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THE PERSONAL MENTAL MAP IS EGOCENTRIC, MULTIFOCAL, HIERARCHIC, DYNAMIC AND INTERACTIVE. FROM A FIELD STUDY TO A LONG JOURNEY AROUND THE MENTAL M,AP

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ABSTRACT

The personal mental map is a process developing day by day during a person´s whole life. One way to understand this process is to "enter" into this person´s lifeline and denote how his personal mental map is evolving. The insight won in that way can give then a deepened understanding of the collected mental maps which are created by integrating many peoples personal mental maps. This is the basic idea behind this paper.

The departure point is a field study. The author, by writing and drawing a "diary of discovery" denoted how his own mental map was developing when moving into a new environment, a city. This personal mental map is then considered as one of many other people´s personal mental map of the same place, which together makes up the collected mental map of that city.

The period, when the author builds up his personal mental map of this particular place is considered then as a part of his entire lifeline. The personal mental map of this place is then seen as a part in a chain formed by other similar mental maps of other places collected during a lifetime. They all are then considered as integrated parts of his mental image of the global surroundings.

Some basic ideas and results can be summarised as (with risk for some retaking)

1. The basic element of all mental maps is the personal mental map. The personal map is specific for each person but they contain common basic elements too.

2. The mental map of a city or other area exists through an intertwining of several personal mental images of people living there or visiting the place.

3. The personal mental map is dynamic. It is developing throughout the whole life of a person from his birth to death. The field study will enlighten some crucial moments of its formation such as "the visual space"(at the local level), misconceptions concerning the size and locations of an area and the process of correction of these errors resulting a successive improvement of the mental image during time. The time element and pace of movements when collecting visual impressions emphasized.

4. The personal mental map evolves around focal points. The starting focal point – in time and space – for an individual is the point of birth. Along their lifeline people establish a growing number of individual focal points, connected by lines of communications. These points and lines create polygons integrated to networks covering specific areas i.e. a city or part of it. They make up the skeleton of the personal mental map of a place.

5. When analysing the "cartographic diary" in this particular place (city) in wider geographic context it became obvious that there are similarities in structure of one and the same person's the mental map in different geographical scales. The term "hierarchic" in the title refers to this observation.

6. The personal mental map has several sources. Visual, direct observations assisted by other, not always so obvious impressions (sound, smell, heat etc) are the primer source. Indirect visual impacts by education, and – with growing importance - mass media, complete the direct observations. These different elements of directly and indirectly collected information together can be visualized with analogy of layers in a printed map.

7. The personal mental map is, however, dynamic. It changes not only from birth to death but also second by second, depending on what we are thinking of in each moment. We frequently change focus and scale when we are thinking of different places and – accordingly – acquire complementary information from different layers of our mental map. The Google Earth in permanent use is a better analogy for this process than reading printed map(s).

8. The personal mental map is an expression of the cultural context a person is living. The collective mental image is an expression of that culture's way of looking at the surrounding world.

INTRODUCTION

Kevin Lynch (1960), Peter Gould (1985), Gould and White ( ) and their successors studies on mental maps and Torsten Hägerstrand time geographic theory, first presented in 1966, gave the underlying ideas to this

paper. The concept grew, however, during a long period of time. The crucial moment for writing of the paper was, when moving to a new city. The author realised that he began a new, in time and space sharply delimited period in his life, well suited for such a study. The process of study reminds of searching for an image hidden by a shroud of mist. Parts of the image appear for a moment, just for fading away immediately. Fortunately, they return, grow, gain strength and melt into a more and more cohesive whole. Slowly you realise that you are following a kind of guiding image even if you have to work hard to find it. The author is confident that many colleagues will recognise his own experiences.

The project which is presented here is still developing. Its final version will be presented in the (hopefully) coming revised 2nd version of the author´s Human Cartography from 1987.

THE GUIDING IMAGE

A man is walking along a street. He is searching for a building he will visit next day. He is "new in town". He strolls along the street, observes interesting buildings, notices a conspicuous tower and enjoys the sight of the small river passing through the city, the lush trees bordering on it and the bridge crossing it by an elegant arch. When he – after asking for guidance a man he meets – finds the building he is looking for returns to his hotel.

Let us follow his path on a map. The map is lying on the floor of a half dark room. We can just discern his way on it. But every time he looks at e.g. a building a tiny shining dot lit up strait above the place, let us say a meter above the map. When he moves along the street, every time he notices something of interest a new light begins to shine right above this new place just at the same height as the previous one. If he finds the building he is looking at interesting the bright dot shines with high intensity. If his impression is not so strong, the shining dot is smaller and weaker. His path after returning to his hotel is marked by a chain of glowing lights with different strength.

The man, who was "new in town" settles there. He will repeat his first walk several times and will, of course, follow new ones. He finds a place not only to work in – that is the place he was looking for on his first day – but also another to live in. His movements between these two places and other places he visit – shops, library etc – integrate to a network, marked by new chains of lights.

When you are new at a place it is easy to misjudge the length and direction of your movements. The result is then a misconception of the size and form of certain areas and their internal spatial relations. With time these misconceptions are usually realised and corrected. At the same time certain important elements in the city, - buildings, streets, etc - begin to stand out with greater clarity, while other, less important ones will loose importance.

The image formed by our "stars" will also change accordingly. The pattern created by the chains of lights grows more complex but also gain a more firm structure. Some lights will glow stronger then previously while other loose strength.

If we freeze the man´s "star"-created traces day by day and then show them as a continuous slide-show, we can follow the development of his mental image of the city. If we choose to show at high speed we get a stable yet shimmering image, including hints of different places changing importance for our man. This sequence of images would be a rather exhaustive representation of his personal mental map of the city.

THERE IS MORE THAN ONE GALAXY...

There are several thousand persons living or regularly visiting the city. Every one of them has an internal image of it, which can be recreated in the same way as we did with our own man. So let us turn on all those persons´ "star-images" at the same time! The image we get in this way would be similar but also different from the view that we get when flying over the city at night. The visually dominating buildings, places, views within the city would stand out most: the star-like dots would have the strongest luminescence. The main roads and highways would even be discernable, but the pattern of dots of light are much more uneven than in the aerial view: the largest, visually most important buildings along the roads are accentuated by strongly shining dots while other parts of the roads appear as chains of tiny lights. Areas of high-rise housing with poor visual qualities are depicted by chains of small lights – there are many people passing them by without noticing them. Areas with detached houses and surrounding gardens are marked by fewer but stronger lights: fewer people observe them but they really notice and remember their appearances. Football arenas are highlighted by the many visitors remembering. Memories from hospitals are recalled and represented in similar way but of different reasons.

This image is shimmering. Memories of individuals change all the time: they receive new impressions; strengthen some of the existing ones and other fade in their minds. New people arrive to the city with new sets of observations. People exchange observations and share their experiences. Their personal mental maps become connected and interwoven with each other´s. All inhabitants and visitors collected memories

– this galaxy, representing all the individual memories - change slightly but continuously all the time. The image is shimmering.

We can treat this image in different ways. We can study the collected mental image of all people in the city. On the other hand we can choose certain parts of population and study their specific collected mental images. We can study e.g. the "female" mental image of the city by turning off the mental images of all men. We can study the children's mental image of the city by switching off all the grown-up's mental images. We can study the mental images of all football fans by turning off all lights representing the uninterested people. And so on.

This shimmering, flexible galaxy represents the ultimate goal, the "holy grail" of mental mapping – the ultimate goal that we never can reach. We never can register and depict all the impressions and all memories of all people in a place. (…let us hope anyway. It would be a nightmare if we could do so. After recent years developments we can not be sure.). However, this way of visualizing the idea of mental map can give departure points for deeper analyses of its structure and characteristics.

(Note. This image above could also be transformed to a numerical model of a mental map.)

THE GALAXY WIDENS

Let us now return to the complex galaxy above the observed city and let us switch off all the glowing dots, except the ones representing the man, who's steps we followed.

The man is a commuter. He is staying in this city each second week where he rents a room, but his main place of residence is in another city some 400 km to the south. He travels regularly between the two by train or by express bus. These movements offer new impressions and views. Main part of the countryside along those communications lines is, however, covered by forest. This, together with the rapid movements results in a limitation of these impressions. The rapidly passing-by images of dense forest is difficult to remember or even to perceive. First when the walls of trees are replaced by villages, towns, and open fields or by lakes has the traveller an opportunity to perceive distinguishable views. These views create first hazy memories, but passing by several times some of the views will be remembered and create a chain of remembered visual pictures between the two cities, which make up nodes in this uncomplicated network. Thus a new level of the mental map begins to emerge: one on the regional level.

It is interesting to note, that the process – noticing by-passing visual elements, and after several occasions memorizing them as a part of a network – occur on different levels. When walking, the pace of movement low, the time for observation of the single elements abundant, hence it is easy to observe small elements – single buildings or parts of a building, single trees etc – and soon, after just a few occasions remember them. When going by tram – the observed man travels to his new job by tram within his "new" city – the images passing by at a higher velocity bur slower than a train. The noticed and remembered elements will be larger – whole buildings or groups of buildings – and they will be remembered only after several times of passing by them. The shining dots on our "galaxy images" will be less frequent and weaker than when walking. This tendency will be far more pronounced on the regional scale – here when travelling between the two cities.

Our man travels frequently not only the regional levels, but also outside his Scandinavian country, yet mostly within Europe. These movements are most often by airplane and result visiting places just for a few days, often in connection with conferences. Giving presentations do not give time enough over to get acquainted with more than the closest surroundings. The "shining dots" appearing after such travels are few and concentrated in small areas – but yet shining with intensity. The journeys between the focus areas, however, give much less specific memorisable images. He enjoys looking out through the airplanes windows, and appreciates the vastness of the views, but only main features of the landscape – larger cities, characteristic river bends, distinctive mountain ridges – are possible to discern and memorise. The places, the goals for these movements are easy to discern on the emerging continental level of the mental map, however small and concentrated they are – the paths leading to them, however, will be difficult to remember.

BACKDROP TO THE PERSONAL MENTAL MAPS

At this point and this geographic scope quite a new level of personal mental map is appearing: the global mental map. Just a few decennium ago this view was based entirely on abstract knowledge, conveyed mainly by education in schools. Very few people had opportunity to get direct, personal experiences on the global scale. This body of knowledge is represented in this presentation by a global projection of the Earth shown in black-and-white. Between the abstract knowledge about different parts of the Earth and the personal experiences, represented by the "shining dots", there is another level of indirect impressions,

which gains increased importance at an accelerating rate. This is the level of information is transferred mainly by different pictorial mass media.

The man, whose movements we traced – the alter-ego of the author – has grown up in a Middle-European country dominated by a Communist regime. The image of the outside world, presented by its propaganda organs, was simple. It was the image of friendly Communist countries – yet very few geographic details given exceeding the school-geography level – and a hostile West. The public opinion, however, tended to reverse these attributes. Moving to a Scandinavian country (Sweden), the geography of Europe and USA began to be more realistic and somewhat detailed over the schoolbook-level. This was a period with much lower frequencies of long way travels and the time when TV just began to show the outside world, and in black-and-white to that. The mental map of our man – and of an important part of the population – was rather limited to Western Europe and the east coast of USA, as regards visual associations. News by radio gave a more detailed picture but it was more abstract information.

Around 1960 the Congo crisis and – in 1962 – the Cuba crisis introduced a rapid change. First Africa, particularly Congo made its entrance to the Swedish people´s minds, especially after the Swedish peacekeeping involvement in the crisis and still more after the tragic death of Dag Hammarsköld, General Secretary of UN. The Cuban crisis shook a whole world and created an enforced awareness of a global world with shared dangers. The assassination and burial of J. F. Kennedy created a feeling by shared sorrow a global togetherness that probably changed the mental map of millions of people. A long row of crisis filled in with geographic details and created a feeling of concrete existents of other parts of the Globe. The Israeli-Arab wars, wars between Iraq-Iran, crisis in Iran, Afganistan and especially the war in Vietnam were decisive points, still more reinforced by the two wars in Iraq, partly almost teleradiated in real time.

The Vietnam War said to be the first one covered by TV. Pictorial illustrations of news, first in black/white, later on in full colour gave a growing amount of what we could call indirect but personal experience. What were happening in other parts of the globe became parts of the everyday life of million people around the world.

The threat of the climate change finalised the process that began with the first pictures of the Earth, taken by astronauts. The Earth as one and indivisible whole planet became an undeniable, widely spread insight. This was further supported by the more and more available satellite imagery and – above all – the rise and spread of Google Earth and similar geographic image systems.

SUMMARY

In this study 6 levels (six layers) of the personal mental maps were discerned. Four of them were built upon direct personal experiences and two upon indirectly received experiences.

The four levels of direct personal experiences are

1. The "here-and-now" level. The direct visual information received when slowly moving through a landscape. Example: a person walking along a street and looking around. Small elements – buildings or part of buildings e.g. – can be discerned. They are integrated into visual rooms. The visual rooms are integrated further to internal images of parts of the city.

2. The local level. The images of parts of the landscape (here: the city) are integrated into a cohesive image of the whole place. The integration happens around the polygons and network formed by the individuals´s movements within the place.

3. The regional level. Larger landscape element such as whole towns or cities where staying are the main focal points. Chains of images gathered by rapid movement between them (train, coach buss, low flying airplane) connect them to polygons and – further – to personal networks. Only larger elements of landscape can be discerned (passing-by lakes, villages etc). These create discontinuous yet discernable lines.

4. The continental and intercontinental level. By long-distance travelling the scope of the personal mental maps grow but become frequently less geographically cohesive. Their resolution i.e. the possibility to discern smaller details in the landscape, sinks. The movements happen frequently by jet-airplanes and at high altitude, often by night. The visibility is poor and only large landscape elements are recognisable. The geographical extents of the visited places, the focal points are - often, but not always – limited. (Small focal points are usual at business travels, larger ones when moving around at vacation journeys end similar occasions.)

The two levels of indirectly received geographic information

5. Images from mass communications. The mass communications media are developing since the 1950 with ever increasing pace. Today telecommunication media display events in our living room from all

around the Earth almost in real time and with high visual quality (colour). In spite of all their limitations they widen the scope of our personal mental images to a global level.

6. The abstract level. Education in schools and similar information sources, giving an outline of the Earth, its different parts and the geographical conditions there give departure points in finding our place in a global environment. Good education, particularly unbiased education in geography, however, is not generally available.

CONCLUSIONS

The basic elementary process when the mental map is formed at any levels, can be described in a series of steps

1. Observations are made, mainly visually

2. The singular observations are integrated to an internal image.

3. The first observation is frequently biased. The biased observations result in a biased mental image of the place or the observed part of it

4. Via repeated observations the biased internal image is corrected.

5. This internal image is integrated to previously existing images over the visited area, resulting in a more complete mental image of the place

6. The image fills in successively with complementary details. The first observed main features are completed by less prominent elements

7. The completed images passing through a process of maturing. The image is strengthened first but slowly fades to a familiar yet paler image. In the long run elements slowly sink to a level forgetfulness, yet can be recalled when activated

8. The pace at which observation are made is essential. Slow movements result in observations with high visual resolution (small details are discerned). Increasing speed when observing lessen the visual resolution yet can cover larger areas.

These steps are reoccurring at different geographical scales. The different observations make up focal points connected by links of movements. The smallest ones are perhaps observation of a detail in a building followed by a movement of eye to next detail. The observation of main features of a continent from a high flying airplane is another end of the personal observations´ scale. Something similar is the process when we look up a place in Google Earth. The movement between places is exceptionally high (we can not discern any features when changing position) but the resolution in the focal areas may be very high.

In the title of the paper was this reoccurrence named as “hierarchic”. The expression “fractal” is probably more relevant. These steps reoccur at every element when forming the personal mental map.

This paper is an attempt to study of the formation of the personal mental map as a coherent whole phenomenon. The underlying idea is that all people have a similar personal mental map and geographically or otherwise related people connect their personal images to collective mental images of different places.

This approach leads to several questions.

1. The study is primarily based on one person’s observations and interpretation of them. In what extent is his way of experiencing the outside world representative? Are there more or less, let alone entirely different ways to observe the surrounding world and structure these observations to personal mental images? What is the roll of the physical and social environment when forming those images? Comparative studies may be carried out not least with applications of GPS-technology (Neuhaus 2010)

2. How do people integrate their individual mental images? What is the roll of bringing up people, and growing up in different geographical, social and cultural environments?

3. Can aggregated mental images be simulated by methods like influence calculation (Szegö 1994)?

4. All those questions appear in connection with research in several parts of the cartographic and geographic field: research about the mental map itself in different context and perception of the surrounding world, not least in pedagogical contexts.

5. The study relates to a long row of different scientific areas: psychology, particularly perception psychology, environmental psychology, architectural perception, theories of visual experiencing in arts, research in the human brains way of functioning, research about formation of the artistic images etc. Even these links must be established.

6. The ongoing technological developments change our possibilities to form our mental images. What are their impacts? Do they only enrich our knowledge or by the shier availability of immediate information

make us less interested in collecting and structuring them in cohesive pictures? Which possibilities are evolving by GPS-technology for enhanced studies?

The work with this paper continues. Some parts of the questions will be dealt with. Most parts of them will, however, inevitably be a task for future research – provided that this way of thinking will gain acceptance.

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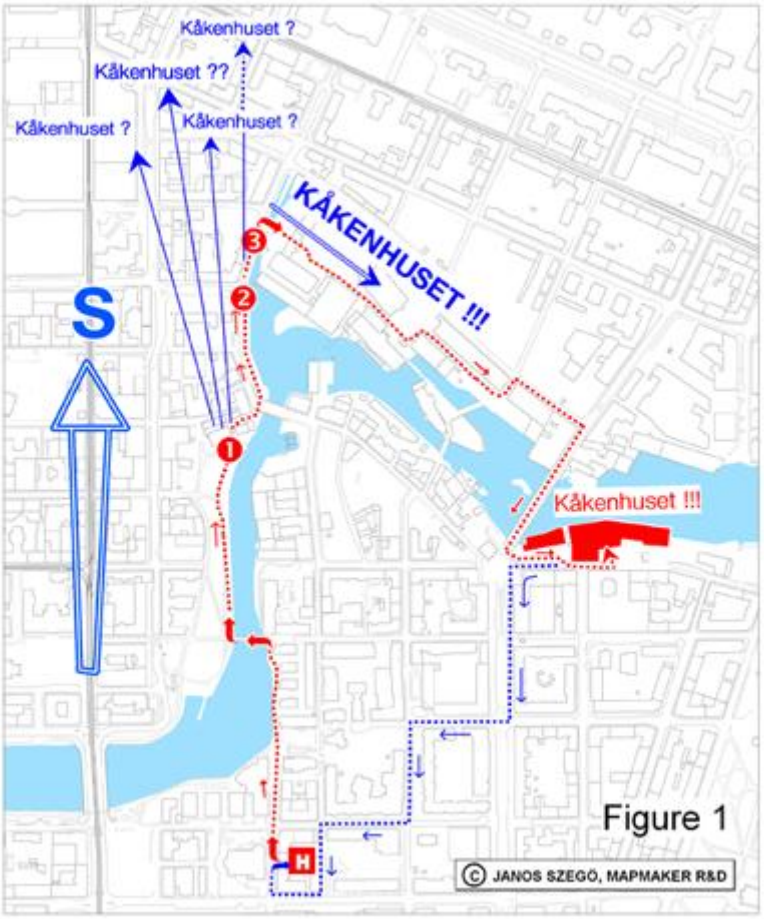
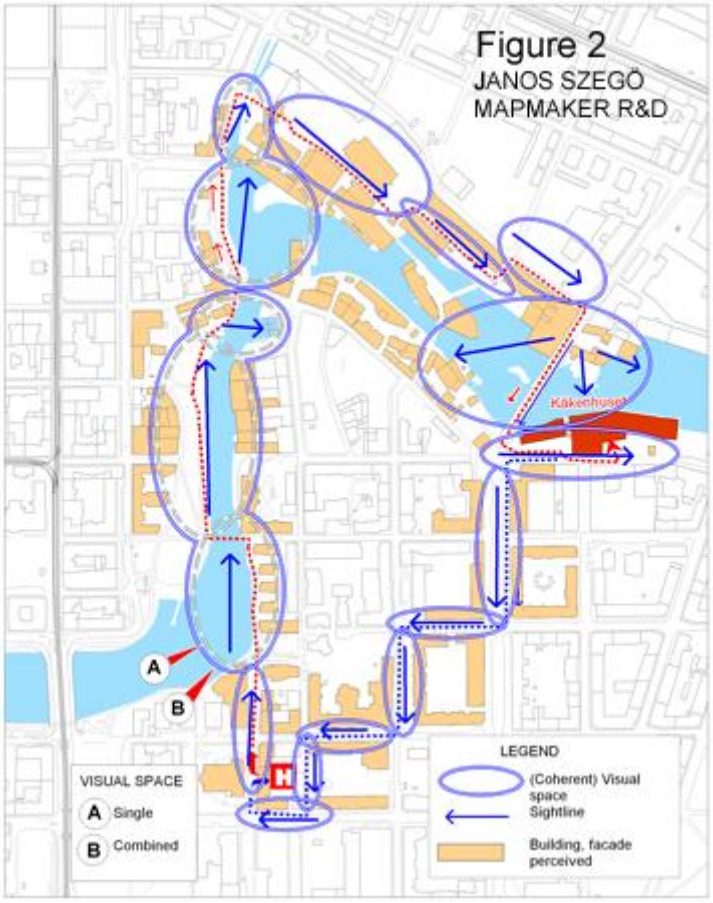
Appendix. Complementary notes to Figures 1-9

Some key elements in this study are

Registering movements: see Figure 1

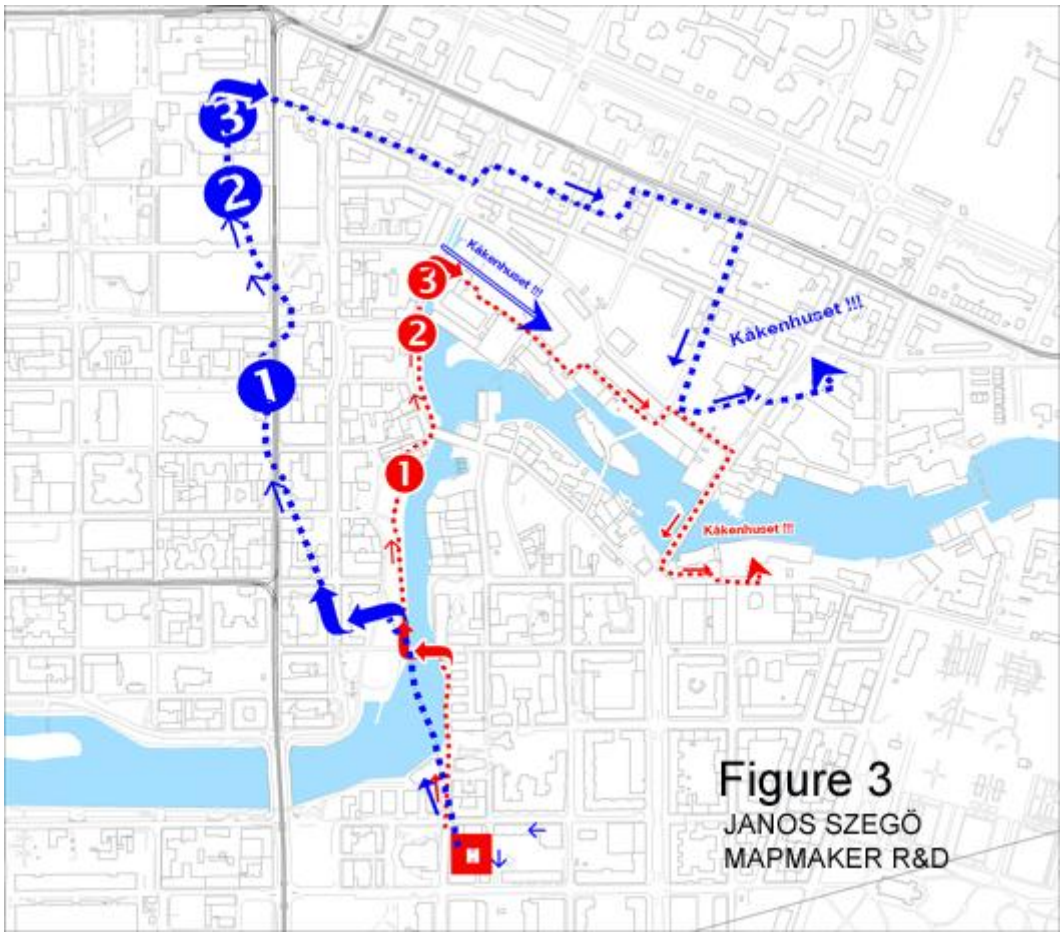


The visual space: visual entity an observer can see when standing at a point and looking around in a place, e.g. a square. This visual entity can be further legible when he moves along lines, which are visible from the point he is standing at. Example: a square defined by the facades of the building around it. A space defined facades on both sides of the street in that part of the street the observer can see. (see Figure 2)



Spatial misconceptions and their correction.

When moving around in e.g. a city the visual spaces appear as links in a chain. By definition the visual spaces are not connected – the observer must connect them in his mind. The length of a visual space is frequently experienced exaggerated and – when two visual places not meet at right angle – the direction of the whole movement is misjudged. As a result the observer thinks he is much further away from the starting point as he thinks and his position in relation to the starting point is different than what he believes. The correction of these and similar misconceptions used to happen when he can overlook the main part of his line of movement and realise its real extension. Other way of correction is to repeat the same movement. After a few time the length of movements used to be mentally corrected and even the directional misconceptions eliminated. (See Figure 3-4).


Kåkenhuset !!!
Kåkenhuset !!!
Kåkenhuset !!!
Figure 3
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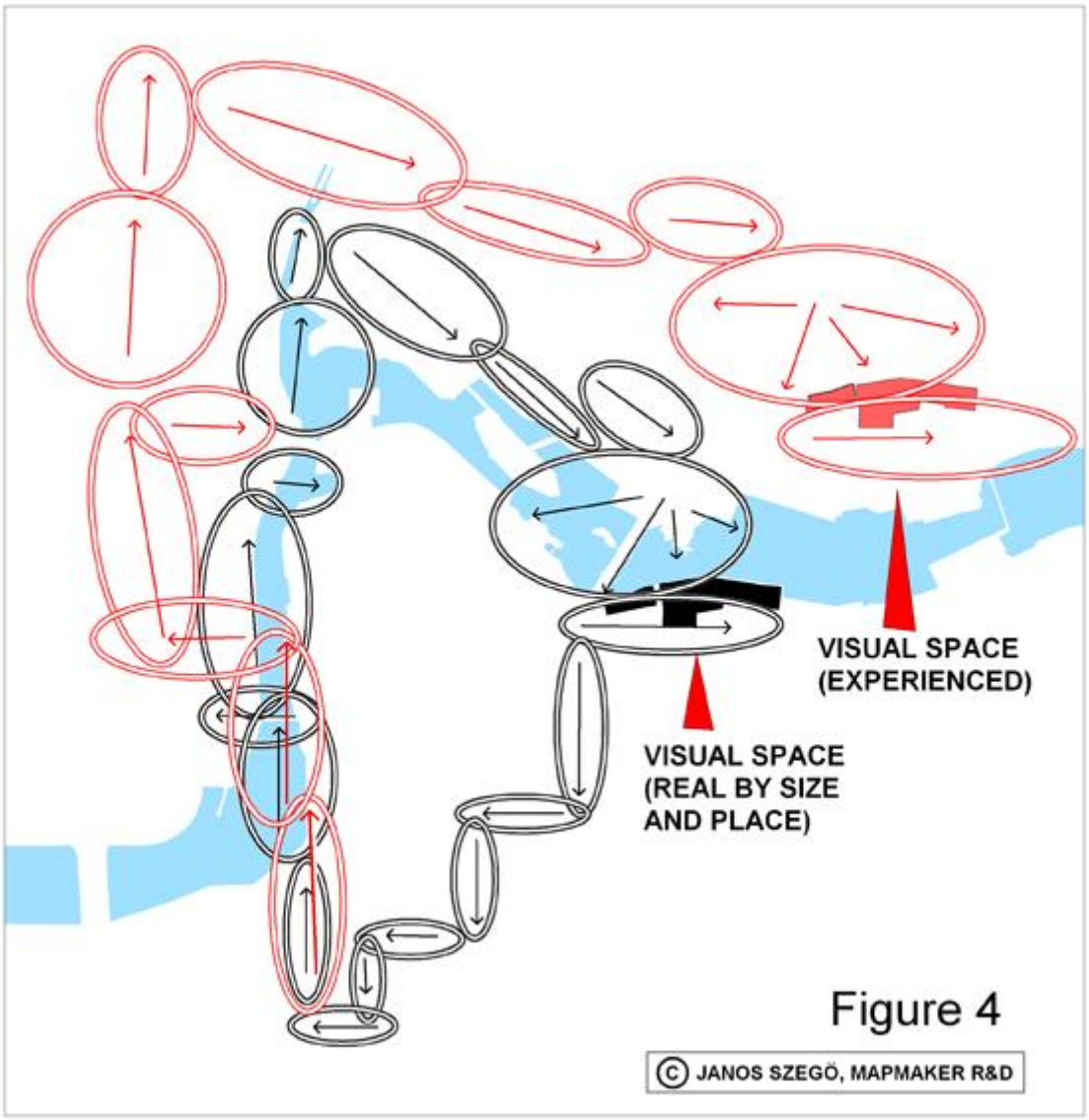

The speed of movement: when we move with higher speed we notice and remember first the visually most dominant elements. When we repeat those movements, the first impressions are strengthened and new, less prominent element begin to fill in with new details. The higher speed we move the larger the smallest registered elements are. Figure 5 and 6 illustrate the process with captured images from a tram.


Figure 5
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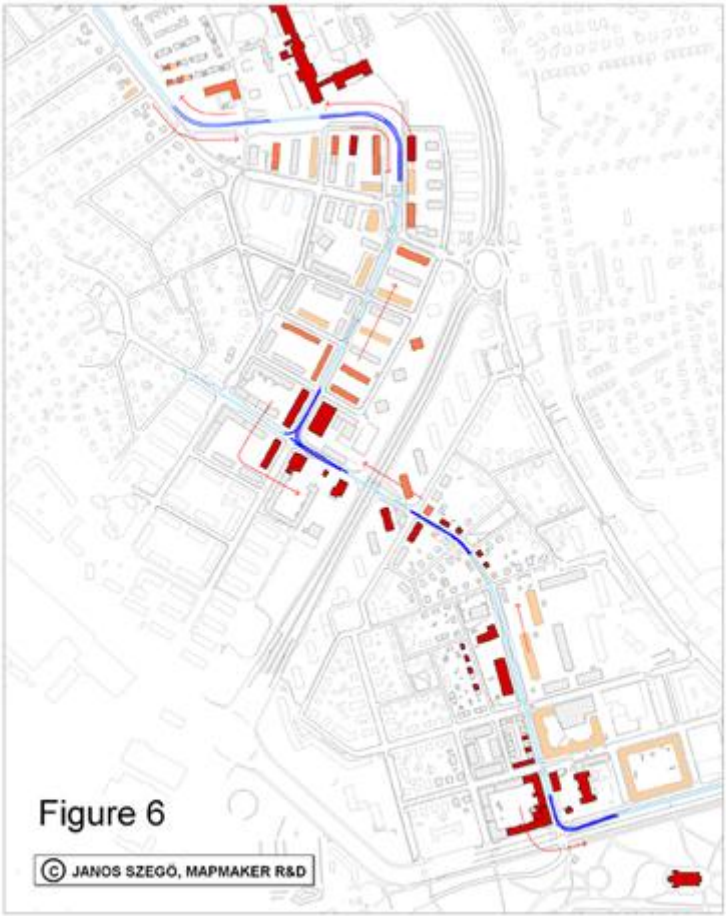
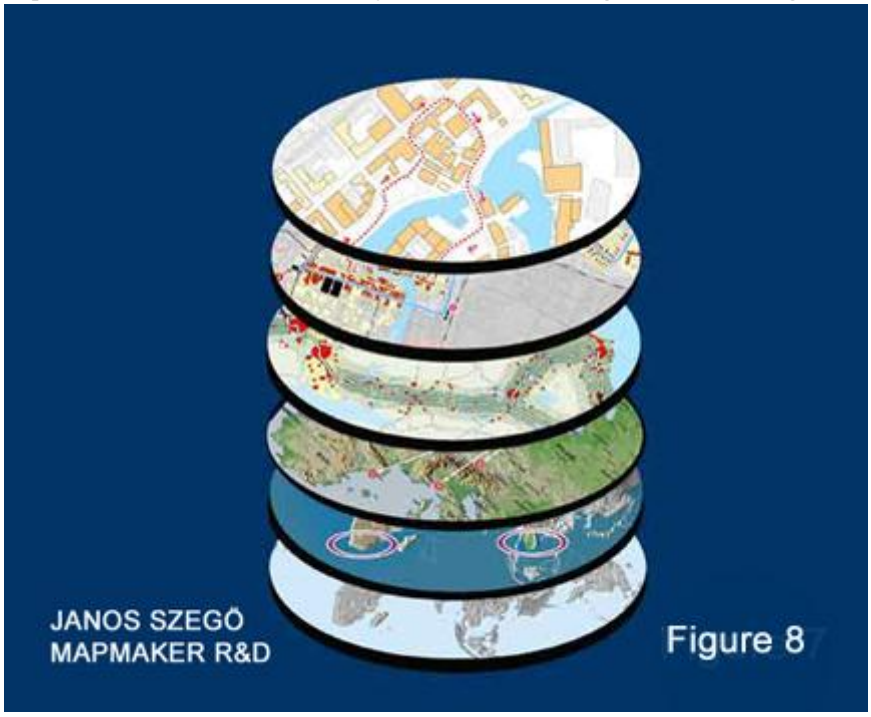


The polygon of daily movements: When the movements are repeated during several days the different polygons melt into a coherent pattern. in the visitor´s mind (Fig. 7). This polygon is backbone of his local mental map

Six levels of our mental images: Figure 8 and 9 illustrate the four levels based on direct personal experiences and the two indirectly received levels. Figure 9 is for enlighten the content of Figure 8.



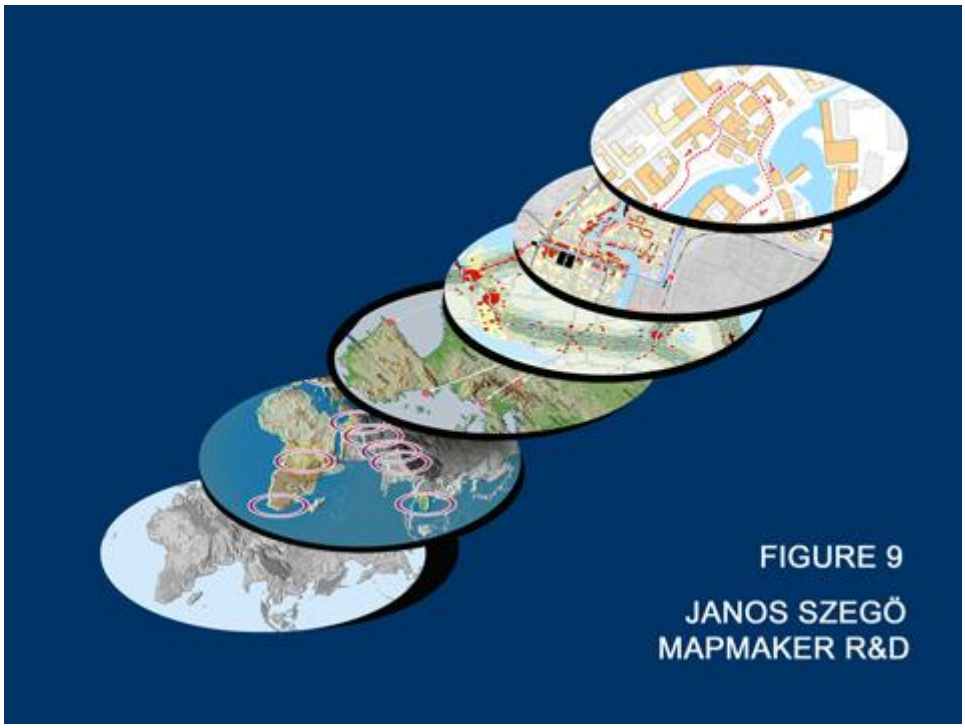


FIGURE 9
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