

Brands Analysis Using Informational Ergonomics Concepts: A Proposal

João Carlos Riccó Plácido da Silva, Luis Carlos Paschoarelli,
and José Carlos Plácido da Silva

UNESP, Bauru, Brazil
joaocarlos_placido@hotmail.com,
{paschoarelli,plácido}@faac.unesp.br

Abstract. Currently, a lot of visual information present in all media is form vehemently, for example, in print media and interfaces used for publicity in conjunction with informational design. This visual information has great influence in the life of human beings, since the vision of these individuals is the most used sense. Studies on visual identity have not explored this issue in a satisfactory manner, favoring thus the subject of this small development projects in the area. It is noted the need for analyzes to enable implementation principles of project, making them accessible to the comprehension of most individuals. This study aimed to propose an evaluation of visual identities, which were analyzed by means of visual concepts of usability, design methodologies and Gestalt. We contacted design firms specialized in visual identity projects, places where interviews were conducted to collect the brands allowed for analysis. The results point to a frequent demand for the employment of visual usability principles, design methodologies and Gestalt design in visual identities.

Keywords: Ergonomic, Graphic Design, Guidelines, Visual Identities.

1 Introduction

Mankind uses brands to communicate since the prehistoric time. Over the time those brands have been more complex and with denser messages. The apex of the contemporary time are the institutional brands that use symbols or graphic language and typography to transmit their message. The lack of concern about how those graphic projects are being applied, has caused a visual discomfort, which is called visual noise and consists in the excess of pre-organized information. According to Raposo (14), if the brand is not used in a coherent and consistent manner, or if the other elements of identity are not a unit, you end up losing the logic of graphic discourse that allows its recognition.

The solution, at first, is responsibility of graphic designers, since they have the knowledge and the methodology to analyze and organize the information in a more appropriate manner, aiming to positively affect the daily life of users. It is noteworthy, in this case, the development, definition and implementation of visual identities.

The lack of patterns for the development of the visual identity results in incomprehensible projects, and realization of the growing number of institutions seeking a place in the market; misconceptions in the use of colors and shapes result in informational overload, among others. Moreover, when the development of the brand is not well done, the visual element can end up in not summarizing the product or service, confusing the perception and reception of the consumer.

This study is based on a directed literature review, addressing factors that are around the visual identity, such as the fundamentals of design, nonverbal language, color, ergonomics and gestalt. Posteriorly, it was developed an analysis sheet based on the review and guided by the informational ergonomics, so brands were pooled to be surveyed by the analysis form, enabling to present some important parameters for evaluating visual identities.

2 Theoretical Foundation

2.1 Design

The conception of objects and information systems in today's world depends on several technological areas, however, the indication of the term design to denote this practice seems to be inherent in a scientific discussion in this area. Currently, after nearly a century of the initiative of the German school, the Bauhaus, the design is still a controversial term. It is noted a trivialization of the term design, sometimes by lack of knowledge, sometimes because it does not imply a unique career, as law, medicine or architecture. These jobs require a license or qualification, with established standards and protected by self-regulatory institutions. The design, on the other hand, widens increasingly new skills, but without any institutionalized specification, without organization or regulatory concept, which makes it capable of indiscriminate use (6).

2.2 Visual Identity

The visual identity is the set of formal elements that visually represents, by a systematic way, a name, idea, ideology, product, company, institution or service (16). The visual identity or brand is an appeal to the senses, it is possible to see, touch, grab, listen, observe and move. It feeds the user recognition and widen the differentiation of its products and ideas, as well as bringing together disparate elements, unifying them into integrated systems (18).

Raposo (14), says that if the brand is not used in a consistent and consistently way, or if the other elements of identity does not form a unit, you end up losing the logic of graphic discourse that allows its recognition. The brand cannot be regarded as advertising or comics, so it does not purport to convey all the corporate values. To demonstrate the quality of the product or service that the institution provides is the role of the publicity. It must explain the positioning of the brand and show its meanings or values. In the development of a visual identity, four main graphic elements must be considered: logo, symbol, color and alphabet.

2.3 Informational Ergonomics

The contemporary ergonomics has focused on studying systems where there is a predominance of sensory aspects, in other words, visual perception and other sensations that work together with the body for decision making (7). According to Chapanis (2), Ergonomics is a body of knowledge and analysis of human abilities, limitations and other relevant features for design projects, which includes the informational aspects.

The informational ergonomics uses the principles of information theory, send the right information to the right person at the desired time, in a more effectively and efficiently way, thus bringing satisfaction to the users and always respecting their diversity. To accomplish that aim, it contemplates the cognition and perception, and covers the aspects of verbal and nonverbal language (8).

This area of ergonomics is related to human cognition process. According to Preece (13) cognition is the event of the mind in carrying out daily tasks and involves interaction of cognitive processes, such as thinking, speaking, among others. This concept can be divided into two types: experimental and reflective, the first involves the action and reaction of the humans involved in certain activities while the second involves the act of thinking, compare and make decisions, this is the type that develops the ideas and rises the creativity (12).

Those models of cognition use some paradigms for their functionality as attention, perception, comprehension and memorization. The attention is related to the level of alertness of the body. Perception is the relation to the cultural context of the individual. Comprehension relates to the correspondence of the senses of the message assigned by the font and the memorization by selective retention of the message (11).

Ergonomics and usability of information systems deal with human-task-machine communication in other supports beyond computers, including, warnings, cautions on packaging, information systems, static graphics, instruction manual, color. It is highlighted in that item the readability issues, decoding focused to the logic of use instead of its operation (10). There is a concern of design professionals in understanding how the user communicates with the products, developing models to facilitate the connection of these with the system in which they are working. It also seeks to facilitate the rapprochement of the two parts, so that it is possible to be more intuitive and/or effective interactions from two situations: an ideal and other problematic.

The analysis of graphic design aims to determine whether the product instructs users efficiently, respecting each process and means of work, seeking as a result the user satisfaction, while respecting the limitations of each individual (9).

The informational ergonomics involves a number of aspects and principles, which deal especially with the whole relation in the human-technology interface, where visual and auditory means, in the information processing, are crucial to an action or activity. The informational ergonomics shall be responsible for visibility, readability, comprehension and quantification, prioritization and coordination, standardization, compatibility and consistency of symbolic components, such as alphanumeric characters and iconographic symbols, which are widely used in signaling, safety and guidance system (16). It is responsibility of the informational ergonomics the application of specific techniques that provide men the tight balance between themselves, their

work and the environment around them. When applied and managed correctly in institutions, it enables the worker (or user), higher levels of perceived health, comfort and safety (18).

Usability as a concept deals with the suitability of the product to the task, where performance is destined to the suitability of the product with the user and the context in which it will be used. Concern with usability has usually occurred in the end of the design cycle, during the evaluation of the product already finished, which results in few changes due to the high cost. Therefore, since the beginning of the design activity, usability must be present in its development (10).

Usability tests are techniques that involve representative users in a certain population for a specific system. Users are assigned to perform typical and critical tasks, where the collection of data occurs for future analysis. Those tests are characterized by different techniques, intended for ergonomic evaluation of interactive systems, such as heuristic evaluation, ergonomic criteria, standards-based inspection, style guides or recommendations guides, checklist inspection, cognitive walkthrough (or inspection), empirical user test, interviews and questionnaires (3).

2.4 Informational Ergonomics and the Visual Identity

The human cognitive system is characterized by processing of symbolic information, in other words, humans create and develop images through mental models or representations of reality, which can be models or aspects of reality (3). In this sense, the cognitive system is the term used to refer to structured and formal representations grounded in theories of psychology.

There are several models of communication that can help understand how scholars have seen this problem, given the difficulty of understanding how individuals see and understand the information presented. The informational ergonomics is widely used in research that relates signaling sites and the recognition and comprehension of signs and information boards. The human structure and information processing are the main methods used to understand and organize studies of functionality and comprehension of the signs of warnings (20). One of the models of information processing is the one proposed by Alves, in 1985, which derived from the model of Welford in 1968, and which was later adapted by Whiting in 1979, comprised of five phases, since the appearance of the information to the motor response (Figure 01).

The models determine the individuals behavior and constitute their vision of reality, that can be modified or simplified by what is functionally significant for them. This process helps the individual to extend the relevant elements and eliminate the secondary ones, and they are usually connected to the knowledge already acquired (3).

This same model can be used in the comprehension of visual identities, which normally have information relating to the institution that is wanted to identify, so that the users can understand and associate with something already seen and processed by their cognitive system. The use of pictograms and icons in the visual identities can facilitate that comprehension.

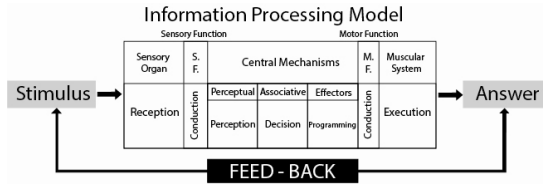


Fig. 1. Model of information processing (Source: Alves, 1985, adapted by the authors)

The visual identities seek to inform and identify in a simple way, just like signposts. Pictorial images are used in their symbols and logos to facilitate the approach of the user with the image being displayed.

A brand does not necessarily need a symbol. Another factor widely used in the development of visual identity is the typography, which is considered a technological element. The possibility of usability applied to the typography responds to the basic interface conditions between the elements and the readers, usually receivers of signs.

2.5 Gestalt

The studies related to Gestalt began in the late nineteenth century in Austria and Germany, and resulted in studies of perception, also known as Form Psychology, Gestalt Psychology and Gestalt. The first published work in the area, which dealt with the visual perception, was that of Max Wertheimer in 1912, in which Wolfgang Kohler and Kurf Koffka were his partners. These three researchers are considered the initiators of the Gestalt movement. They considered the psychological phenomena as a standalone set, indivisible and articulated in its configuration, organization and internal law, independent of individuals perception that formulate their own laws of human perception.

William James, American philosopher, greatly influenced the fundamentals of that school, considering that people do not observe the objects as packages made up of sensations, but as a unit, concluding that the perception of the whole is greater than the sum of its parts. The phenomenology of Edmund Husserl also influenced the Gestalt formation. It is based on the principle that all consciousness relates to something and, accordingly, it is not a substance, but rather an activity consisting of acts, perception, imagination, speculation, volition, passion, among others, with which it is possible to aim for something (4).

For Arnheim (1) the visual perception is organized through the establishment of total and central patterns in the comprehension of some laws. This pattern can be structured in the internal sense that is part of that image so that the appearance of any part depends on its greater or lesser extent inside the structure which is influenced by the nature of its parts. The act of note those relations is a more effective way to establish those differences and establish a set of perceptual tensions that highlights the contrasting elements in the image. From this premise, the comparisons among contrast, similarity, proximity and others share the study of mental comparisons and the relation with the existing one.

Those studies arose as a reaction to the established contemporary theories and were based only on the individual and sensory experience. They assume that the sensible object is not just a bundle of sensations for humans, because the perception is beyond the elements provided by the sensory organs. They were based on the statements of Kant, that the elements perceived by us are organized to make sense and not only by associations with what is known previously (5).

According to Gestalt principles, there are eight main aspects in the perception of objects and shapes: Unity, Segregation, Unification, Closure, Continuity, Proximity, Similarity and Pregnancy of Form (5).

3 Materials and Methods

Studies conducted through bibliographical references were applied directly to the analyzed objects in order to propose possible parameters for analysis and development of visual identities. Accordingly, we sought to demonstrate the range of related issues enabling a technical analysis of these projects. Thus, we tried to gather all the factors in a spreadsheet that enables the study of brands, seeking an equality among them on issues established by the review.

The next step was to select the brands that would be analyzed and compared to each other, not in order to show which one is superior or better, but rather seek and display the same factors that highlight the brands in the projects of the graphic area.

For this, it became necessary direct contact with companies and professionals, through personal contact, clarifying our intention, so that companies and professionals did not feel intimidated by the approach.

3.1 Proceedings

Analysis Sheet. In order to enable an effective analysis of the brands obtained, we opted for the development of an analysis sheet that seeks to address all or most of the important factors in the development of a brand. It was not found any line of analysis related to visual identities in national bibliographies. There are specific analyzes, such as those made by visual ergonomics or the gestalt. Based on literature review, we realized the existence of factors that could later allow the proposal of some parameters for the development and analysis of visual identities, among them it was seen the aspects related to visual ergonomics, the gestalt and colors, using techniques such as the verification of the golden ratio, number of colors, color psychology, and others. Analysis sheet, at first, was defined with the following items: company name, rank, range, brand, size, typography, symbol and composition. All those factors made it feasible the search for equality among the brands used, thus it was possible to propose parameters for analysis and development of the analysis sheet (Figure 02).

Company Name. The company name describes its fancy name, so that it becomes easier to identify to which company the brand belongs.

Company Name		Record Number
Classification		
Range a - regional b - national c - international		Original Brand (image)
Measures (image)		
a - with symbol b - with integrated symbol c - without symbol		
ae- be- ce- de- ee- fe- ge- he- Cj= Tip=		Typography (image)
Symbol (image)		
		Visibility 1 2 3 4 5 Legibility 1 2 3 4 5 Readability 1 2 3 4 5
() unit () unit () integration () proximity () continuity () shutdown () similarity		Set (image)
Extra space for annotations		
		N. of colors = Frequency of form 1 2 3 4 5

Fig. 2. Structure of the analysis sheet of brands (Source: authors)

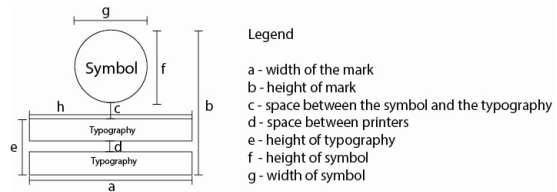


Fig. 3. Template of measurements of the dimensions of the brands (Source: authors)

Sheet Number. The number of the analysis sheet enables data collection and analysis of results without the need to memorize the names of companies and the organization in each classification.

Classification. The classification refers to which market sector the brand is inserted. This item allows a division that allows a comparison of the same markets, and then among all the brands that will be analyzed. The brands were divided by the market to which they are intended: Industry, Commerce, Health, Education, Food, Transportation, Event; Offices; Product.

Range. As far as the brand reaches geographically. Brand is the original image or the desired object, divided in regional, national and international. To determine which definition the brand is inserted if researched on the internet the market it covers or if there is any relation outside the state or outside the country for each company.

Dimensions. In this section is where the search for some relations among proportion is inserted. In order to perform this analysis, the sheets were printed and measured. The established measures were always noted in one dimension, considering the largest brand length by setting a size of 63 mm, in its longest line, for example, if it is wider or higher, thus maintaining equality in measurements and subsequent existing comparisons. I was created a template for performing the measurement (Figure 03).

Typography. In typography we analyzed how the fonts and shapes were used to achieve their goal, highlighting aspects of visual ergonomics, such as visibility, legibility and readability. There are six aspects that can vary an alphabet: the case, weight, width, inclination, contrast and style. In those variables there is an unlimited number of spatial possibilities of expression and texture (15). Those aspects make the brand more visible or legible and these types of items will be considered in the analysis of the brands. The classification of each item of analysis occurs in a range of 1 to 5, considering an increasing scale, where 1 is terrible, 2 is bad, 3 is regular 4 is good and 5 is great.

Symbol. To analyze the symbol, the typography was excluded, isolating it from the symbol, and determining a degree of connection with its reference object. In the symbol we just consider the gestalt, using six laws, which are: Unity, Unification; Segregation; Closure; Proximity, Similarity. Performing a visual reading of the shape, as shown by Gomes Filho (5), we selected three items present in that shape.

Composition. Analyzing the composition, it is possible to see how is the brand set. First, the amount of existing colors, and then assess the level of pregnancy of the shape, which is another of the Gestalt laws. Thus the brand set was analyzed, in other words, symbol and logo which binds to visual ergonomics items discussed in typography. Regarding the pregnancy of the shape, we opted for a bar analysis, such as the one made in the typography, where an increasing scale was used, in which part 1 was terrible and 5 was great.

Space for Extra Notes. This space has been reserved in order to write down some existing problem in the sheet or any item that could not be analyzed by the established means in the literature review.

Brands. The interviews proved to be effective, because they enabled the comprehension of companies to the importance of the research and use of their projects in it, which means that they allowed the analysis of their graphic designs in this study. Five projects of 10 companies were sent, as defined previously, thus obtaining a total of 50 brands. Companies were numbered (concealing their names) and their respective brands.

4 Results

4.1 Results of the Analysis

After the analysis of the brands, it was possible to tabulate all the data to obtain the results in each item defined in the analysis. First it was necessary to divide them into categories, allowing a deeper and more complete data study comparing just the related brands to the same sector, in order to compare all the results of analyzes. Below, there is an example of sheet filled in (Figure 04).

The result was expressed in a table in which some items were placed in percentage and the others in numerical values, since it dealt with the selection of dimensions and quantities (see Table 01). The numerical values were used only on the dimensions in relation to the interval and the higher incidence (mode) and also in the total mean. It was also used in the gestalt section, since it reflects to the three ones that most often appear in symbols, and thus it is easier to analyze them by numbers.

The range of brands is present in the results, expressed in percentage. Regarding the dimensions, which are eight in total, measured from the brand, and two more that are the mean of the set and typography, it was analyzed the percentage that appears, the range of measures, the higher incidence and the full analysis of the mean. In typography it was analyzed the visibility, legibility and readability, expressed in percentage. In gestalt, it was listed the first three laws that appear in the brand symbol,

whether integrated or only typography. In colors, it was quantified the different colors that appear, also expressed in percentage. In the symbol, we observed if it existed or not, and if it was integrated into the set, also expressed as a percentage. And lastly, the pregnancy of the shape, expressed in percentage.


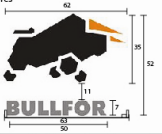


Company Name		Bullfor	Record Number	38
Classification		Industry	Original Brand	
Range				
a - regional X - national c - international				
Measures		developed brand for a company of accessories and metal constructions X with symbol h with integrated symbol c with symbol		
		Typography		
Symbol				
(1) unit (3) unification () segregation () proximity () continuity () shutdown (2) similarity		Visibility 1 2 3 4 X Legibility 1 2 3 4 X Readability 1 2 3 4 X		
Extra space for annotations		Set 		
		N. of colors = 3 Pregnancy of form 1 2 3 4 X		

Fig. 4. Example of filling the analysis sheet (Source: authors)

Tables containing the results were also divided by color, to facilitate their identification and visualization. Each selected color refers to the category to which it was adopted, thus facilitating subsequent comparisons among categories.

In Gestalt is possible to verify a number below the statement, since this number corresponds to the number of brands multiplied by three, resulting in the amount of gestalt laws that would be present, and thus an easy access and comprehension of the resulting numbers.

General Analysis. The capture of the brands with the interviewed companies resulted in a total of 50 brands. In this table it is possible to see the comparative results of all brands obtained and analyzed, also joining the two brands which do not belong to either category, in other words, transport and product categories. The overall results presented here are very important to understand how the relevance of each item of the brand is treated for its development.

In range, there is a large percentage of 50% for national brands. Regarding typography is observed a great commitment in brand visibility, and 92% achieved the top score, and in relation to the legibility and readability, respectively, 70% and 66%. In Gestalt, the laws that prevail in relation to the symbols of the brands are in decreasing order: closure, similarity, unification, unity and continuity, segregation and proximity. In the colors, the use of only two is extensive, 76%. Regarding the symbol, it is

confirmed the high percentage of 64% in the presence of the symbol. In the pregnancy of shape, it was proven that 74% were considered of great comprehension and fixation of the brand.

Table 1. Results of the analyzes of brands - Total

Results of the analysis of brands				Total					N of Brand		
Range (%)	regional	national	international	Typography (%)	riter	bad	regular	good	optimum	50	
	30	50	20	visibility	0	0	0	8	92		
Dimensions				legibility	0	0	6	24	70		
				readability	0	0	4	30	66		
b	100	10 - 62	20	34,7	Gestalt	unification	unit	similarity	shutdown	150	
c	74	2 - 10	2	4		25	19	27	37		
d	56	1 - 5	2	2,8		continuity	proximity	segregation			
e	90	06 - 34	10	15,9		19	10	13			
f	84	10 - 47	20	24,5	Colors (%)	1	2	3	Symbol (%)	With Symbol	Without Symbol
g	84	10 - 63	20	30,7		16	76	6	64	30	6
h	100	33 - 63	63	56,4	Pz. of Form (%)	riter	bad	regular	good	optimum	
C.J.	100	10,1 - 38,7	31,5	21,7		0	0	2	24	74	
Tip	100	14 - 63	63	41,1							

Regarding the dimensions, there is a high incidence of all of them, and the dimension "d" remains less incident, with 56%. In some items, extended intervals are observed, which have made mode very similar to the mean of those intervals. We chose not to use the symbol approximately in this mode, since it was exactly correct, without many variations. In the study of total brands, the mean was included as a complement to the mode, demonstrating that even with an extensive range, it remains in an approximate measure of the mean.

5 Discussion

The evolution of the methodology enabled several ways to develop a good design project for any type of product, but may be perceived that in companies there is not a specific methodology for the development of graphic brands. They showed that for most developers of this kind of project, the methodology is used in order to adapt to every professional and every type of team that the company has.

The analysis sheet showed to be very effective in the division and study of graphic brands. The sheet was developed using criteria of visual ergonomics in its division in order to enable a more thorough observation of the brands, separating the analysis into specific points, such as the existence of the symbol, whether it is used or is included on the brand, or even if it absent. The study showed that 64% of the brands analyzed contained symbol and 30% had the symbol integrated to the typography.

The study demonstrated the range of the brand which resulted in 50% of them having a national range, while 30% are regional. This showed us that the companies analyzed in this study are small and medium-sized, and they are in the same bracket, allowing a closer and comparative study among them.

The separation of the symbol was of utmost importance to study the laws of gestalt, because it was possible to check which laws were used for development. Applying the three major laws, verified in one order, it proved to be a concern of its comprehension through simplicity. It was observed in the results that the most active

law was the Closure, just because this law is able to link the elements of the symbol, which enables us to understand its real sense, in second place was the Similarity, which allows the use of equal elements in order to simplify the shapes, facilitating the visibility, in third place was the Unification, which is the junction of different shapes to create a whole.

The analysis of typography, through the laws of visual ergonomics, showed a concern with the visibility, which background was the legibility and readability, as reported in some of the interviews. The result always relevant of that item showed that all companies seek a way to promote the comprehension of the brand, demonstrating that they seek the same pattern, working largely with the medium and small companies. Because the brands were provided by medium-sized companies, there was no major problems regarding the brand reading, where it was possible see that in the item visibility, 92% achieved the highest score, followed by legibility with 70%, and readability with 66%.

The analysis of the color showed to be very effective with the use of few colors in the development and implementation of brands, which was expected by the reports in the interviews. The result showed that two colors are usually used, with few variations in gradient, among other graphic accessories, which may hinder the visibility of the brand. This factor is directly related to the pregnancy of the shape, which is characterized by ease of reading and understanding. In this question 74% of the brands obtained maximum score.

The sheet also included the dimensions of brands and their relations, there are a lot of similar or very close dimensions followed by the higher incidence of the same dimension. This demonstrates the existence of a pattern for certain brands, which may facilitate less experienced professionals in the development of their first projects. There was a need to develop a more effective methodology, despite complaints from some interviewees in relation to newly graduated students, who do not use any method in product development.

6 Concluding Notes

For the proposed parameters in this study, it was used as a reference all the available theoretical background in order to provide means of analysis of visual identities for companies and public or civil institutions. The use of those references allowed reaching all the goals defined and established throughout the literature review, which covered subjects related to the world of brands. It was described: items related to the design, the project methodology, the visual identity, ergonomics, non verbal language, color, and gestalt, which provided the construction and a proposed of an analysis sheet, which aimed to study the brands selected with the companies surveyed, according to pre-established criteria and maintenance of the necessary ethics during this type of approach. The sheet covered all the necessary aspects demonstrated in the theoretical apparatus defined for the study, thus enabling those projects to be discussed in a depth and objective way. That provides new studies possibilities of analysis that permeate the field of informational ergonomics, since this is a new area of research applied directly to graphic design which so far have been based on intuition and

experience of its designers, causing the scientific research to stay in the background, since those projects have a large intuitive load, which is hard to evaluate.

The research contributed significantly to the design area studies, allowing it to be expanded, whereas the approach allowed different views on the development of projects, thus providing the opening of new horizons and new possibilities for future research in the area of visual identity, but also in other fields of graphic design. The use of an analysis sheet may expand the parameters on several other products of graphic design, as well as for product design. The methodology of the research presented here, proved to be adequately effective, obtaining concrete results and that might be used in order to analyze and develop new visual identity projects.

References

1. Arnheim, R.: *Arte & percepção visual: uma psicologia da visão criadora*. Pioneira, 13th edn. São Paulo (2000)
2. Chapanis, A.: A some reflection on progress. In: Human Factors Society. Proceedings Santa Monica, Santa Monica (1985)
3. Cybis, W.A., Betiol, A.H., Faust, R.: *Ergonomia e Usabilidade – Conhecimentos, Métodos e Aplicações*. NovatecEditora, São Paulo (2007)
4. Dondis, D.A.: *A sintaxe da imagem visual*. Editora Gustavo Gili, Barcelona (1997)
5. Gomes Filho, J.: *Gestalt do Objeto: Sistema de Leitura Visual da Forma*. Escrituras Editora, São Paulo (2000)
6. Heskett, J.: *Design, Ática*, São Paulo (2008)
7. IIDA, I. *Ergonomia Projeto e Produção*. EditoraEdgard Blucher LTDA, São Paulo (2005)
8. Martins, L.B., Moraes, A.: *Ergonomia Informacional: algumas considerações sobre o sistema humano-mensagem visual*. In: *Gestão da Informação na Competitividade das Organizações*, vol. 1, pp. 165–181. Editora Universitaria da UFPE, Recife (2002)
9. Melo, C.V.A., Cursino, R.M., Santos, V.M.V.: *Estudo da Ergonomia Informacional Sobre o Uso de Mapa de Riscos e Sinalizações Voltados as Rotas de Fuga Existentes Numa Planta de Processamento*. XXVII ENEGEP, Foz do Iguaçu (2007)
10. de Moraes, A., Frisoni, B.C.: *Ergodesign: Produtos e processos*. 2AB, Rio de Janeiro (2001)
11. Moraes, A.: *Design e Avaliação de Interface: ergodesign e interaçãohumanocomputador / Organizadora: Anamaria de Moraes*. iUsEr, Rio de Janeiro (2002)
12. Norman, D.A.: *La Psicologia de los ObjetosCotidianos*. Editora Nerea, Madrid (1990)
13. Preece, J.: *Design no Brasil: Origens e Instalação*. Editora 2AB, Rio de Janeiro (2007)
14. Raposo, D.: *Design de Identidade e Imagem Corporativa*. IPC, Lisboa/Portugal (2009)
15. Samara, T.: *Evolução do design: da teoria à prática*. Editora Bookman, São Paulo (2010)
16. Santos, N., Fialho, F.: *Manual de Análise Ergonômica no Trabalho*, 2nd edn. Gênesis Editora, Curitiba (1997)
17. Strunk, G.: *Identidade visual: A direção do olhar*. Editora Europa, Rio de Janeiro (1989)
18. Takeda, F., Xavier, A.A.P.: *Ergonomia informacional: sistemas de informação e comunicação na gestão de riscos de acidentes numa planta de abate de frango*. XV Simpep, Simpósio de engenharia de produção (2008)
19. Wheller, A.: *Design de Identidade da Marca*. Editora Bookman, Porto Alegre (2009)
20. Wogalter, M.S., Dejoy, D.M., Laughery, K.R.: *Organizing theoretical framework: A consolidated communication-human information processing (C-HIP) model in Wogalter*. In: Dejoy, L. (ed.) *Warning ans Risk Communication*. Taylor & Francis, Abington (1999)