

Brazilian Journal of Cartography (2014), N° 66/7 - International Issue: 1567-1586
Brazilian Society of Cartography, Geodesy, Photogrammetry and Remote Sense
ISSN: 1808-0936

PUBLIC INFORMATION SYMBOLS IN TOURISM: IMPORTANCE, CHALLENGES, DIMENSIONS AND EMPIRICAL RESEARCH

Símbolos de Informação Pública no Turismo: Importância, Desafios, Dimensões e Pesquisa Empírica

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*Recebido em 16 de Setembro, 2014/ Aceito em 1 de Dezembro, 2014
Received on September 16, 2014/ Accepted on December 1, 2014*

ABSTRACT

After the 1970's, tourism becomes an economic and social practice of great importance worldwide. Two major factors are decisive in this change: first, the space becomes smaller due to technological progress, which reduces physical distances by means of transport (displacement) of passengers and communication (satellite). At the same time, socioeconomic changes as the gradual reduction of working hours (forty weekly hours, weekends and paid holidays), increasing the purchasing power of a significant portion of the population (growing of the middle class in many countries) and the raising of the educational level open the way for the change. In this historical context, the pictograms, also called Public Information Symbols, are becoming increasingly important, as are established as facilitators in the media. The graphic feature is used in daily life, being enhanced in environments that shelter many different cultures and nationalities, which have limitations to understand and express themselves in other languages, either at airports, exhibition venues, fairs and international events, historic centers, etc. The paper aims at the importance of these symbols for contemporary society, highlighting some challenges related to the development and / or use of pictograms (language, time and culture) and the lack of global standardization. Subsequently, it presents a substantiation of sign projection dimensions followed by an empirical research with eighty-two Public Information Symbols.

Keywords: Pictogram, Public Information Symbols, Communication, Tourism, Signage, Maps.

RESUMO

Após a década de 1970, a atividade turística se torna uma prática econômica e social de grande relevância em todo o mundo. Dois grandes fatores são decisivos nessa mudança: primeiro, o espaço torna-se menor em razão do progresso tecnológico, que reduz distâncias físicas por meio dos transportes (deslocamento) de passageiros e da comunicação (via satélite). Ao mesmo tempo, transformações socioeconômicas como a diminuição paulatina da jornada de trabalho (quarenta horas semanais, fins de semana e férias remuneradas), o aumento do poder de compra de uma parcela significativa da população (crescimento da classe média em muitos países) e a elevação do nível educacional abrem os caminhos para a mudança. Neste contexto histórico, os pictogramas, também denominados Símbolos de Informação Pública, ganham importância cada vez maior, pois se estabelecem como agentes facilitadores na comunicação social. O recurso gráfico é utilizado no cotidiano das pessoas, sendo potencializado em ambientes que abrigam as mais diferentes culturas e nacionalidades, que possuem limitações para compreender e se expressar em outros idiomas, seja

em aeroportos, locais de exposição, feiras e eventos internacionais, centros históricos, etc. O artigo disserta sobre a importância desses símbolos para a sociedade contemporânea, evidenciando alguns desafios relacionados ao desenvolvimento e/ou uso de pictogramas (idioma, tempo e cultura) e a falta de uma padronização mundial. Posteriormente, apresenta-se uma fundamentação das dimensões de projeção do signo seguida de uma pesquisa empírica com oitenta e dois Símbolos de Informação Pública.

Palavras-chave: Pictogramas, Símbolos de Informação Pública, Comunicação, Turismo, Sinalética, Mapas.

1. INTRODUCTION

The symbols are present in the daily life of any society in the world and they are essential for interpersonal communication. In Linguistics studies, the symbols are derived from a larger concept related to the image: the sign, element representing an object as it puts itself in place of it. Therefore, the photo, the drawing, the ground floor and the very word “house”, are not the object itself, they only represent it.

In this context, the signs are established as a set of symbols formed from two categories: collective, cultural pact and conventions, rules (SANTAELLA, 1990).

In the first category, the symbols are characterized by representations (mental, graphic, photographic, video graphic) unquestioned and simply accepted by society. For example, Christ the Redeemer symbolically represents Rio de Janeiro city; green color represents the hope, nature; white color, peace; the light blue, the sky, a river. However, at the last reference we ask: How many rivers have their water in light blue color? Formal education (school) and informal (media, leisure time, conversations) makes us accept such symbology. However, during the development of the Indian Atlas of the state of Acre (GAVAZZI & RESENDE, 1996), the color yellow was chosen to represent the river system on the maps because the blue color, usually found in the maps of “formal” culture, did not make sense to the understanding of potential users: the Indians.

Tuan (1980) still completes that the symbol has the power to suggest part of the whole (cross = Christianity; crown = monarchy; circle = harmony); and this habit of structuring the world in substances, colors, directions, animals and human traits, stimulates a symbolic view of the world.

Commemorative dates like Christmas, Easter, Valentine’s Day, or folders with pictures of touristic sites take advantage from the

symbolisms sensitive to the advertising effect. Even large companies adhere to visual symbols to represent their identity and their goals (DONDIS, 1991).

In the second category, the symbols represent an object through conventions and stricter rules, ie, it is necessary to formally learn the traffic signs to drive; letters and numbers of a particular alphabet to read and write; understand signs, norms and standards to develop architectural projects (plants); interpret the points (cities, capitals), lines (roads, contour lines), traces point (state boundaries) to read a map, etc.

The pictograms, also called Public Information Symbols (PISs) are part of the second category, being expressed in essence by figurative signs - drawings, illustrations that have some physical similarities with the object represented - schematics and that aim at public communication. In other words, PISs are essentially designed to cause an immediate association to a site, fact (actions, activities, concepts) or objects through figurative, non-verbal signs (without the aid of text) which should be straightforward, of easy recognition and self-explanatory.

The development of PISs is due to the fact that currently the societies need that the same information content is decoded by people from different places and languages. This pictograms group is found in different everyday situations, for example, stickers clothing, cleaning products, electronics equipment manuals, recycling bins, computer programs and infographics (print and digital media).

In the case of activities related to tourism, the PISs are present in products for Touristic’s guidance (folders, maps, websites) offered by operators, travel agencies and by the destination trade. There are totems with maps and touristic information spread in various cities in the world. Indeed, when addressing more specifically the

last item, it is stated that part of PISs are also signage pictograms, because they are responsible for guiding people in geographic space. In this case, the symbols are heavily used in road signs on streets, highways, parks (natural, amusement), in addition to equipment and indoor services such as shopping malls, airports, hospitals and restaurants.

According to Gerber, Burger & Stanton (1990), with undeniable increase in leisure and tourism activities in the world, PISs are becoming an important mean of social communication.

However, Carneiro (2001) alerts - and the problem persists - that is flagrant the lack of studies and researches that deeply assess the implementation, use and understanding of pictograms towards a standardization of a world tourism signage system.

Not by coincidence, it is common that a single pictogram is interpreted or represented in different ways, which results in symbols that end up being little remembered or used, and even worse, when they are misinterpreted compromise its essence: communication.

Thus, the paper is concerned to discuss how to develop and / or use, identify, standardize and disseminate graphic signals that promote the correct guidance of the user in any destination or recreation and tourism equipment.

The realization of an empirical survey with eighty-two PISs conducted between the years 2003 and 2007, added to the subsequent activities in class with graduate students in the discipline of Geography of Tourism (Tourism course of UFRRJ) from 2014, reveal some indications as to the understanding and acceptance of the set of analyzed pictograms.

2. PICTOGRAM: IMPORTANCE AND CHALLENGES

The first modern pictograms appear in 1895 in the Italian Touring Club. The development of a set of graphic signs for the transport sector already showed concern for public communication. However, it is only after the First World War that it is started the actual studies for the development of a communication system concerned to overcome the language border (AICHER & KRAMPEN, 1979).

Samoyault (1997) and Lima (2008) state that the Austrian philosopher Otto Neurath, interested in the language of signs, creates in the mid-1930s, the ISOTYPE movement (International System of Typographic Picture Education), systematizing a set of pictograms that seeks to transmit information in a clear, simple and nonverbally way.

In the second half of the twentieth century, the topic gained global importance. Some significant works of designers like Masaru Katsumie and Yoshiro Yamashita, Otl Aicher and Adrian Frutiger are quoted who developed, for example, a set of information symbols for the Olympic Games in Tokyo (1964), Munich (1972) and Montreal (1976) in addition to the airports of Frankfurt and Charles de Gaulle, respectively in 1971 and 1974 (ERCO, 2016; SAMOYALT, 1997).

Thus, contemporary society is looking for - there is very little time in its history - develop modern pictograms systems: PISs, which are characterized by a simple communication, they must be useful, non-verbal, transcultural (“international”), and must be used by illiterate. It is enough to realize that the same gas station or restaurant pictogram (Figure 1) is used to represent such establishments in countries with different languages and cultures.

It is reiterated that the PISs are primarily concerned with visual communication (Figure 2). Ornamental and aesthetic intentions are in the background.

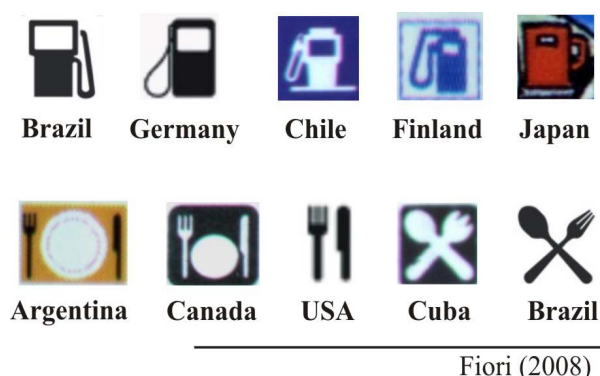



Fig. 1 - PISs of hotel and restaurant in use worldwide.



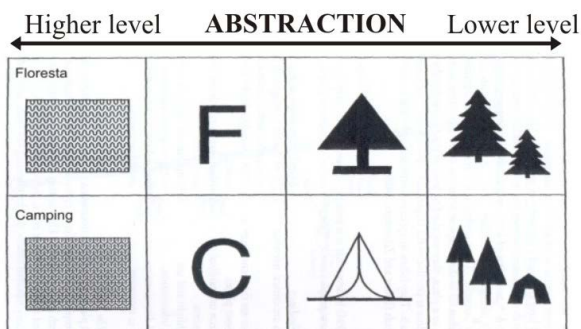
Graphical form	What do they represent?	What they say? What message do they convey?
1	Bus with cover	Bus station
2	Elephant	Zoo
3	Letter	Post office
4	Masks	Theater
5	Baroque house	Historic architecture

EMBRATUR (2016)

Fig. 2 - What do such graphic forms represent and say?

Pictograms are formed from different levels of abstraction of reality (concrete). This is because, during the distillation process of the visual elements (physiological perception) in traces (graphs) that represent the essence of the object, place or event to be reported, the producer of the symbol works with levels (higher or lower) of graphical complexity and interpretation of symbols.

The transformation is selective and occurs at three levels: pure abstraction that reduces visual demonstration in simple strokes, basic, non-retaining relationship with the represented phenomenon; the meaning assigned arbitrarily and abstraction built on symbolism. In ascending order, the symbols located to the left require more mental energy from users to be interpreted than those to the right (Figure 3).



The more similar is the symbol with what it represents, the easier it is to interpret it, understand it.

Adapted from Moscardo (1999)

Fig. 3 - Symbol abstraction levels.

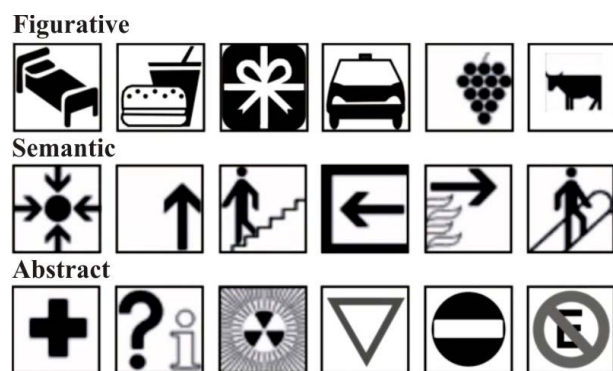
Relating the levels of abstraction of symbols to the development of pictograms, Souza (1992), Samoyalt (1997) and Carneiro (2001) present three different types (Figure 4):

Figurative - considered pictorial signs when represent a place, event or object by similarity (physical). They are characterized by mimetic vocation of the image when suggest the appearance of the represented element. Thus, immediately inform, without the need of learning in formal education.

Semantics - they are not understood at first, requiring a period of learning. Images are worked in a simple spelling, sufficiently clear and intelligible in the relation representation-symbol. In general, these pictograms indicate an action, direction (fact).

Abstract - do not seek resemblance to what they represent. The code is intended only for users who have been taught (mainly in formal education) to use them. However, when incorporated into the daily lives of people bring the information immediately and spontaneously.

As shown in Figure 4, the pictograms result from unique symbols or the symbols composition with higher or lower level of abstraction, thus creating the information to be communicated. Figure 5 shows the combination of symbols in the formation of the pictograms. Souza (1992) points out that the communication barriers can be worked through the graphical conciseness, semantic density (see section 3.2) and focus on functionality.



Source of pictograms: ERCO e EMBRATUR (2016)

Fig. 4 - The three types of pictograms.

Due to the non-verbal and transcultural nature of PISs, most pictograms are figurative. However, there are some exceptions as to the good acceptance of abstract pictograms. A classic case is the PIS of Hospital / First Aid (symbol which looks like a plus sign), in addition to pictograms of recycling and radioactivity.

In this scenario, the greater or lesser degree of abstraction of pictograms is scored through the direct influence of factors such as language, time and culture.



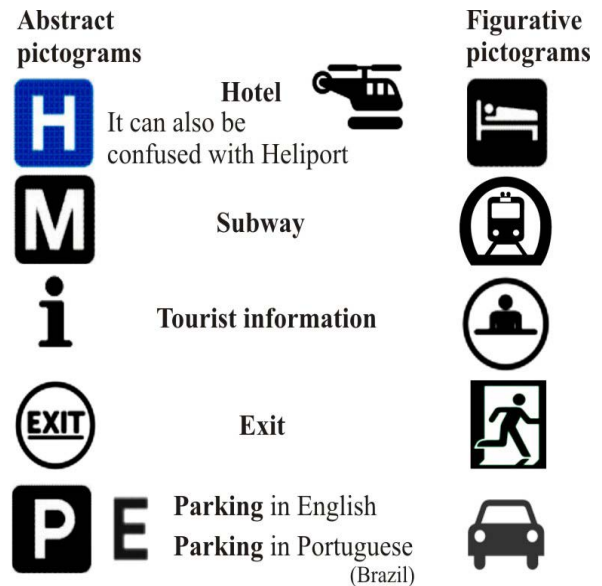
Fig. 5 - PISs examples.

2.1 Language

Among the abstract pictographs there are those that make use of the Latin alphabet letters such as “H” for Hotel, “P” for parking, “I” for Touristic Information, “WC” for Bathroom, etc. However, it can be said that PISs with Latin letters do not make much sense to people who use other alphabets (Cyrillic, Arabic, Oriental). Furthermore, even the companies that use the Latin alphabet have specific languages, so the intention is that progressively the letters are replaced by figurative pictograms - Fig. 6.

2.2 Time and graphics

Some pictograms become obsolete due to the natural development (cultural, technological)



Source of Pictograms: AIGA e EMBRATUR (2016)
Fig. 6 - Greater acceptance of figurative pictograms.

of the society, correlated to time and its dynamics. Therefore, some PISs will require a periodic review of its representations and graphics (Figure 7A). Souza (1992) also noted that, even with a normative principle for creating pictograms, it is common arise several versions of the same concept, that is, the same pictogram can present graphical differences without changing its meaning, and concludes: usually, the figures of the pictograms are represented as if they were right in front of the observer and at eye level (Figure 7B).

2.3 Cultural context

The cultural aspect is an important component in decoding some Public Information Symbols. Two situations taken from Fiori Research (2003, 2008, 2010) and from the activity in the classroom in the course of Geography of Tourism (since 2014) exemplify the fact. When presenting the pictogram of a Cross (Figure 8A) on a touristic map to interviewers-interpreters (most of them composed by Westerners and Christians), it is no surprise that they link the symbol to Church. However, the same does not occur when they observe the Star of David - which represents a Synagogue - and much less they are able to interpret the Crescent Moon as a Mosque (the percentages are in item 4).

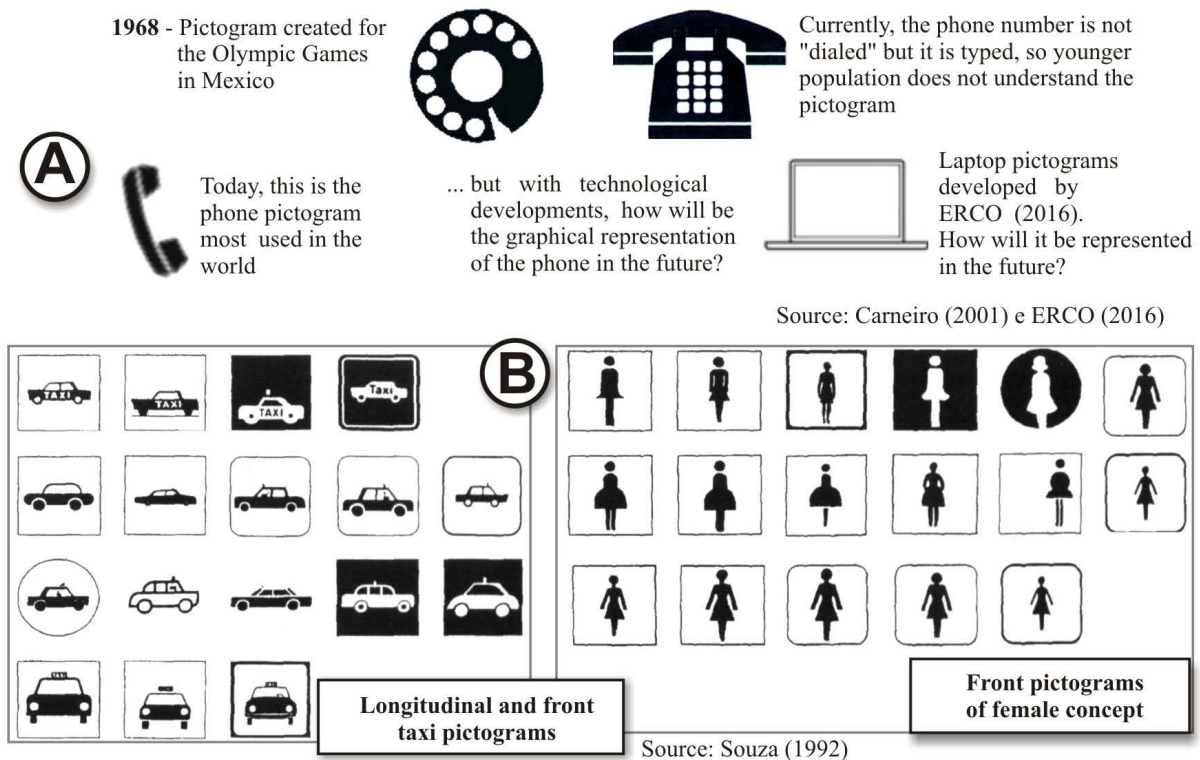
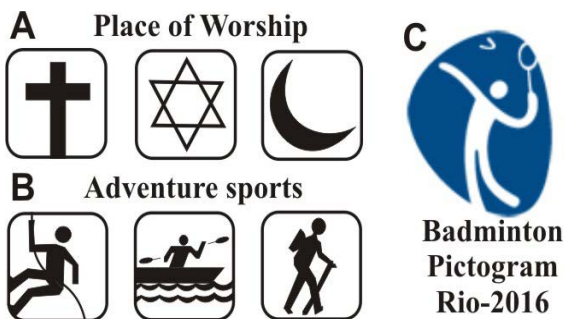


Fig. 7 (A and B) - Aging and graphics in the same pictogram.

In relation to the experience of social activities and PISS, the example is given to groups of people who practice or like (leisure in general: reading, television) adventure sports. It is inherent in the group decode more easily pictograms of rappel, canoeing, trekking than those groups who do not experience this social reality (Figure 8B).

A third example: Asian and European easily recognize the Badminton PIS - Olympic sport popular in these regions - than other people in the world (Figure 8C).



Source of pictograms: Fiori (2008) e Rio 2016™

Fig.8 (A, B, C) - Pictograms, culture and experiencing.

However, it is important to consider that in a touristic signaling system, the pictograms are more or less subject to two ways of learning: verbal and visual communication.

Through verbal language people are literate from a process that is divided into stages with synthetic structure and relatively well organized. At first, a system of symbols represented by abstract shapes of certain sounds (group of sound symbols) is learned: the alphabet. Then, letters and sounds are combined, creating words that are constituted as representatives or substitutes of things, ideas and actions.

Consequently, a common syntax (a specific language: Portuguese, English, Japanese) is learned, which even in its most simplified way, represents a structure with technical plans and agreed definitions, thus avoiding ambiguities in the comprehension of the information, because the individual reading the text is able to decode it (DONDIS, 1991). On the other hand, this is only possible for those who have mastered the given language (group of people who share the meaning attributed to a common body of information), which normally occupies a space (territory) limited on the Earth's surface. Even the English language (the most spoken in the world) can not reach all peoples.

On the other hand, visual communication is easily achieved through the various levels of direct experience to the act of seeing and recognizing, for example, a house, tree, mountain, an animal, etc. Such capacity gradually expands the knowledge of concrete-reality of the individual, which generalizes an entire species to its basic attributes, namely, the bird type, man, tree, beach, woman, giraffe, shark, etc. They are defined in elementary visual terms, being identified in a general manner. This means that all elements share common visual references within a broader category (DONDIS, 1991). In other words, in the visual perceptual act, an apple is the same for an English, French or Russian, even though the first call it apple, the second pomme and the third яблоко. In this situation, which differs the verbal language from the visual communication is the ability to avoid the ambiguity of visual

cues and should express ideas in a simple and direct way. According Fiori (2010), it is reiterated that excessive sophistication and the choice of a complex symbolism can bring difficulties in intercultural visual communication (Figure 9).

Dondis (1991) confirms that the visual literacy has a special strength to know that there are more than three thousand languages currently in use in the world, all more or less independent and unique. The author states that visual literacy can never be a system as logic and precise as the verbal language, because its structure has logic that visual literacy is unable to reach. Figure 10 illustrates that when a symbol is well prepared, you can understand much of the information, even ignoring the Finnish and Hungarian languages.

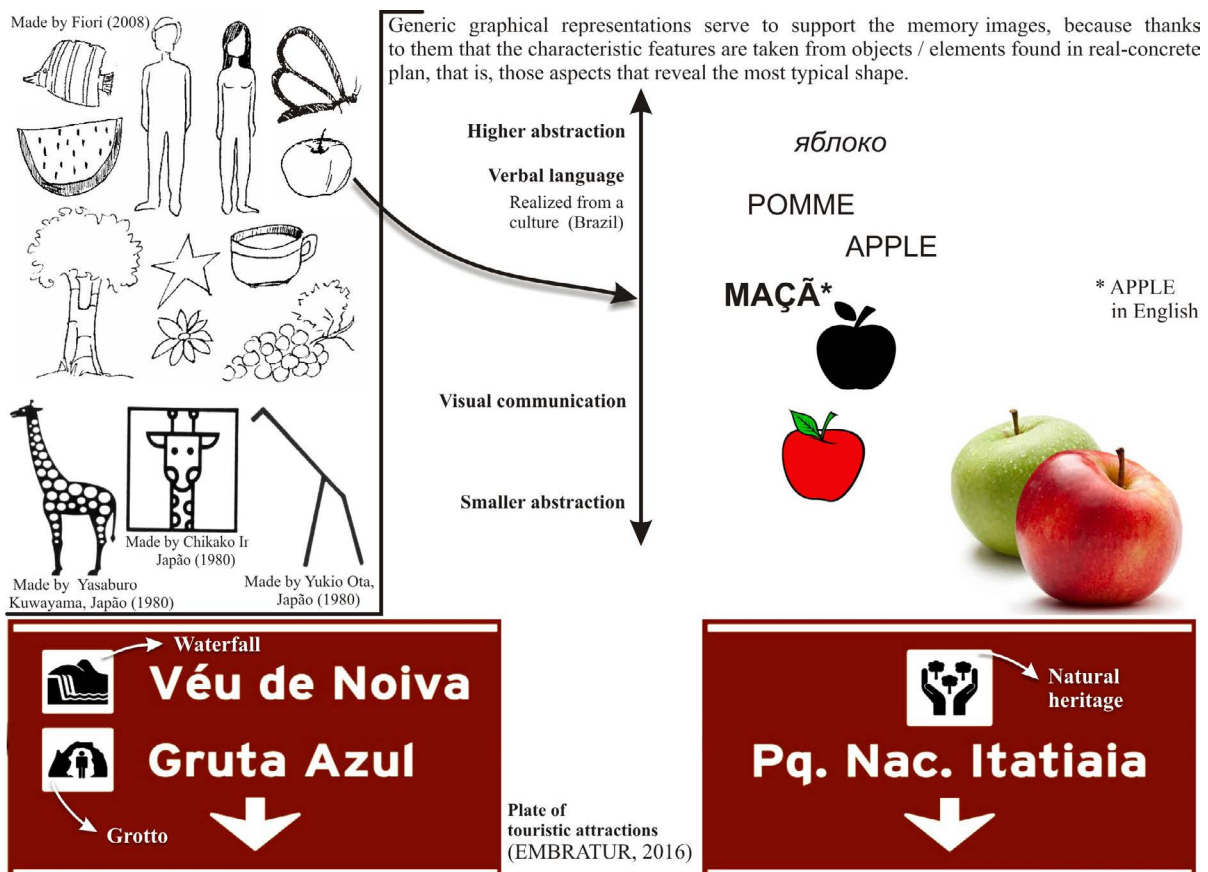


Fig. 9 - Verbal language versus verbal communication.

Due to the undeniable power of visual communication as a means of information, increasingly it is necessary to understand it in depth. Dondis (1991) warns that an ignorance position on visual literacy can no longer continue.

Taking into account the factors of language, time and culture, Carneiro (2001) proposes the initial structure of a touristic signaling system (Figure 11), being that the production of each pictogram - of the system - comprises the following steps (SOUZA, 1992): recognizing different invariants attributes (gestural or formal) that a being, object or situation have to belong to this or that class; value the recognized attributes; select the most significant attributes for proper semantic identification of being, object or situation; translate the selected attributes to graphic language, observing the standards or syntactic patterns already established by usage.

Starting from the basic premise that any PISs should be effective as the communication, that is, the pictograms must be readable (clear, legible typography and can be easily read) and intelligible (understandable), the development or choose of using any pictogram must be initially guided by three dimensions of sign projection:

the syntax, semantics and pragmatics.

3. TRANSFORMING THE PICTURE INTO SYMBOL: THREE DIMENSIONS OF SIGN PROJECTION

When you know that the sign is always an element that represents another element: its object, it only works as such if carries the power of representing, replacing something different from it. Therefore, the sign is not the object; it is only in its place, representing it in a certain way and in a certain capacity. It can be interpreted through concrete experiences, feelings or thoughts. Everything will depend on the nature and on the sign potential, in addition to the intrinsic conditions of existence of each person (SANTAELLA, 1990). The signs are distinguished into two parts:

- Significant - it is the plan of the content and transmits the concrete / material aspect of the sign.

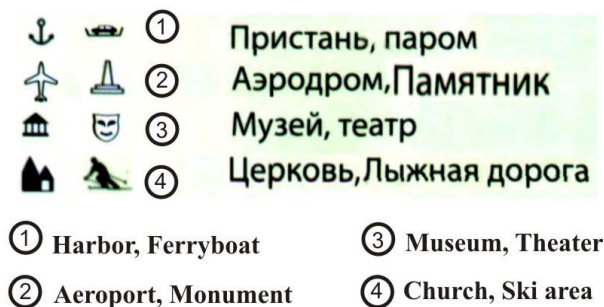
- Meaning - it is the expression plan of the element and transmits the abstract / conceptual aspect of the sign. Moreover, the meaning of a sign is not in itself, but in the concepts or images created in people's minds. This makes us assume that the meaning of a sign is another sign, or a mental or actual image, an action or mere gestural reaction, a word or mere feeling of joy, and so on.

The combination of the two aspects leads to meaning, which is defined by the transmission of information via a language system. Figure 12 illustrates that a real communication is only possible when the (same) signal-intent generated by the issuer-producer can be understood by the user receiver. The process is fundamentally based on two conditions: the channel should be rich enough to not have noise; and the signal must be part of the repertoire common to the producer and receiver source (BERTIN, 1996).

The signs are understood by the syntactic projection dimensions, semantics and pragmatics, which together help in structuring and improving the quality of the graphic repertoire.



Source: Pohjois-Savon, Finland.
Legend cut of the touristic map (Karttaikkuna, 1999)



Source: Miskolc Region, Hungary.
Legend cut of the touristic map (Tourinform, 2004)

Fig. 10 - The drawing “speaks” for itself

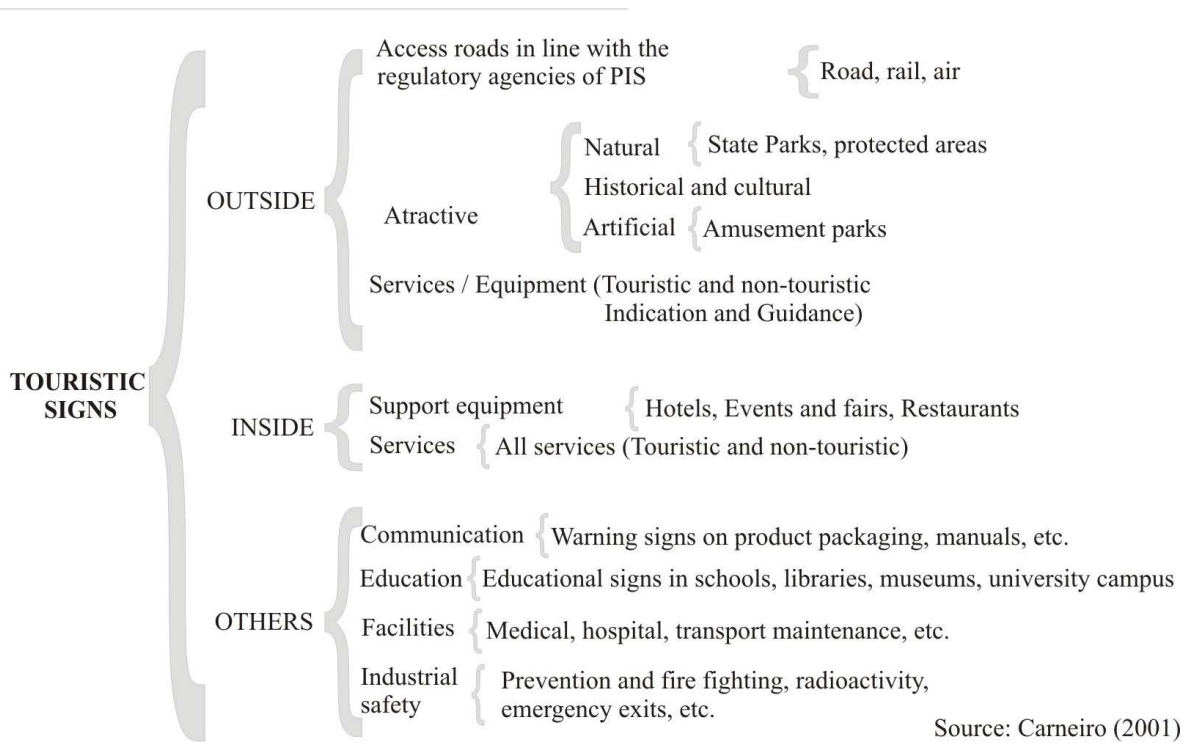


Fig. 11 - Touristic Signaling System.

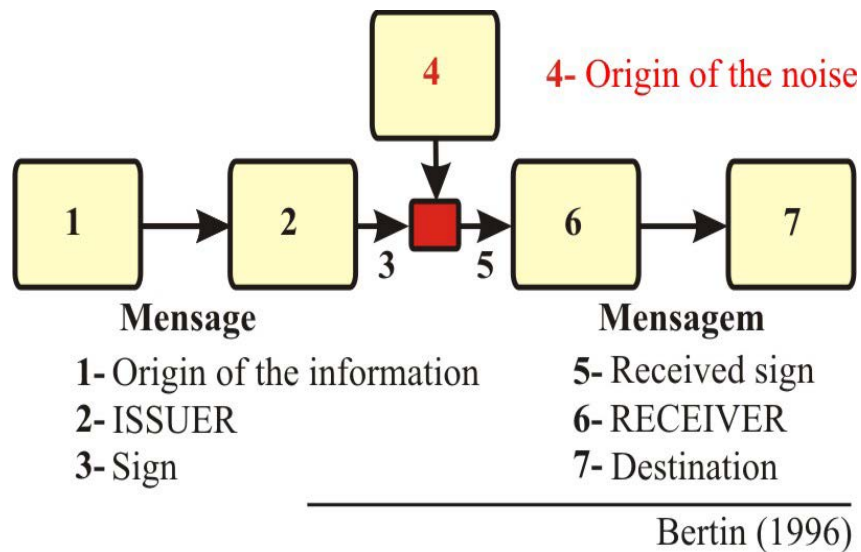


Fig. 12 - Communication Theory.

3.1 The syntactic: the study of the relationship of signs with other signs

The syntactic is concerned with problems relating to the way of representation - how to tell to the user? - Studying structural items and composition techniques, which create training rules of formation and visual coding of an element, in addition to examine their interaction with other representations (the set of elements) that also have rules regarding language and

repertoires (CARNEIRO, 2001).

Souza (1992) says that the syntax study is concerned with the logical and grammatical structure of the language, characterized by the material qualities of the sign in its concrete and particular way of existing. By the way, Dondis (1991) states that this stage of visual composition is vital to the creative process, as this is where the visual communicator wields more control over work, having the opportunity to express, in full, the spirit of his work. In the context of

the visual alphabet, the syntax means the orderly arrangement of parts (lines, colors, proportions), in the absence of absolute rules. There is a high degree of understanding of what will happen in terms of meaning if we do certain collations of parts that allow us to organize and orchestrate visual media.

There are two basic rules in syntactic dimension: the formation - which promotes free combinations (independent), but accepted among the signs of a system; and the transformation - which determines the combinations that can be obtained by other combinations (SOUZA, 1992). In this relationship, the author also subdivides the language of signs in three denotative functions (objective, literal meaning of the sign), separating them due to the level of expectations related to the interpreter.

Indexical - it draws the attention of the interpreter to individually denote an object. As an example, is cited to the word this, the graphic sign of the arrow or the gesture of pointing with the index finger.

- Characterizer - it denotes a set of elements that is characterized in only one group, having the designation explained or restricted due to the presence of other signs that make them proper to a "species." The word man, man's silhouette.

- Universal - it denotes anything, because it has a universal significance. It is cited the word something, the female pictogram, hospital, etc.

Normally, indexical, characterizers and universal signs combine among themselves, seeking an effort (redundancy) to identify the object that is being alluded to then determine (with more or less precision) the user-receiver's expectations regarding the possibilities to interpret the signs used.

This makes that in the combination of signs there are those that work as dominant and others as specifiers. In Figure 13 the drawing of a man in a unique position works as a dominant sign. The complements such the accessories on the head and hands work as specifiers of the four professions.

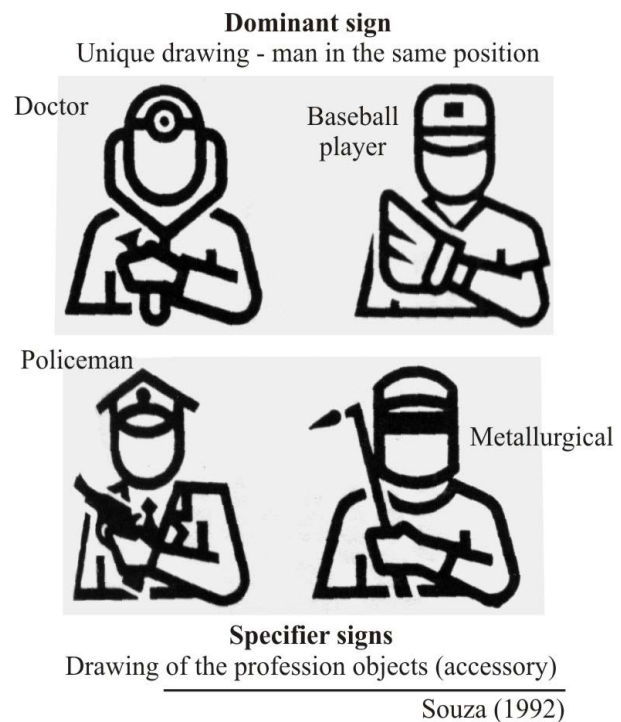


Fig. 13 – Dominant sign and specifiers.

3.2 Semantics: study of the relationship of signs with the objects to which they are referred to

Semantics is the dimension that producers should disburse ninety percent of their time. The dimension is concerned with issues relating to the content of the representation, seeking to develop shapes that area always characterized by lower noise. When this dimension is worked the question to ask is: what to say about that. In fact, the rules in semantics are much more established by habits of behavior than by scientifically proven propositions. This is because they are set up as models or are culturally learned and transmitted by tradition (CARNEIRO, 2001; SOUZA, 1992).

The development of a code is made taking into account the means of communication that will transmit the message (plates - Figure 14A - or maps - Figure 14B) to someone (tourists and locals) through a channel (paper, computer screen, signposts, totems). Thus, the choice is not random and should analyze the nature of the message and the characteristics of the channel and means of communication, so that, thus, the signs or meaning units (signs) are transmitted in the best possible way.

Signaling totem for pedestrians in Rio



Rio de Janeiro's city hall (2016)

Cutout of the tourist map of Foz do Iguaçu, Paraná.



Fiori (2016)

Fig. 14 (A and B) - Media: Nature of the message and the characteristics.

Krampen channel (1965), Oliveira (1978), Santaella (1990), Souza (1992) and Carneiro (2001) describe the three semantic relations in sign relation and its referent (object, concrete element): the icon, the index and the symbol.

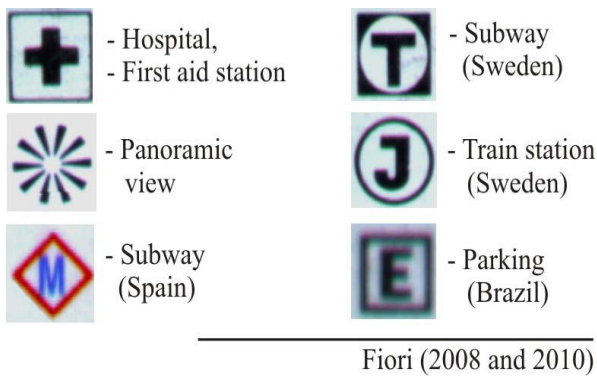
The icon has a direct relationship with the figurative pictograms, when they seek graphical similarities to what they mean. Due to the ability to produce comparison relations between the concrete element and the symbol, the way that the icon represents the object enables a high power of suggestion. In other words, the iconic encoding feature since representations with large number of visible properties of object attributes (replica effect, illusion of reality), to those with a reduced number of attributes showing in schematic or conventionalized manner, as in the case of figurative PISs (Figure 15).



Fiori (2008 and 2010)

Fig. 15 - Icon: The drawing “speaks” for itself.

The index does not possess similarities properties with objects represented. It is a kind of symbol (related to diagrams) from arbitrary or schematic shapes, where the interpreter-user reasoning does not go beyond the understanding of the sign as a concrete existence, simply translating what you see without major implications as to want to identify, individualize an image. Figure 16 exemplifies that the pictograms are ended in simulations on themselves.

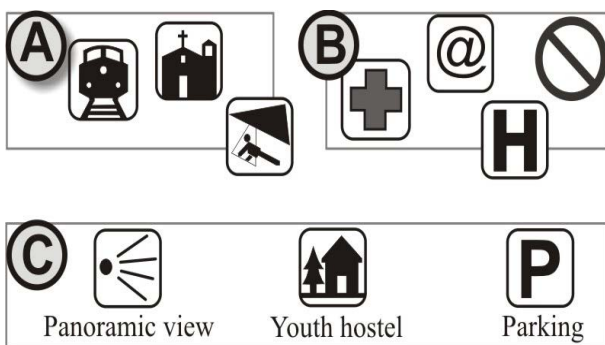


Fiori (2008 and 2010)

Fig. 16 - The index: Symbols that do not have direct similarity to the represented element

The symbol represents and assigns the objects similar to a model, having as reference standards and socially agreed uses and therefore not questioned and simply accepted. The symbols are also characterized by representing the elements of a generic way, denoting a kind.

There are two distinct levels of convention: analogical (motivated) and arbitrary. At first, the significance fulfills its role as the observer recognizes in the sign the properties of the represented element (Figure 17A). In the arbitrary convention, the meaning is achieved only through the existence of rules conventionally established and acquired by essentially formal learning (Figure 17B). In Figure 17 C is represented the contiguity (state or proximity condition, contact) established, with a rule between the meaning and the signifier. This makes that the interpreter refers to the text to understand the general meaning of the established representation.



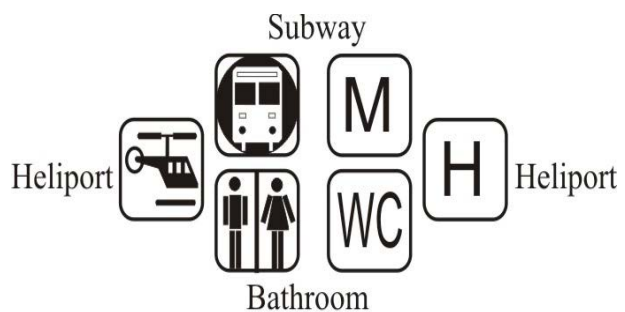
Fiori (2008 and 2010)

Fig. 17 (A, B, C) - Symbol: The drawing developed through standards, conventions.

3.3 Pragmatics: study of the relationship of signs with users

The pragmatic dimension is concerned with the performance of representation - for and which the user is directed to the message - when analyzing the choices made during the preparation process of a sign (psychological, biological and sociological phenomena), emphasizing or eliminating qualities and / or attributes providing the better understanding to the user.

This dimension introduces rules that work together with duality: represented objects and their signs in order to cause a change of behavior in users. At this point, it takes into account that the more abstract or conventionalized is the relationship between the sign and what it is assigned, the greater will be the need for habits to be consolidated by some kind of learning. Figure 18 illustrates different degrees of sign abstraction: the user will only understand the messages from the previous knowledge (accumulated habitus).



Fiori (2008 and 2010)

Fig. 18 - Two levels of symbol representation.

4. EMPIRICAL EVALUATION OF 82 PISs

The concern to establish a tourist signaling system is on several fronts of efforts: inventory, order, standardize and disseminate a particular set of pictograms, at least in relation to actions, situations, and places of use by most of the world population. Carneiro (2001) confirms that, being official, is not a quality imposed by agencies or entities, but the legitimate condition of use and intelligibility.

Fiori (2003; 2008) collects, compares, graphically - works - readaptation of an aesthetic standardization (syntactic-semantic) - and

prepares a list of 82 Public Information Symbols, with the greatest concern to quantify the degree of recognition of each pictogram. The choice and work with the symbols were given in the following order:

1st - Use pictograms that already appear usually on maps (national and international) and touristic guides (as the guide Quatro Rodas Brazil), by submitting a pictographic generalization conventionally established in society (in this case, Brazil), thereby facilitating the discovery of meaning by providing a greater degree of familiarity.

2nd - Take as reference and use some of the symbols proposed in a survey conducted in 1987 and 1989 by Stanton (cited Gerber, Burgen & Stanton, 1990), which selected touristic maps of Australia, England, Switzerland, Denmark, New Zealand and Spain. The intention was to develop a series of pictograms, based on an Australian model for making public information symbols (AS 2342), which is equivalent to the British model (BS 6034) and the International Organization (ISO 7001). It is added to Clarke's research (1989), which selected two sets of commonly used symbols and available in tourist maps belonging to UK institutions (Ordinance Survey) and the US (State Publications).

3rd - Use the valuable research of Carneiro (2001), who studied for years the subject of touristic signs. The author presents the following directories (or systems) of PISs:

American Institute of Graphic Arts (AIGA), USA. It creates a pictograms repertoire for signaling large spaces where circulate a large number of people. Among the work of the Institute is the preparation of graphic signaling systems for several countries. Bibliographical sources of AIGA are constant in Brazilian signaling systems.

Kuwayama, Japan. Publication entitled *Pictograms & Typefaces of World No. 2*. Collects and inventory pictograms over seven years (1980/87) in 76 cities of 39 countries in the world (Europe, Asia and the Americas - including the Brazilian cities of São Paulo and Rio de Janeiro).

Portland Oregon Visitors Association (POVOA), USA. It creates a pictograms repertoire used by public and private institutions.

Cities of Navarra, Ibiza (Spain) and Alentejo (Portugal).

Olympic games in Sydney, Australia, in 2000.

It analyzes repertoires of national agencies: as the National Council of Traffic (CONTRAN), the Brazilian Tourism Institute (Embratur - Brazilian Guide) and the State Secretariat for Sports and Tourism of São Paulo (SEET).

ERCO, Germany. Design Company that assumes the sale and licensing of Otl Aicher's PISs. Today, based on the initial designer it creates many other pictograms.

4th - Use the pictograms present in maps and touristic sites around the world collected randomly during the doctoral research (FIORI, 2008). Already beforehand, it can be said by the inventory that is possible aspire a certain homogeneity in relation to the pictograms used in tourism, even if there is a factual intercultural heterogeneity.

During the process of observation and collection of PISs, it is held a quick analysis of the cited references at the end of the inventory:

- It is noticed that the same graphical appearance of a pictogram is used in different cultures. As is the case, for example, of Gas station, Touristic information, Cafe, Hospital, Airport, Swimming, Theater, Camping pictograms.

- Cultural implications could be highlighted in some cases. First: all countries already listed pictorially illustrate the item Restaurant from illustrative graphic representations composed by a fork, a knife, a spoon and / or a plate. A case to be considered is a Japanese map distributed to the native population (not distributed to foreign people) representing the restaurant category through a rashi. Another case: Brazil is the only analyzed country that does not use the letter "P" to refer to Parking (even used in Japan), preferring the letter "E", that because the parking translation into Portuguese is "Estacionamento". Perhaps the best solution is to put the figurative pictogram of a car, as used on a map of Glasgow, UK. The same situation occurs with the symbols for Hotel. A final observation refers to northern European countries (Germany, Finland, Sweden) using a pictogram of an eye to represent mail.

• There are PISs more present and specific and even restricted to a few destinations, which ends up bringing a greater difficult to be understood. For example, the pictogram of historic buildings in Europe is represented by the symbol of a castle tower, while in Brazil it is used part of a facade of a Baroque house.

Figure 19 illustrates the process of inventory and collection of pictograms chosen to compose the list of PISs analyzed by interpreters-users. The symbols go through a process of visual uniformity using CorelDraw.

Figures 20 and 21 shows the table completed with eighty two pictograms for empirical evaluation test (of the research (FIORI 2003; 2008).

The research is prepared through questionnaires answered by 675 persons, divided into:

Dissertative answers on-site (Figure 20) - Interview with 596 people from 14 Brazilian states aged between 20-60 years old. The person when looking at the symbol (one by one) writes,

soon after, at the blank space in front of each symbol what it meant when saw them, that is, what was the first word that came to mind when faced with pictograms.

Alternative responses via Internet (Figure 21) - from a small website a questionnaire was developed in two versions: Portuguese and English language. Interview with 79 people (56 Brazilians and 23 foreigners) aged between 20-60 years old. In the latter case, the person saw the list of symbols, but had a numerical grade for each symbol that was going from one to five, related to a scale with graduated concepts from bad to great. The person, then, evaluated the acceptance of each one of the symbols.

Added to the previous researches, practical activity carried out with students of Geography of Tourism course (since 2014) of UFRRJ, which addresses the use and importance of PISs in activities related to Leisure and Tourism. The students use the questionnaire that verifies the understanding of the pictograms (Figure 20).



Source: AIGA (2016), EMBRATUR - Brazilian Guide of Touristic Signs (2016), ERCO (2016), Bruns (2000)

Fig. 19 - Process of visual standardization of Public Information Symbols.

Answers where the interviewee fills the gap in front of each pictogram to check the understanding of the Public Information Symbols

596 interviewed persons

- 13 Brazilian states and Federal District

Alagoas, Amazonas, Bahia, Brasília, Ceará, Espírito Santo, Goiás, Maranhão, Pernambuco, Piauí, Rio Grande do Sul, Santa Catarina, Sergipe and Tocantins

Rio de Janeiro

- Use of the table during a class in the subject Geography of Tourism (Tourism course of UFRRJ) since 2014
The score of the questionnaire in the classroom is not accounted in this research.

The producer and researcher only check the reactions and impressions of students in contact with the PISs in the classroom.

Sentence translation
Try to find out what each symbol of the list makes reference to:

Tente descobrir a que se refere cada símbolo da relação: @

	E				
	P				

Organizado por Sérgio Ricardo Fiori

Fig. 20 - Questionnaire for dissertative answers on-site.

Relative alternative answers to verify the acceptance of the Public Information Symbols

79 interviewed persons

- 56 brazilians from 6 states and Federal District
Brasília, Mato Grosso, Minas Gerais,
Pará, Paraná, Rio de Janeiro and São Paulo

- 23 foreign people from 9 countries
Austria, Canada, China, Mexico, Netherlands,
Spain, Switzerland and United States of America

Version in english

Make a **X** in the number : **1-** to the symbols you found **very bad**,
2- to the symbols you found **bad**,
3- to the symbols you found **regular**,
4- to the symbols you found **good**, and
5- to the symbols you found **excellent**.

	Cable car	1	2	3	4	5		Hotel	1	2	3	4	5		Internet, Lan house	1	2	3	4	5
	Ferrycable	1	2	3	4	5		Youth Hostel	1	2	3	4	5		Bar, Pub	1	2	3	4	5
	Taxi	1	2	3	4	5		Caravan Park	1	2	3	4	5		Brewery	1	2	3	4	5
	Bus, Road station	1	2	3	4	5		Camping Area	1	2	3	4	5		Ice-cream	1	2	3	4	5
	Harbour	1	2	3	4	5		Cabin	1	2	3	4	5		Supermarket	1	2	3	4	5
	Subway	1	2	3	4	5		Windsurfing	1	2	3	4	5		Snacks	1	2	3	4	5
	Helicopter, Heliport	1	2	3	4	5		Volleyball	1	2	3	4	5		Restaurant	1	2	3	4	5
	Rail, Train	1	2	3	4	5		Swimming	1	2	3	4	5		Coffee bar	1	2	3	4	5
	Ferry-boat	1	2	3	4	5		Football	1	2	3	4	5		Library	1	2	3	4	5
	Airport	1	2	3	4	5		Tennis	1	2	3	4	5		Panoramic View	1	2	3	4	5
	Marina	1	2	3	4	5		Golf	1	2	3	4	5		Park	1	2	3	4	5
	Car Rental	1	2	3	4	5		Basketball	1	2	3	4	5		Diversion Park	1	2	3	4	5
	Telephone	1	2	3	4	5		Abseiling, Treking	1	2	3	4	5		Monument	1	2	3	4	5
	Shopping	1	2	3	4	5		Rappel	1	2	3	4	5		Historical constructions	1	2	3	4	5
	Fuel supply	1	2	3	4	5		Canoeing	1	2	3	4	5		Mosque	1	2	3	4	5
	Toilets - men, women	1	2	3	4	5		Parachuting	1	2	3	4	5		Synagog	1	2	3	4	5
	Mecanic repair	1	2	3	4	5		Square, Picnic Area	1	2	3	4	5		Church	1	2	3	4	5
	Drinking Fountain	1	2	3	4	5		Cooper	1	2	3	4	5		Light house	1	2	3	4	5
	Equipamentos para deficientes fisicos	1	2	3	4	5		Boating	1	2	3	4	5		Dancing	1	2	3	4	5
	Baggage Lockers	1	2	3	4	5		Snow skiing	1	2	3	4	5		Cave	1	2	3	4	5
	Hospital / First Aid	1	2	3	4	5		Hanggliding	1	2	3	4	5		Waterfall	1	2	3	4	5
	Bank / Currency exchange	1	2	3	4	5		Balloning	1	2	3	4	5		Zoo	1	2	3	4	5
	Police station	1	2	3	4	5		Surfing	1	2	3	4	5		Museum	1	2	3	4	5
	Tourist information	1	2	3	4	5		Water skiing	1	2	3	4	5		Theatre	1	2	3	4	5
	Mail	1	2	3	4	5		Diving	1	2	3	4	5		Horserecing	1	2	3	4	5
	Handcrafts	1	2	3	4	5		Jet ski	1	2	3	4	5		Beach	1	2	3	4	5
	Parking	1	2	3	4	5		Playground	1	2	3	4	5		Motor racing track	1	2	3	4	5
															Bicycle, bicycle touring	1	2	3	4	5

Fig. 21 - Questionnaire for interviewees via internet.

4.1 Group 1 - High level of efficiency

Pictograms that show acceptance (alternative interviews) and understanding (dissertative interviews) equal or above 85%. In this group are 18 PISs: Port, Airport, Hospital, Bank, Post Office, Hotel, Swimming, Football, Tennis, Golf, Ice Cream Shop, Supermarket, Cafeteria, Church, Restaurant, Library, Waterfall and Beach.

4.2 Group 2 - Good level of efficiency

Pictograms of high degree of effectiveness with acceptance and understanding between 70% and 84%. In this group are 26 PISs: Cable Car, Taxi, Bus, Metro, Telephone, Gas Station, Public Bathroom, Volleyball, Basketball, Rapemountaineering, Parachuting, Picnic Square-Area, Snow skiing, Gliding, Ballooning, Surfing, Water skiing, Diving, Jet ski, Coffee Shop, Amusement Park, Lighthouse, Zoo, Theatre, Cycling, Biking and Internet.

4.3 Group 3 - Effectiveness in PISs acceptance

Pictograms with high degrees of acceptance (above 80%), but with the understanding below 60%. In this group are the following pictograms: Cable Car, Ferry Boat, Access to handicapped people, Parking, Camping, Cooper, Windsurfing, Playground, Horse Riding, Autodrome-kart track and Bar and Brasserie. There are still cases where acceptance remains high (around 70%), but understanding decreases around 50%, they are:

Marina, Rental cars, Mechanical workshop, Drinking Fountain, Guard volumes, Touristic information, Police Station, Crafts, Trailer, Kayaking, Sailing boat, Park, Monument, Synagogue, Cave, Helipad, Shopping, Dance hall and Railway station. In total the group sum 30 PISs.

The positive reaction (symbol acceptance) occurs more easily when the pictogram (visual communication) is associated with the text (verbal language). This suggests that part of the users at first may resort to redundancy (pictogram + text) to mean, and finally, “formalize” the PIS (Figure 22). Thus, in a second time (solved the doubt) the textual resource is not necessary anymore in the interpretation of the symbol process.



Fig. 22 - The formalization of the pictogram.

4.4 Group 4 - Low level of efficiency

Pictograms with acceptance around 60% and comprehension below 30%. In this group are 7 PISs: Mosque, Youth Hostel, Panoramic View, Historic building, Trekking, Hotel and Museum.

In groups 3 and especially 4 is evident that the PISs refer to large concepts (cultural) and / or very abstract layout to what is intended to inform. In these cases, beyond the text as initial support for the formalization, we see the need to change graphical pictogram seeking enhance the meaning.

Due to the lower rates of the research each PIS from group 4 is individually approached.

4.4.1 Mosque

Taking as reference the Western Hemisphere (where most of the interviewed people live), it is observed that the pictogram Church reaches high values of understanding (93.4%) and acceptance (82%).

4.4.2 Trekking

When taking into account the knowledge of interviewed regarding the culture of adventure sports, one can say that the pictograms receive good indexes of understanding and especially acceptance: rapell - mountain climbing (respectively 68% and 78%), kayaking-canoeing (48% and 82%), windsurfing (46% and 88%). In this case, it is necessary to improve and test a new spelling for PIS.

4.4.3 Historical Bulding

The producer is wrong when developing the syntactic dimension of the pictograms, because he inserts in the same question two symbols that, in theory, mean the same thing but in different geographic regions, causing great noise to the interviewed - 23% of understanding and acceptance 68%. This is because the “tower” is used to indicate historical buildings in Europe, while the “baroque house” has the same function, but in Brazil (Figure 23).

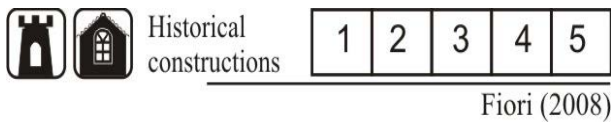


Fig. 23 - Syntactic Noise.

4.4.4 Youth Hostel and Inn

The composition of the pictogram is inspired by the symbol used by the Organization of Youth Hostels (Figure 24). In fact there is not a graphic error, the symbol does not deserve correction, but use, (re) knowledge. For example, Europeans are more familiar with this pictogram, common in identification plates of the region. Within this same context, the pictogram for Inn also has serious significance problems by its degree of generalization.



Fig. 24 - Youth Hostel:Plate and pictogram.

4.4.5 Panoramic View

Widely used arbitrary pictogram, but with low levels of understanding (10%) and acceptance (54%). You already can see an exchange move to a figurative symbol (Figure 25).

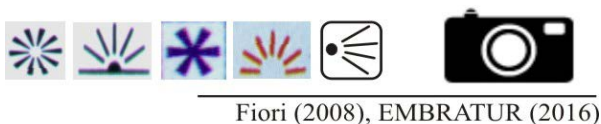


Fig. 25 - Panoramic view: Arbitrary and figurative

4.4.6 Museum

It deserves a safeguard as to its semantics conformation. The pictograms used in much of the world's countries have levels of understanding (20%) and acceptance (65%) surprisingly low. The most curious is to realize - even in classes of the Tourism course - that more than half of the interviewed people missed the meaning of the pictogram interpreting it as "circus" (Figure 26).



Fig. 26 – Museum or circus? Figurative and arbitrary symbols.

5. FINAL CONSIDERATIONS

In contemporary society, education and studies in visual communication have become indispensable. The drastic reduction of travel times in space and satellite communications enabled interpersonal relations worldwide ever seen in human history.

In many countries, factors such as the gradual purchasing and educational power of the population, have caused economic and social practice of tourism grew exponentially.

All these facts bring an increasing need to develop products that facilitate the media as identification plates, totems, guides, folders and maps for the leisure and tourism industry in analogical and digital environments. Many of these products makes use of Public Information Symbols, which are characterized by immediate association to a place, event or object, being potentially utilities, figurative, non-verbal, of easy recognition, self-explanatory, interpersonal and cross-cultural.

Carneiro (1997) points out that the languages and cultures will continue to exist parallel to the universal use of English language, but it is important to establish pictograms that have an efficient design and that are able to reach the greatest number of people, regardless of language and where they are.

The search for objectivity in visual communication should make the producer researches - incessantly - the universe of images extracting those that can be unambiguous and common to a larger number of people.

However, there are few studies in the world which seek to understand, apply and propose ways of graphic compositions intended for visual communication.

Research shows that 54% of 82 PISs have great and good levels of understanding and acceptance by those who have been interviewed in the research. It is stated that most of the evaluated pictograms are part of international signaling systems, thus, it is possible to establish

a standardization that reaches a larger number of countries in the world.

In conclusion, we present three final considerations:

I) Thinking of universal symbols, the fact is that the pictograms developed by arbitrary convention are contrary to the real nature of PISs. For example, it is important to replace the pictograms that use alphabets letters as the “J” to railway station (Finland), “M” for Metro (Spain) or Museum (Argentina or Israel) or “E” for Parking (Brazil). The ideal is to replace the symbols from arbitrary convention by figurative (motivated convention). However, it is known that some - few - arbitrary symbols have great acceptance by the world population, as the pictogram for Hospital.

II) Figurative pictograms are not necessarily composed by motivated convention, because even symbols of iconic, mimetic essence need to worry about the cultural contexts. This is the case of the pictogram of Youth Hostel, which join the two symbols arbitrarily: house and pine mean one type of accommodation (different from Hotel or Inn). Very different from the junction of the symbols of scissors and a comb, which can establish through motivated convention the effective pictogram of Hairdresser.

III) It appears that there is a wide variety of pictograms that “speak for themselves”, not needing the help of a text, but it is still not the case for all the PISs. Accordingly, the verbal language (contiguous) may be combined with a big ally - only - during the process of formalization and standardization of some PIS through redundancy feature. It is reiterated that the visual understanding is a natural process. What needs to be done is a sense refinement permitted by visual literacy.

It ends with a question: in the future, will be ideal to replace all abstract PISs by figurative? In this scenario, it is important to note that the process for obtaining a standardized pictogram system is guided by studies regarding the significance and formalization of this category of symbols. Moreover, considering that the use of modern pictograms aiming at a worldwide standardization is recent, since it started to be really designed in the mid-1960s to the Tokyo Olympic Games, in Japan.

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