SIGNS, SYMBOLS, PICTOGRAMS - GRAPHICS BEYOND THE BOUNDARIES OF **SPOKEN LANGUAGES**

Abstract: This paper is about very interesting elements found in the daily life: signs, symbols and pictograms. From the sunrise till sunset, the people is surrounded by these things which may help to have an easier life. We have learned a lot about the capacity of these elements to act as a main guide, using many times just graphics. We have understood that signs, symbols and pictograms must catch the people's attention. These ones have to guide, allow, warn or forbidden something, inform or assure the final destination for a traveler. We have identified the typology of these graphic representations and the working process to create pictograms. Some findings and results are explained in the paper.

Key words: signs, symbol, pictogram, design principles, wayfinding, signage system, graphic language

1. INTRODUCTION

For a graphic and visual communication is very important in which way someone will convey the message: using signs, symbols, pictograms, figures, images, illustrations, colours or different geometric shapes. Of course, there are situations when some of these elements are escorted by words, to underline something special. In our study we have tried to understand the place and the effect of such representations for a graphic language. The paper is only a part of our researches but relevant for the study. The meaning of signs, symbols, pictogram and other elements has to be clear because the people has to receive the message, translate it and act. We have noticed a few characteristics of the graphic language necessary in airport, university campus, hospital, business center, national park etc.

2. A FEW CONSIDERATIONS ABOUT SIGNS AND **SYMBOLS**

It is known that from the beginning the humans have tried to present or communicate their life painting the walls of caves. Analyzing a lot of information we were in the position to affirm: the humankind was a creator of signs, symbols and pictograms from the beginning. The graphic representations on walls have depicted a meaning of the life and communicate about animals, source of food and water and, of course, danger. Nevertheless, all these graphic pictures were the daylight of a communication system, which invest meaning in signs and symbols.

The Egyptian hieroglyphs, the earliest form of writing known as the Mesopotamian cuneiform (a technique to impress the characters on clay tables) and Mayan inscriptions (a large number of glyphs in stone) marked an important step for the mankind in their cultural development. The discovery of the Rosetta Stone in 1799 was a very important event because it was possible to understand and to translate the hieroglyphs for the first time.

In the Middle Ages (Medieval Times) has appeared a new category of pictorial signs located in medieval

heraldry, which was also an ideographic system which have realized symbolic identities. In our researches we have analyzed a lot of information concerning the ancient art of heraldry and the composition of coats of arms. These coats of arms have become the noble family emblem (known as a blazon) and were used in the ceremony of the medieval tournaments, announcing and introducing the competitors on the battlefield. The partition and the shape of the shields and the colours used were different because each colour or combination of colours were symbols with a special meaning. For this medieval heraldic iconography were used symbols and signs, as follows: lions and leopards (traditional symbols for power and courage in battle), dogs (representative for their faithfulness and loyalty), books (about wisdom and learning), flowers (with different meaning) etc. In the fourteenth century was a great wave of religion fervor and a lot of inns have appeared in the way of the pilgrims and, of course, having for identity signs and symbols to recognize them. It is interesting to name some of these symbols: animals (lion, antelope, beagle, bear, buck, bull, cat, cow, deer, dog, horse, dragon, elephant, horse, greyhound, stag etc); birds (chicken, cock, crane, crow, dove, duck, eagle, falcon, hawk, owl, raven, swan etc.); insects (bee, butterfly, grasshopper, scorpion etc); fish, mammals and reptiles (crab, dolphin, frog, salmon, crocodile, snake etc); trees, flowers and fruit (apple, beech, cherry, fig, lily, lime, oak, myrtle, orange, peach, pear, rose, willow etc). An interesting symbol in medieval heraldry was the flower of the lily (le fleur de lys) used even today in a lot of logos, as a very good identity symbol. We have seen different attitude of animals which have shown different meaning. For example, the rampant lion from the coat of arms of the United Kingdom denotes courage in this posture. Well known symbols are the Christian Cross, the Star and Crescent and the Star of David. The Christian Cross has a double meaning, the death of Jesus Christ and his glorious resurrection. It is a symbol of suffering and hope. For Islamic faith are a lot of visual images and the Star and Crescent is the main iconic symbol. The Star of David has widely used as a symbol of the Jewish faith. Other famous symbols are Yin and Yang, Heart, the Hammer and Sickle (an ideological and political

symbol), the Skull and Crossbones, the Peace, the Olympic Rings, Bluetooth and @ and so on.

In the nineteenth century has appeared a science of signs, called *semiology* in Europe and *semiotics*, in USA. The study of signs was developed by two thinkers and researches, Ferdinand de Saussure (1857-1913) and Charles Sanders Pierce (1839-1914), independently one from other. They have specified two fundamental elements to create a sign: the signified and the signifier. Roland Barthes has identified two different levels of significances [6]: *denotation*, which answers to the question: What is represented? and *connotation*, which answers to the question: How it is represented? These theories were a big step in front because they have allowed to create a lot of signage systems using signs, symbols, pictograms, colours etc and to give them a meaning.

These elements are used to create a graphic language beyond words. Another American researcher, Charles W. Morris (1901-1979) has written two interesting books concerning the theory of signs in *Foundations of The Theory of Signs* (1938) and *Signs, Language and Behavior* (1946). Umberto Eco also has spoken about sign. He has described, as follows: "everything that, on the grounds of a previously established social convention, can be taken as standing for something else" [1].

About a symbol, it has to be: functional, legible, visible, informative, instructive. In his well known book, called Symbol Source Book, Henry Dreyfuss has presented three types of symbols: representative, abstract and arbitrary. He has given an interpretation of symbols to point out an action or a situation, such as: a. rabbit (for a quickly displacement); b.turtle (slowly displacement);c. clepsydra (time measurement); d. lighting bulb (light); e. switched off bulb (dark); f. continuous arrow (direction); g. interrupted arrow (displacement to a direction);h. umbrella (protection from water); i. broken glass (fragile). Also, Henry Dreyffus has given us a very good example about the importance of using graphic representation to mark a danger. It was about a bottle on which is written the word POISON in four languages: Greek, Hebrew, Russian and Japanese and nothing more. For someone who doesn't know one of these languages will be difficult to understand the danger message and it will be possible to drink from the bottle. Henry Dreyfuss has presented the solution to be in a safety situation: it has to be on the bottle the symbol called skull and two crossed bones and the danger will be remoted because this is an universal symbol for danger. Also, there are very good explanations concerning the interpretation of different lines, colours and geometric shapes in a lot of books about graphic language. During time, there were attempts to realize a global graphic language, but this project has failed because it is impossible to have the same sign/symbol understood in every culture all over the world. Only in the field of traffic signs (Figure 1) and in automotive industry for car instrument panel (Figure 2) has been created a global graphic language.

It would be impossible to drive safety a car without classic or digital pictograms and symbols on the panel or on the touch screen.

Of course the colour is very important to convey a message and we have noticed that colours are very important *vehicles* to assure an action or not: to drive to a final destination, to permit, to forbidden, to warn. Different colours are for different purposes and that is why it is important to have a complete graphic representation having: symbol, colour and shape.



Figure 1 Shape and colour in traffic signs design.

As we have presented before, the colour (red, yellow, blue and green) and the geometric shape contribute to a clear convey of a message using a graphic representation, and, the same time, create a difference in the world of pictograms as follows:

- red colour & circular shape mean interdiction;
- red colour & triangle shape mean compulsory;
- yellow colour & triangle shape mean warning, care, prudence;
- green colour & rectangular shape mean *emergency exit*, *rescue*;
- blue colour & square shape mean *indication* (information about something);
- blue colour & circle shape mean *indication* or *obligation*;

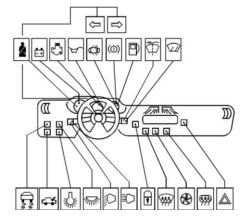


Figure 2 A car instrument panel having graphic representations (pictograms) [3].

3. THE PICTOGRAM IN A GRAPHIC WORLD

In our study we have seen a lot of signs and symbols. And, for us, it was an adequate question about pictogram: What is this? Is it a symbol, a picture, something else?

The answer was as clear as crystal: a pictogram is an artificial element, created by the people, for a clear and quickly communication, beyond any language and words, to draw attention to something [1]. It is a visual graphics. Otl Aicher, a great graphic designer and cofounder of Ulm Hochschule für Design (Ulm College of Design) has given us an explanation about pictogram: "The pictogram must have the character of a sign and should not be an illustration" [1].

That means a realistic or stylized graphic representation.

The world of pictograms is so huge and there are a lot of domains of application. All over the world there are pictograms. From the sunrise till the sunset our life contains these elements. In this paper we have tried to present the way to draw them, the typology and the colours which define them, their place in a signage system and many other characteristics.

Nakawa Kenzo have said that" pictogram is an intelligent invention of the 20^{th} century".

And Herbert W. Kapitzki (Professor of Visual Communications at Universität der Künste -University of Arts) in Berlin has pointed out: "a pictogram is an iconic sign which designates something which is represented" [1]. A pictogram has a very important quality, namely a strong relation to its meaning.

The translation of a pictogram has evoked a few interesting meanings: it has message, structure, connections and purpose. In figures 3 and 4 it is represented the way to have a pictogram (how to achieve a pictogram for emergency exit and for an escalator).

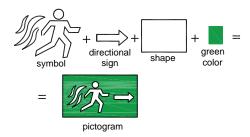


Figure 3 The elements for a pictogram concerning emergency

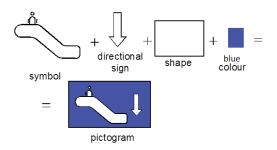


Figure 4 The way to achieve a pictogram for an escalator.

The context is very important when somebody wants to use a pictogram. About the intention or purpose, the pictograms are: indicative (in the same time to inform and to allow a person to act); imperative (to influence the decision or the behavior of a person); suggestive (to present what it possible to happen if somebody do not agree with the imperative pictogram) (Figure 5).

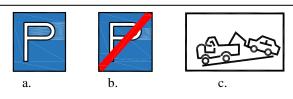


Figure 5 Typology about intention a. indicative; b. imperative; c. suggestive.

It is not so easy to create a set of pictograms and that is why the designer has to use a grid. For example, the pictograms drawn for The Olympic Games were realized using a grid to have the same size for athletes. Otl Aicher has used vertical, horizontal and oblique (as diagonals) lines to create the pictograms for The Olympic Games in Munich 1972 (Figure 6).

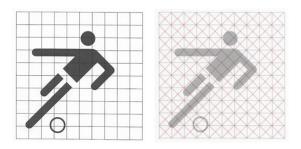


Figure 6 The grid for a football discipline used by Otl Aicher [5].

There are pictograms in different domains of activity but, in many cases, we have seen realistic, abstract or stylized graphic representations for toilet, escalator, stairs, elevator etc. In figures 7, 8 and 9 are presented a few of them [2].



Figure 7 Pictograms for elevator [2].



Figure 8 Pictograms for escalator [2].



Figure 9 Pictograms for toilet [2].

For an airport signage system, in our study we have identify almost the same graphic representation for pictograms as: arrivals/departures, check in, food court, business area, etc. using different colour (Figure 10).



Figure 10 Arrivals/departures pictograms [1].

4. WAYFINDING AND THE SIGNAGE SYSTEM

There are two important terms which are involved to design a signage system: wayshowing (it is about the whole process, as a strategy and planning) and wayfinding (to indicate the way from point A to the point B). The wayfinding process means to access a few phases; a. displacement decision; b. searching information; c. checking information; d. analyzing alternative routes; e. choosing one route seeing established criteria; f. final decision. For this purpose there are stationary or digital maps which may help a person to reach a desired destination or to navigate in a town or along a country. These maps are an intelligent presentation of the reality in the field. The possibility to have a good navigation involves signs, symbols, pictograms, figures and words. We have identify in our study three types of signs for maps: directional signs (the way to something); descriptive signs (information to help a person) and regulation signs (rules, commands, for people's security and location) [4].

We have seen an universe of pictograms, arrows, colours and other symbols in our daily life in a mall center, hospital, university campus, museum and so on. It was about theory and practice in our study.

5. CONCLUSIONS

What's about this paper. A small part of a research study including elements which are used in a signage system as a graphic language. We have tried to introduce only a few characteristics and elements which allow to create a special language, namely a graphic one. Nevertheless, this paper has wanted to introduce the public into an interesting area of information. We have selected information about this subject and we agreed that it will be a long way of the study to describe so much details of a graphic language. We think that our study will bring a lot of bricks to contribute to understand a graphic language.

REFERENCES

- [1] Rayan, Abdullah, Roger, Hübner (2007). Pictograms, Icons & Signs, Thames & Hudson Inc., ISBN 978-0-500-28635-7, USA.
- [2] Pictogram & Icon Graphics 2 (2007). PIE BOOKS, ISBN 978-4-89444-585-7, Japan.
- [3] Adîr, V., Pascu, N-E, Adîr, G. (2016). Graphic Visual Language Design (Design de limbaj grafic vizual), Printech Publishing House, ISBN 23-0693-9, Romania.
- [4] Mollerup, P. (2013). Wayshowing>Wayfinding, BIS Publishers, **ISBN** 978-90-6369-323-7, Netherlands.
- [5] Elam, K. (2011). Geometry of Design, Princeton Architectural Press, ISBN 978-1-61689-036-0, USA.
- [6] Crow, D. (2003). Visible Signs, AVA Publishing SA, ISBN 2-88479-035-7, Switzerland.

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