

URBAN CARTOGRAPHY  
FOR BLIND PEOPLE

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The present paper analyses:

- a) The importance of urban cartography as a complement for the positioning and mobility process.
- b) The city's sectorization in order to make possible its study and perception.
- c) The codification of its components to facilitate the communicative process.

## URBAN CARTOGRAPHY FOR BLIND PEOPLE.

### INTRODUCTION

We know who we are, we have got a name, an origin, a family and a history. A position in time and space, they are the epoch and place where our lives take place. We've got a mental image of our body and everything that surround us.

But, how was the representation of ourself and the others born? It has got a general line: certain Universal Evolutionary Rules and in a particular way: life experience.

Every action and knowledge take place in a determined time and space. In the first years of life, the person perceives and organizes the space, according to what the cognitive structures allow.

The space is apprehended with direct body actions, having a gradual production of them which extend when the movement actions are incorporated. Then, these actions go deeply into people and are turned into representative systems which end up organized in operations. In this way, the process continues up till maturity when the person gets an objective notion of space.

There are no rigid chronological moments for this production, by virtue of the personal times which are determined by each person's experience. In spite of what has been described previously, it can be sequentially ordered in the following way:

- \* **Space-action:** it is conquered by movement.
- \* **Body space:** it is based on the relationship between the distance and the person.
- \* **Objects space:** objects can be located in agreement with other objects in terms of relationship and distance.

The Urban Cartography answers continuously to the "Where am I?" question, carrying out this function. It includes the graphics of the internal and external structures which form the cities, that is to say: playgrounds, schools, hospitals, public buildings, etc.

Insofar as it contains enough information, this mapmaking allows blind people to locate themselves and get exact data of the place where they are and where they want to arrive.

It also serves as a strong **COMPLEMENT** in the positioning and travelling process extending the blind person's autonomy. But this happens, after they have studied the passed zone or they have really gone through it previously. For that reason we can say that it's very different to locate yourself in a map than locating yourself in the physical place. Therefore its function is as a very important **COMPLEMENT**.

The Urban Cartography from its concept helps in the learning of shapes, sizes, distances and direction, that is to say, it allows a global approach to the place where they live, which will be known by the user through the use of the walking stick, a very important instrument to overcome the topographical problems: fences, columns, etc.

To understand better everything that has been explained before, it's essential that before entering the maps topic, blind people should understand clearly the concept of space and its way of representation : the scale:

#### **SECTORIAL MAKING OF CITIES**

A geographical space appears to us in two ways:

- \* **SUBJECTIVE or EMPIRICAL:** since it is assimilated through the sensorial operation.
- \* **OBJECTIVE or SCIENTIFIC:** for that reason it can be measured and explained rationally.

\* **Maps space:** high level of abstraction although it is based on visual elements. It requires a good conceptual understanding.

\* **Abstract space:** it involves the objects and their mental images or representations.

The slow cognitive maturity has its projection on the physical level, through the discovering and later consciousness of the existence of vital spaces for the subsistence and development of the person. In such a sense, we can emphasize the following:

**MATERNAL BELLY**

**FAMILY'S ARMS**

**HOME**

**SCHOOL**

**NEIGHBOURHOOD**

**CITY**

The children who see, have big possibilities to consider or experience what has been explained before. The sight sense constitutes an incalculable social value. It not only makes possible to see the object itself, but it trains the person to perceive the distance and depth sensation.

Therefore, when an image is decodified, heights, distances, spaces in general are measured. Images are kept as microfilms recording a great quantity of information with only one look.

So the question that we have to ask is: What happens to blind children? Their way and our way of approaching to the spatial knowledge is different. But, at last, both of them (viewers -not viewers) need to apprehend and learn the same concepts to subsist and come unrolled in the world.

## THE IMPORTANCE OF URBAN CARTOGRAPHY

Coming back to the point of the vital physical spaces, it is said that we keep in the subconscious mind the memory of the maternal belly, and we slowly discover, the family's arms, the house, the school, the neighbourhood, the city and so on.

These places acquire a transcendental importance in our life since they form the first boundaries that contact us with the real world and give us the sense of property and belonging.

Where are we heading with these assessments? Talking about Tactile Cartography isn't just trying to find the way of reproducing in relief a geographical map, otherwise to create an element to help blind people in the making of the mental image or representation of a geographical location.

The challenge, according to our point of view, is the production of works, through which the users don't make an interpretation of those vital spaces, if not to make them really know them.

Although it's important to improve and enrich the person's education with maps that contain all the different factors which constitute the countries, the continents and the world, it is more useful and practical the production of graphics and maps that represent the vital spaces mentioned before, where great part of his/her life will take place.

Through a survey done in the Argentinian cities of Mar del Plata, Mendoza and San Juan, it is shown that this user's necessity is still unsatisfied. Therefore, we consider that there must be an orientation of the Tactile Cartography towards the local representation as a first step to make easier life and development of those who we want to help.

The seven year's experience on the subject, shows it is not necessary to keep a rigid scale in the cartographical document, but it has to answer to a methodology including the following documents:

- a) A total map of the city, made in a convenient scale, to give a global idea of the shape and its dispositions on the ground.
- b) Fragmentation: in neighbourhoods or agreed sectors previously related among them, to distinguish: streets, avenues, green parks, public places, etc. Streets can be made in a different scale from parcels.
- c) Internal graphics of the user's preferred buildings.

#### CODIFICATION OF ITS COMPONENTS

A map is a reality's abstraction, which is represented on paper through universal agreed signs different from the real vision. That is to say, one thing is the ground, the **REALITY** and another different thing is a map, **FICTION**.

The linguistic sign comes out from the relationship between the meaning ( mental image) and the significant (oral or acoustic image). The cartographical sign keeping immovable the significant, synthesizes the significant through writing. Its variations are put on paper, constituting the appropriate methodology to describe, know and understand the geographical space.

On the other side, its the cartographer's job, to select the information to show and consequently the components to use in the representation.

In the Urban Cartography for blind people this task acquires a huge importance and requires of great skill because of two reasons.

The first aspect is apprehended by the users through the sense of touch which nature and functionality are different to sight. However, they both coincide in connecting, ordering, quantifying and classifying. Although they perceive some phenomenons in common, they obviously do in another way, but it is not an obstacle to understand the scale concept.

As the tactile sensibility first analyzes the parts and then makes up the whole, its separating power needs more time than sight, which works in the other way round, it picks up the general idea and then analyzes its parts. To determine the tactile scale you must consider the following points:

- a) Tactile sharpness for which we're going to work.
- b) Total area to represent.
- c) Phenomenons to represent.
- d) Amount of information to show.

We have to make clear that extending the proposal to every blind people is impossible. The problem appears from the level and quality of the users perception factors, which depend on the physiological, phycological and intellectual fellow's conditions.

Therefore, in the detetermination of the tactile scale, the tactile sharpness is considered as a first point. For what has been said, we can deduce that working with understandable scales for blind people means to produce broad dimension documents.

Referring to an example of it, we can say that the tactile map of an Argentinian city -Mar del Plata- has a 3 times 3 metres surface, map which turns out to be impossible to know and understand completely. There is no other way of dealing with it than breaking it into fragments: coasts, parcels, etc.

In a first place you must be very careful about the amount of information you are going to show, since the excess of data placed on the map might confuse the reader. According to the touch's characteristics it is preferable to make a zone's atlas instead of putting on the same map everything it means and represents.

In a second place it's necessary to incorporate a writing system and tactile signs to represent the culture works showing their location.

This tactile signs, as the visual ones, must synthesize the meaning, for this reason they will never be the real object's image. But, as it's done in visual cartography, a place containing the references which locate significant for each one, written in Braille's system, will be created.

To this effect, we highlight the tactile signs model created in Mar del Plata city - Argentina- in 1989, which helps the user to find the required building's location in each parcel. This system is analogous to the reading-writing Braille's method but it's based on two generative signs where dots change in size to avoid confusion.

## CONCLUSION

Someone said " Land belongs to their owners, but the landscapes belong to those who know how to see them..." Back in our topic, hands, our sensing canals lead the mind in the apprehension of the proposed knowledge: the city and its components.



## BIBLIOGRAPHY

- \* Psychomotor activity in kindergarden. Alicia Esparza, Amalia Petrolli. Buenos Aires, Argentina. 1983
- \* Physical education in childhood. Jorge Gómez, Lady Gómez. Buenos Aires. Argentina. 1978
- \* Creativity or the right to be different. Olga Gómez. Buenos Aires. Argentina. 1990
- \* Psychomotor education in primary school. Jean Le Boulch. Buenos Aires. Argentina. 1986.
- \* Children conquer their environment. Hannaun.
- \* Spaces. Patricia Hrabina. Mar del Plata, Argentina. 1995.
- \* Profile magazine. page 47. 1994.
- \* Survey: importance and use of urban cartography for blind people. Alicia Nobilita. San Juan, Mendoza and Mar del Plata Argentina. 1995.
- \* Cartography for blind people. Mónica Brull. Buenos Aires. Argentina. 1994.
- \* Urban cartography for blind people. Sonia Fioriti. Mar del Plata. Argentina. 1989.
- \* Cartographic positioning. Cristina Dubedout. Mar del Plata. Argentina. 1993
- \* Scales employed on tactile cartography. Sonia Fioriti. Mar del Plata. Argentina. 1995.