning, for contemporary design, the domain of beauty, functionality and resistance?

Framing Beauty in the post-modern background, of an aesthetic achievement from individual experience, beauty is the exercise of freedom translated by the programme of form, that is to say, the artifact’s rhetorical domain designed by its author. An authorship brand, certainly, but that is, mainly, a creative manifestation of style as a metaphor (historically engaged) erected for perpetuating life (overcoming end and oblivion).

For that reason the forms of beauty open themselves to such different and contradictory programmes as the ones with a beauty through sublimation, catharsis or difference. If the author’s domain is (in its etymological origin) the one from the roman auctor (deriving from augeo, related to “increase”), that is to say,

¹² SÉNECA, Lúcio Aneu. *Cartas a Lucílio*. Lisboa: ed. Fundação Calouste Gulbenkian (2009). ISBN: 9789723105360.

the one who dilated the empire's territory, the author should be viewed as the one that invents new domains for design. But the author is also the one confronting himself to his death sentence, the one witnessing and overcoming his death sentence. A device, as identified by Michel Foucault and explained by Deleuze¹³, whilst a machine to enable to see and to talk, enunciation system that from a "fracture" translates itself into knowledge, power and subjectivity.

Functionality is the programme attributed to the efforts of drawing, its practical value, the resolution of a certain problems or necessities set, aiming the satisfaction, the confort or the exceedance of the user, frequently required by the client. The project's programme involves concerns with its target and, in that sense, represents the user, leading us to question the limits of that service, if addressed to society or to the market, if addressed to its economic exploitation, if for its social protection.

Questions on the programme direct the project towards the other, convene him, opening up an explosive discussion on the social role of design. Market economy has been placing the consumer in the centre of its concerns. Some authors condemn darwinistically to residual uselessness all the drawing (of artifacts) that does not respond to the market's requirement. But how can the market aim for what it does not know? And proposing itself to solve the market problems, will not design remain hostage from a competition between similars, limiting difference only as far as the price is concerned?

For the progress in the qualification of consumption, for the progress of design in its own innovation, design should create new problems to the market, instead of submitting itself to its demands. In any case, practical functionality, or the programme, intend design, ascribe to it a social or commercial intention, that finds in sociology and marketing privileged partners for its dissemination. Sustainability, accessibility and social innovation have characterised design's programming agenda, substituting the obsolescence of others, such as ergonomy, fashion or identity.

Finally, Durability concerns the technological domain. The technology that allows edificating things. Technology determined the format of things before the invention of drawing. That was the big revolution operated by Drawing classes in the 16th century, founding Academia¹⁴ by liberating form from the technological

¹³ DELEUZE, G. O que é um dispositivo, in DELEUZE, G. (1996). O mistério de Ariana (tradução e prefácio de Edmundo Cordeiro). Lisboa: Ed. Vega – Passagens. In http://www.uc.pt/iii/ceis20/conceitos_dispositivos/programa/deleuze_dispositivo

¹⁴ In the 16th century, St. Luke Academy was founded in Rome in 1577 (14 years after

constraint imposed by artesanía – in traditional technicality, in handcraft, there is no drawing but moulds applied on models through traced design, likewise on tailoring. It was drawing that, on behalf of desire, implied the overcoming of technology, releasing it from tradition. If through technology the humankind was released from natural constraints (namely from the dependency on irregular energy sources), it was also technology that imposed the insurmountable and present domination framework; we live, nowadays, more dependent than ever on technology. Drawing is (as it has always been) a product from technology, submitted to its rethoric. The introduction of vectorial machines for drawing, such as the Frehand (in the 1990s of the last century) or the Adobe Illustrator (that survived the previous one), contaminated design's form, reifying and massifying it.

In the last 20 years, digital technology has played a dominant role on mobilizing economy, sexual and social reorganization and the anthropological representation itself. A technology that, the more advanced, the more invisible becomes, has turned to deeply dominate human life.

What is, therefore, technology to design? Where does its manifestation root itself? Technology is in the origin of humankind's invention. I say invention because humankind is, as Ortega and Gasset refers, that animal that, because he does not exist yet, he is looking forward to being, building itself. An entity whose being consists, not of what it is already, but of what it is not yet, make of it a pure imagined possibility¹⁵ (Ortega and Gasset, 2009).

Technology is, has been, the tool for implementing that pure imagined possibility. Which technology has humankind built? Undoubtedly, the word or, before it, drawing, allowed humankind to present itself (to become present). If tech-

her congener in Florence), associating artists to overcome the simple handcraft, through drawing and drawing from a living model. St. Luke Academy had notable teachers such as Bernini and Pietro Francesco Alberti who, in 1625, presented this space as a workshop, as a model to the other drawing classes that still function in the Fine Arts Schools (luminous spaces, with plaster models of busts, body members, skeletons and skinless models, where one would draw on easel, with charcoal or graphite, the naked model to learn both the visual language and the human anatomy). In the 18th century, by order of D. Maria I, João Carlos de Bragança (2º Duque de Lafões) established in Lisboa, in 1779, the Academia Real das Ciências de Lisboa, devoted to the promotion of History, Letters, Sciences and Economy. In the 19th century, by decree of D. Maria II, the Academia Real de Belas-Artes was created in Lisbon, in 1836, nowadays a public institution, under State supervision and with the task of defending arts.

¹⁵ Ortega and Gasset, José. *Meditação sobre a técnica* (tradução de Margarida Amoedo). Lisboa, ed. Fim de Século, 2009. ISBN: 978-972- 754-265-9.

nology released humankind from its natural constraints, it also created new technical ones, making him forget the being (Heidegger). If technical language transforms the human being into a thing, alienating himself, the poetic language, unveiling truth, might reconcile him with the being. But how to assure the poetic language alternative to the technical object constitution? How to balance poetry and technology? Poetry, in its interpretative accuracy, interprets not only the purposes (goals), but also the means (technology), giving origin to novelty; that is a condition of existence that cannot be forsaken.

Using Vitruvius' and Seneca's thinking in present design achievements, the ontological model seems quite consistent, observed by its intervenients: Author (beauty, craftsman, draughtsman), Programme (utility, target, motivation) and Technology (resistance, matter, instrument).

Let us admit, therefore, that authorship, programme and technology constitute themselves as three drawing production agents (Design), invoking aesthetics, aesthetics and technique under the common goal of the shape design; if that is so, also in the shape the three dimensions on its origin — poetic, social and technological — will converge.

This ontological principle was applied to the teaching structure of design at the University of Aveiro (1st training cycle, degree), therefore motivating a polysemic experience on the learner, creating a wide field of possibilities approached differently in each one of the 3 training years, evolving from the freedom of the author (aesthetic reference frameworks), to the programme constraint (accomplished in conjunction with companies), going through knowledge on technologies (viewed as creative means of production), thus constituting itself a design experimental lab. In each one of the three years of the training cycle the three agents are questioned: Who does it? How? And why? (Branco and Povidência, *The Design Journal*, 2017).

Possibly motivated by the present perplexity of Design in its endless extension of hybrid combinations, London Design Museum has also felt the need to bring more clarity and consistency to Design culture, confirming our design ontological thesis through the tripartite organisation of its permanente exhibition, divided into designer, user and manufacturer.

“Design is the product of an intersection between the three key participants of the designer, user and maker. [...] Generally speaking, professional designers respond to briefs given by manufacturers who are influenced by production processes and commercial imperatives” (Newson, Suggett and Sudjic, 2017, p. 7).

Gui Bonsiepe also suggests an ontological structure for Design (Bonsiepe, 2015). According to him, in the design the user, the task and the tool are integrated, as opposed to the model we defend, structuring design polarized by the author, the programme and the technology (Calvera, 2003).

Acknowledging the evidence of the evidence of the similarity between technology and tool and between programme and task, we identify the cleavage of user instead of author proposed by Bonsiepe. Bonsiepe will, therefore, place the market in the centre of the decision-making process about the shape, dismissing the author, renouncing to his interpreter role on the project, not inviting him to execute the design as his, in the first person, but sacrificing the individual (author) for the sake of the collective (market). By doing it, the designer will renounce to any moral interpretation (or ethical responsibility), formulated from his own consciousness, as existential knowledge.

This is, as I see it, a relevant point on the designer's mediating role. He is hired to do this and that, to solve this or that problem. But should not he be charged for his responsibility on what he does? On the consequences of what he does?

Noticing that sometimes we are invited to renounce to the moral decision on the shape, and acknowledging design as a moral decision about the shape of beauty (idea quoted from the plastic artist Álvaro Lapa¹⁶), the thought of Hannah Arendt¹⁷ on the nazi officer's trial "Eichmann in Jerusalem" comes to me:

"Eichmann's problem was exactly that many were like him, and many were neither perverts, nor sadistics, but were, and still are, terribly and frighteningly normal. From the point of view of our institutions and our moral judgment standards, that normality was far more dreadful than all the atrocities together", because that indifference before the other was grounded in the renunciation of consciousness, constituting in itself the major crime against humankind.

Awareness on the shapes of what we do, apart from a moral condition, should also be matter of research, discussion, study and comprehension, that is to say, matter of knowledge, in order to formulate the answer to the question: Which Man designs your forms? Which Man designs himself on your Design?

RESEARCH IN DESIGN

Turning to the ontological consideration, generated from the author, the programme and the technology, we will inevitably build a triangular relationship,

¹⁶ DIONÍSIO, Eduarda; FARIA, Almeida; MATOS, Luís Salgado de (org.) (1968). *Situação da arte: inquérito junto de artistas e intelectuais portugueses*. Mem Martins: Publicações Europa-América.

¹⁷ ARENDT, Hannah (1999). *Eichmann em Jerusalém: um relato sobre a banalidade do mal (Parte II)* (tradução de José Rubens Siqueira). Rio de Janeiro, ed. Companhia das Letras. ISBN: 978-85-7164-962-0.

where Design is generated. Design generated in this field of tripartite influence will also acquire different identity according to its proximity towards each one of the vertexes. In its edges, however, two-way relationships are produced between each pair of vertexes, generating exterior mediation surfaces with the knowledge from other areas:

In the connection between the Author and the Technology, Art is generated, interpreting technology from itself, declining the Programme and any externally imposed functionality;

In the connection between the Programme and the Technology, Engineering is generated, declining the Author, motivating itself through the objectivity of ergonomic suitability and productivity optimization;

In the connection between the Author and the Programme, Management is generated, declining Technology to focus on the leadership of social goals, politically and commercially recognizing them.

With no simultaneous presence of the three drawing agents (author, programme and technology vertexes), the result will inevitably refer to one of the three “reductions” (art, engineering and management edges). Therefore, it will be relatively easy to find a justification for the Design scientific partnership with Art, Engineering and Management domains.

The question is, therefore, grounded in the historical process of design’s international dissemination. In Southern Europe the training in design is, at the beginning, integrated in the Fine Arts Schools. But from Ulm’s German school on, a design’s technological culture that positions it near to engineering has spread. In many schools all over the world design was also born associated to Management, whether as a marketing instrument, whether as a sociological tool at the service of social and political activism.

In these three big generating centres of design one can still acknowledge its subcultures — communication Design (invoking art), industrial Design (invoking engineering) and service Design (invoking management). It seems natural that these design elective affinities imply the research and produced knowledge diversity, with implications for the polysemic claim of a science of design.

In that sense and reflecting on research as a source of innovation in design, we observed that doctorates in design accomplished in Portugal (Félix, 2013) reveal in more than two thirds (67%) the category that Frayling (1993) identified as “into design” (from external scientific contributions, coming from history, sociology or engineering...) and that only 15% could get close to the “for design” category, directly coming from its project-oriented activity and resulting in the drawn object.

According to Vasco Branco, two contributions might be in the origin of this evidence: the training of the first design doctorate advisors and the lack of concern from industry towards this field of knowledge, therefore inferring that the impact of research in design on professional, economic and social activity is paradoxically residual or even inexistent in Portugal (Branco and Providência, 2017)¹⁸.

If there is no doubt about the benefits that Design experienced with the external contribution from other fields of knowledge, one could also question if it should not attach more relevance to its own designing epistemology, namely through the deepening of a research on project, turning project into its own knowledge production lab, though encouraging the convergence between design's theoretical and practical dimensions on the same object.

PHENOMENOLOGY OF DESIGN DORST, CROSS AND TILL

Dorst¹⁹, in 2016²⁰, came out in favour of the convergence between design's theory and practice, through the creation of what he called academic Design. Dorst's academic Design is grounded in the observation of three problems:

Theory in design is disconnected from its practice (neither serving it nor being instrumentally recognized by this last one);

Theory in design presents itself internally diffuse and unclear (opening itself systematically to the extension of new domains);

Theory in design has not achieved the impact that one would expect among the designers' community (that does not recognise to it an effective contribution to design's innovation and development).

To rehearse an integrated and convergent response through such "academic Design", Dorst identifies the privileged resource to knowledge on three academic and professional domains: the theory of Art, Marketing and Management.

The doubt formulated by Dorst on the importance of theory about design's practice does not seem unusual when we notice the architectural innovation pro-

¹⁸ Branco, V., Providência, F. Design as Cultural Mediation between Matter and What Matters, *The Design Journal*, 21(1), p.1-9, November 2017. In <http://www.tandfonline.com/eprint/sTxE4pN3VHW3fcikFAWu/full>

¹⁹ Kees Dorst, design university professor in Sydney and director of the design research centre in Eindhoven, has been studying with all its relevance the traditional divorce between design's practice and theory.

²⁰ Communication at the congress Design, research and society, in Brighton (2016).

duction from awarded architects such as Álvaro Siza or Souto de Moura, not benefiting from the knowledge produced in any architecture research centre (apart from the tacit research directly undertaken in their own offices and headed by themselves).

However, the model of an academic Design proposed by Dorst, seems too committed to management, lacking the technological and artistic dimension.

Responding to the definition of what might be the research (knowledge production) in design project, the ethnographic observation of its creative practice (also predicted by Frayling) will gain relevance, to the comprehension of design's creative process. As Lino Cabezas from the University of Barcelona argues, the research in design and its theoretical production should result a posteriori and not a priori from design (maybe to preserve contributions from the unconscious that, otherwise, would be censored by consciousness).

Design's abductive character (always evolving through hypothesis), founded in the empirical and heuristic practice of problem-solving through drawing, will gain an enormous potential with the integration of a more critical dimension, but that cannot stay aloof nor differ from the designing act, so that it does not run the risk of submitting itself, through practice, to a mere illustration of theory.

Joana Quental²¹ reflecting on design's methodology, takes the question submitted by Alain Findeli, asking herself: does the design subject have a specific scientific and/or academic status, sufficiently distinct from other subjects so that it demands and justifies the use of specific methodologies to conduct its research? (Findeli, 1999:1).

Nigel Cross, contemporaneously with Findeli, will publish in the same year a possible answer, identifying in the designer a particular manner of reasoning, the origin of a design's natural intelligence, capable of distinguishing it from other forms of thinking (Cross, 1999), what would constitute the ontological root of its scientific affirmation. Briefly, Cross suggests that specific knowledge forms of design might have three origins, centering themselves in people, in the processes or in the products.

Considering people (and the human mission of designing artifacts), research will include empirical studies on the nature of that skill and the design teaching and learning methodologies.

²¹ Joana Quental PhD is designer and professor at the Doctoral Programme in Design from the University of Aveiro, assuring its vice-direction and the Curricular Unit of Methodology.

Considering processes, research focus should be attributed to doing, to the design's techniques, strategies and methodologies.

But, from the products point of view, research will fall on the study of forms and materials that configure the idea and, consequently, design's achievements as ideal manifestations (not only because they were conceived, but also because all forms are, in themselves, ideas).

From here Cross will deduce a characterizing taxonomy of research in design, enunciated by the domains of the epistemology which he called "designerly ways of knowing" (study of the ways to knowledge), enunciated by the domains of epistemology (about the way the designer carries out his work), praxiology (about practices and processes) and phenomenology (dedicated to the study of artifacts' form).

According to Cross, we therefore consider Phenomenology as the research for the production of knowledge in Design centred in the convergence of a thought of, and in the designing practice (drawing), convergent with Houaiss²² etymological definition, when considering "any theoretical formulation that aims to highlight the living experience on subjectivity, to the detriment of predefined principles, theories or values and, therefore, the process that elevates itself from the individual and apparent sensations to the true and universal reason".

Phenomenology, whereas the philosophical study of consciousness and its objects, applauds the way through which knowledge of the world is accomplished through each person, instead of the (inaccessible) world's existence in itself. For that reason the impact of the diversity of authors (individual authors) is highlighted, expanding, through their objects, design's consciousness about itself.

However, according to Jeremy Till²³, reflecting on his text "Three myths and one model"²⁴ (2017) about the research in architecture (that we will use here applied to design), there are three frequent misconceptions related to research in design through project.

The first one refers to the conviction that design is exclusively design, shutting itself until its own marginalisation. Design will, then, become more and more irrelevante or even irresponsible, risking to be ignored.

²² "Fenomenologia" in HOUAISS, Antônio (2001). *Dicionário Houaiss da Língua Portuguesa*. Rio de Janeiro, ed. Objetiva.

²³ Jeremy Till (1957-), architect, investigator and professor at Central Saint Martins and Pro Vice-Chancellor of University of the Arts London.

²⁴ TILL, Jeremy (2008 1st edition). *Three myths and one model*. Building Material Vol.17. Dublin, (Published here under a Creative Commons, non-commercial, no derivatives license), pp. 4-10.

The second one, by opposing the first one, claims that design is no-design, aiming to conquer its credibility near other more recognized subjects, but that depends on other intellectual paradigms. When turning to others, design dresses a methodological straightjacket, forgetting its own nature.

The third one argues that drawing is researching, acknowledging it each design's uniqueness and originality the original production of knowledge. But knowledge in design, investigation the definition on "research" from Bruce Archer is, according to Till, the "transmissible knowledge", for which reason artifacts, in themselves, will not provide sufficient proof. In order to promote Design's progress, it will be necessary to understand its processes and question the objects' life after its conclusion. But by doing it through speech, will not the author hide his own origin (as the psycho-traumatized patient), that way calling the comprehension of the phenomenon, the analysis of his own speech?

In the model proposed by Till, Design should realize its own basis and specific knowledge procedures. Design's comprehension into a qualitative or quantitative activity is not easily categorised, and therefore should be regarded as a synthesis of a great variety of intellectual approaches. Design should learn to communicate its tacit research, accomplished through its designing practice, but in a way that does not compromise the value of intellectual property from its own individual practice.

Design can, and must be, a research subject with its own rights, acknowledging the Academia universally accepted criteria but, simultaneously, applying them in an appropriate manner to the questions it has to solve, from conception to mediation through drawing (shape and process).

As previously referred, it is possible, nowadays, concerning research in design to distinguish three large mediation domains: services' mediation (motivated by management), product's mediation (motivated by engineering) and communication's mediation (motivated by art), though originating service design, product design and communication design.

Service design to social intervention is the one, presently, getting more media visibility in Design's culture. Very informed through sociology and management contributions, namely in innovation and social accessibility, design management and design thinking, in this domain, as Ezio Manzini²⁵ observes, design should no longer continue to feed industry, but focus itself on redesigning society for a

²⁵ The reference, in this context, to Ezio Manzini (recognised design professor and thinker from the Milan Polytechnic) is not based on any specific quotation, but in his general thinking.

more sustainable performance, privileging the territory's management. By opposing itself to the traditional economic structure, service design has been creating differentiation mainly through social innovation, frequently forgetting its own creative culture, or creating new associations with low technological (handcrafted) producers or even on validating autoproduction.

Simultaneously, product (or industrial) design keeps on feeding the big production industry of marketable goods (nowadays shifted to the East and founded on digital), even if observing natural phenomena in a more attentive way and, therefore, electing bio-mimetism as the protagonist of the artificial, adopting the innumerable solutions offered to complex problem-solving and generically promoting the reduction of the resistance between natural and artificial (between body and prosthesis), but regarding market as its future decision-maker. In this perspective and as Di Bartolo²⁶ points out, design is submitted to the social darwinism from which the future of drawing will, inexorably, depend.

In a third domain, communication design inherits remote expressions from graphic design, privileges artifacts' cultural mediation, destinating them to the construction of (new) meanings, that design will, ultimately, accomplish to find a global sense to its efforts. Aesthetic dimension of an author's poetry, away from formalities and ornaments, does not respond to the market's needs, but offers it new needs. As one can recall from Andrea Branzi²⁷, design is a metaphorical resource that, besides its practical function, does not abandon the symbolic function with which interprets world and life, though inviting the own existence as difference.

In these innovation areas we review the three generating centres observed in design's ontology: the technology (nowadays stated by digital as the protagonist of the interactive experience), the programme (headed by the sustainability and ecology social dimension) and the autor (aesthetic interpreter of the world using metaphor to produce new meanings).

Design therefore appears as a cultural mediation activity that translates into the drawing of artifacts, devices and services the process of the historical evolution from industrial Design (product) when the 19th century turned, the emer-

²⁶ The reference, in this context, to Di Bartolo (recognised design professor and thinker from the European Design Institute, Milan) is not based in any specific quotation, but in his general thinking.

²⁷ The reference of Andrea Branzi (recognised design professor and thinker from Milan Polytechnic, co-founder of Domus Academy) is not based in any specific quotation, but in his general thinking.

gence of communication design by the middle of the 20th century and the gradual hegemony of service design (mainly in digital support), taking place over the last twenty years from the 21st century. The different fields of design persist simultaneously, translating features, at times contradictory, from a commonly shared culture, centred in the ambition of contributing through material culture to the common good in progress.

But might such distinctive expressions of Design question us if there is a common denominator to their practice? If their practice will constitute disciplinary support? Or if we acknowledge a methodology that supports a science of design? Is design a methodology, a way of achieving a goal, as Marco Sousa Santos²⁸ (1999) stated days before the first biennale Experimenta (Público, 2017)²⁹ and, consequently, an operative instrument or, like art, will constitute and end in itself?

It is importante to ask and understand what designology (or science of design) means, acknowledging humbly to Drawing the device of formulating, understanding and communicating the ideas and the inventions of what we want to do and be.

FOR A DEFINITION OF DESIGNOLOGY³⁰

Thinking from Kuno Prey³¹, I ask myself: is Design a subject³² or a science³³? If the subject brings us to the idea of behavioural order, to the domain of methods that ensure a particular technical outcome translated into doing (the reality), science brings us to the methodology with which we direct the spirit when ques-

²⁸ Marco Sousa Santos (1962-), designer, professor, entrepreneur and animator of design culture, founder of the Experimenta design (1999-2017) biennale.

²⁹ “ExperimentaDesign: o fim da bienal, 18 anos depois”, by Joana Amaral Cardoso, In revista Ípsilon / Jornal Público, <https://www.publico.pt/2017/09/30/culturaipsilon/noticia/experimentadesign-o-fim-da-bienal-18-anos-depois-1787164> (consulted on August 13, 2018).

³⁰ “Contributo para a definição de uma ciência do design”, Francisco Providência | ed. facebook | 16 junho 2018 in <https://www.facebook.com/providenciadesign/posts/1531249746979281>

³¹ UD18, meeting of doctorate students in Design, Universidade de Aveiro, 2018.

³² A Subject is a set of regulations from resulting from a certain knowledge, or know-how, intended to maintain any corporation at a good functional order.

³³ A Science is a rationalised, experimented and universally communicable knowledge, on a specific theme, obtained through its own methodology.

tioning reality, translated into thinking (the truth). Ultimately, the “subject” does the reality and the “science” thinks the truth. But if design thinks the truth (through its authors) doing reality (through the accomplished drawings), then design “thinks by doing” and, consequently, its science will be the poetics (poet is the one who does).

Foreseeing Design from this point of view, we might be tempted to think that Design is a subject, once the product of its knowledge is never universal; that is to say, the thought truth is always associated to each one of its agents and circumstances. But if we think that that one is the condition of interpretative truth of Design, then it will not be also possible to elect a corporative method, because we acknowledge the existence of an intrinsic methodology to each agent (author) and, consequently, of many methods to do it.

In design’s Science, when convoking the individual as an agent, we will lose the universal truth to find the polysemic diversity of a way of thinking, translated into each act of doing. That is why design’s methodology will be the set of all invoked methodologies by all the designers. This will be its phenomenological advantage, by retrieving the subjective legacy as knowledge. In that sense, design’s authorship convokes the existence of its agent, its subjectivity, as a production and moral guarantee device (distinguishing good from evil, from the own existential experience).

By conceiving the project from itself (author) and putting itself in the other’s shoes (programme / user), its inscription and complicity on being there, in a social situation, will be guaranteed. But how to guarantee that its contribution escapes to the frivolity reifying vortex? How to assure that it escapes from the condemnation to repetition (inauthenticity) with which it is polluted by material culture? Through the confrontation with nothingness, that is its consciousness of time. “Nothingness” guarantees, will guarantee, truth’s unmasking and the convocation of difference (Heidegger).

Taking for granted that the design’s theme is the designation or drawing of the form, its formulation will then be produced in its act of doing (drawing), what turns design into the science of poetics (or poiesis). But the aim of doing-thinking design is engraved in the operated relationship, in the transforming expectation of that action. If Design conceives a wine label, a bicycle, a brand or a service, it operates a mediation and the specificity of its knowledge will be, precisely, that one: “to mediate”. By mediating, design has been contributing to the human functionalization, transforming beings into things, men into consumers and society into market, in a big chain of causalities that usually start from the individual annulment or his apparent exaltation for pseudo-freedom of choice that will subjugate him to technology, exchanging freedom for survival, or a dependency for a bigger one.

If in that mediation, knowledge would result conditioned by the operative matrix from its own agent, then that would be a cultural mediation.

Thus and summarizing, design is, in the European tradition, drawing of cultural mediation, or drawing of cultural mediation artifacts, devices and services.

While drawing of cultural mediation, design presupposes a technology (operative means) and an agent (draughtsman), but also a goal (function): design actuates.

We can then add to design's formulation: drawing of cultural mediation for the artificial (world's transformation) _ though it might be redundant, once all culture is already a construction of the artificial.

Design will then be defined as drawing of artificial mediation artifacts, devices and services. But admitting its contribution for authenticity _ in the condition of turning the being present, as an epiphany of freedom and accomplishment _, its plan shall subordinate practical function to symbolic, changing the euphoria of interventive exaltation for nothingness.

In that condition (and in that one exclusively) Design would become: drawing of artificial mediation artifacts, devices and services for nothingness. That is its wisdom and its major difficulty, once "nothingness" is not the indifference of result, but exactly its opposite, brings the novelty of difference.

But can we change the desire for repetition (or "happiness" as Kundera³⁴ called it), for the sacrifice of differentiation (resistance against indifference and innovation condition)? Maybe. That is our thesis, a design informed by the life of its own author.

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³⁴ "Human time does not spin round in circles, but advances in a straight line. That is why the human being cannot be happy, because happiness is the desire of repetition". KUNDERA, Milan (2017 reimpressão). *A Insustentável Leveza do Ser*. Lisboa, ed. Bis.

practice of drawing, aims to contribute to the construction of new meanings.

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