

SPATIAL ORIENTATION IN THE URBAN SPACE IN RELATION TO LANDSCAPE ARCHITECTURE

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Abstract

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The need of individuals to identify with the environment and the ability to create a schematic isometric image of their surroundings are essential factors affecting participation in social relations. Spatial orientation in itself reflects the ability of people to read complex urban space and identify with the place.

The presented work studies spatial orientation in the urban space in the context of landscape design. It analyses and searches for opportunities to apply instruments of a landscape architect as a means of improving spatial orientation and readability of the city. The study makes a synthesis of all the data obtained from the environment model. The methodology of work includes sections of a professional urban view combined with mental mapping of current users of the urban space.

The total synthesis was preceded by an intermediate stage of classification which was a comparison of the mental map with the reality in order to obtain “memorable” elements in the urban space, in which it was fundamental to see which entity the communication partner drew first and what entity it is in terms of spatial urban structure. Another parameter was the frequency of occurrence method. The presented study responds to this strong spatial anchoring of the memorable orientation entity by defining the landscape element and this is supplemented by the aspect of spatial orientation. The landscape element is defined on the basis of the evolution parkway-greenway → *greenfindingway*. Its substantiation is multiplied not only from the aspect of spatial economy but also in correlation to the dynamic recreational pattern, psychological well-being or the preference of sustainable mobility. The final document of the study in the form of the so-called *wayfinding map* has the potential of a foundation material which can be applied to strategic and urban designing as a sum of unbiased data in correlation to involvement of the public into the process of creating the urban space.

Keywords: mental maps, wayfinding, urban space, landscape architecture, spatial orientation

INTRODUCTION AND DEFINITION OF A MENTAL MAP

Before the definition of the term mental map, its developmental predecessors can be found in cultural, anthropological or ethnographic studies. The enunciation of the currently used term mental (cognitive) map in the 1940s is work of the American psychologist Edward Chace Tolman (1948). This notable representative of behaviourism used the term mental (cognitive) map when publishing his results of experiments on rats done in spatial labyrinths. It was probably the first indication of existence of mental (cognitive) maps, which

contain information about the spatial arrangement of the environment and its mutual spatial relations (Stuchlík, 2003).

The following broad use places the issue of mental maps on the edge of several disciplines, namely psychology, sociology, behavioural geography, cartography and also urbanism. Their frequent use in the mentioned disciplines results mainly from typically interdisciplinary character of mental mapping methods. The term itself has undergone a change in relation to the Czech or more precisely Czechoslovak concept to a distinction of the terms mental map and cognitive

map. In the segmentation mentioned, graphic (drawing scheme) expressing personal ideas about the organization of the surroundings is regarded as a mental map (Drbohlav, 1991); the term cognitive map is introduced for the representation of external reality in the human brain (Zelenka, 2008). In the foreign literature it is possible to meet a different interpretation and it is that a cognitive map and a mental map are synonyms. Essential for this study is the classification of mental maps prevailing in Czech literature, and according to its authors we distinguish two basic types: *lynch* type (Lynch, 1960) and *gould* type (Gould, White, 1974). To use the issue of a mental map in spatial sciences or in the field of urbanism, the lynch type is fundamental for its possibility to be compared with the reality and a potential accuracy assessment.

MATERIAL AND METHODOLOGY OF MENTAL MAPPING

The methodology of the study is composed of four basic phases. These are the preparatory phase, analytical phase, mental mapping phase and synthesis phase and the evaluation of results with a few intermediate stages of classification. Individual methodological phases differ considerably especially due to the use of different data acquisition methods. Although this study relies in its basis on the results of mental mapping, this method was combined with other methods applied throughout the study. These are quantitative questionnaires, analytical methods of urban design, mapping of social processes and interactions in specific time intervals. The results obtained in these ways were subjected to triangulation to increase their validity.

- 1) In the first, preparatory phase of the study, there were several fundamental choices. It is the selection of an assessed model locality and an evaluating entity – the communication partners. The selection of model localities was carried out in relation to the following aspects: the historical origin and development of urban structures, the integration in the context of the scale of the entire city, the application of urban structure forms of space and matters, the presence of citywide importance entity and mainly natural elements.

6 model localities with the following basic distinct characteristics were selected:

- one-shot inclusion of an urban structure in the natural matrix based on a complex plan – part of the cadastral area Lesná,
- one-shot act of placing a residential complex in clash with the current structure of rural foundation – part of the cadastral area Bohunice,
- layering of urban structure with distinct enclaves of free areas on one side and compact

built-up area on the other side – part of the cadastral area Ponava,

- a residential area with a predominance of terraced family estate with an overlap on the area developed from a historical rural origin of the residence – part of the cadastral area Černá Pole and Husovice,
- a residential area Stránice with the dominance of family housing in detached houses and villas – the cadastral area Stránice,
- the best preserved village complex in Brno with a “street village” (a village with a ground plan of a street) in central position visible up to the present day – part of the cadastral area Obřany.

Such formal definition was determined only in the basis with an extension to the scale of the entire city and its catchment characteristics.

- 2) Besides the model locality, it was necessary to provide the evaluating entity – the communication partners, with whom semi-structured interviews and drawing mental maps were carried out. This selection phase had a significant impact on the whole study. Communication partners were elected on the basis of selection subject to the basic requirement to address and gain communication partners of different ages with different social statuses. Mental mapping was done with 25 respondents.
- 3) The preparatory part of the analytical part consisted in the selection of time slots, in which field data collection for the analysis of human actions in an urban area will take place. The same periods of time for mapping were selected for all the locations: weekday morning (Tuesday–Thursday 9:00 to 11:00), weekday afternoon (Tuesday–Thursday 4:00 p.m. to 6:00 p.m.), Friday afternoon (2 p.m. to 5 p.m.), weekend afternoon (Saturday–Sunday 2:00 p.m. to 4:00 p.m.). We have focused on these aspects: *How many people are here? For what activities, purpose do they use the urban space? What age and social status are they?*
- 4) The structure of questions from Kevin Lynch's research published in *Image of the City* (Lynch, 1960) was used as a basis for the formation of the questions.

The specific formulation of questions, their modification and order were based on the studied issue. Their wording was subsequently subjected to collective criticism intended to avoid a biased grasping of the questions for interviews. The basic aspects of the formulation of semi-structured interview questions were objectivity of the questions without a subtext anticipating negative or positive assessment by communication partners. Furthermore, it was the focus of questions on the orientation in urban space, questions designed to search for compositional entities

of static and dynamic character in the space with the potential of an orientation element or line.

- 5) For quantitative data collection we used random interviewing of “passers-by” at a pre-selected location. Locations were selected in the preparatory phase. A passer-by was asked verbally and on the basis of a submitted photograph about:

- a different entity in the urban figure based on the meaning, function or scale; for instance rector’s office at a university, city hall in a town district, swimming pool,
- repetitive compositional element, for instance terraced houses in a housing estate, a high-rise block of flats on the estate,
- on the basis of a toponymic name of a street or a square.

A total of 64 people were addressed.

- 6) The analytical part is represented by a field survey and an analysis of the model locality. They were studied from the perspective of architectural matter, urban space and moving elements in the city, people and especially their actions. A very important part of this methodological step was the mentioned recording of events in relation to time and space as the two decisive determinants of human behaviour (de Certeau, 1984). We determined the same time intervals, in which the human events and activities were studied and recorded. The field data collection took place at the same time for all the model localities. This phase of the study carries in itself data of a professional view. This is to capture all the available characteristics of the static environment of the locality as well as its moving elements. The moving elements of the urban space arose during this study as entities which have the potential to increase the memorability of a physical location. This partial result will be further discussed in relation to the spatial anchoring in the urban figure.

- 7) The essential part of the study is based on partly structured interviews and formation of a mental map. Mental maps are of the lynch type. The maps were drawn directly by communication partners during interviews, in which they recorded the spatial context, significant objects based on their personal experience with the location. The maps were available during the whole interview while complementing or clarifying their representation of space.

A part of interviews was a qualitative approach in data recording and also underpinning the communication partner’s reaction to the question asked, their willingness to respond, the rapidity of their response or, conversely, misunderstanding of the question.

- 8) Comparison of the created mental map with the reality and value aggregation were an intermediate stage of classification in methodology. Subsequently, both

the information gained in mental mapping and the analytical part were combined. The synthesis moves the results close to the level of the planning basis by incorporating a professional view; it is also free from academism. This material identified in this methodology as the *wayfinding map* is a synthesis of all the information achieved and evaluated from the analytical part of mental mapping.

RESULTS

A) The presented study has created a synthesis of mental mapping in combination with a professional urbanist’s point of view of a selected model locality. It was all done on the basis of mental mapping application combined and complemented by other methodologies mentioned; searching for essential entities to improve spatial orientation, which is based on a discussion being in progress does not take into account whether the orientation element is, according to the general vote, a road, an essential element, outskirts, an area or a node; evaluating their importance for urban design in terms of their readability and memorability. Further, the study, using the mental mapping and analyses, assesses the data to be used in relation to dynamics of contemporary leisure pattern in the urban space and in correlation to the necessary requirement of percentage change in the traffic work on sustainable mobility forms at the expense of individual car transport. At the same time, it finds means in the field of landscape architecture and subsequently defines their spatial properties. They have the potential of good readability and memorability. They are positively perceived by users as natural guidelines. They are contrast of complexity and intricacy of navigation typographic systems. The result of this synthesis was the evaluation of subjective and professional data from the areas and the creation of the *wayfinding map*.

The mental map is a summary of personal experience with spatial arrangement. In the process of overall assessment, mental mapping data aggregation has been performed in the way this methodology is used to evaluate cartographic works (Kynčlová, Bláha, Hudeček, 2010; Bláha, Hudeček, 2010). The final evaluation is further based on a synthesis of the results of both mental mapping and addressing “passers-by”, the study of human interactions and events and, last but not least, the analytical part. This material, within the framework of this methodology referred to as the *wayfinding map*, was a synthesis of all the information obtained and evaluated from the analytical part, mental mapping and field interviewing. It is a document which provides a pre-project preparatory framework. In the scale of the entire city and its subparts, it generates the entities that contribute to the readability or good orientation in the urban structure. It is a material

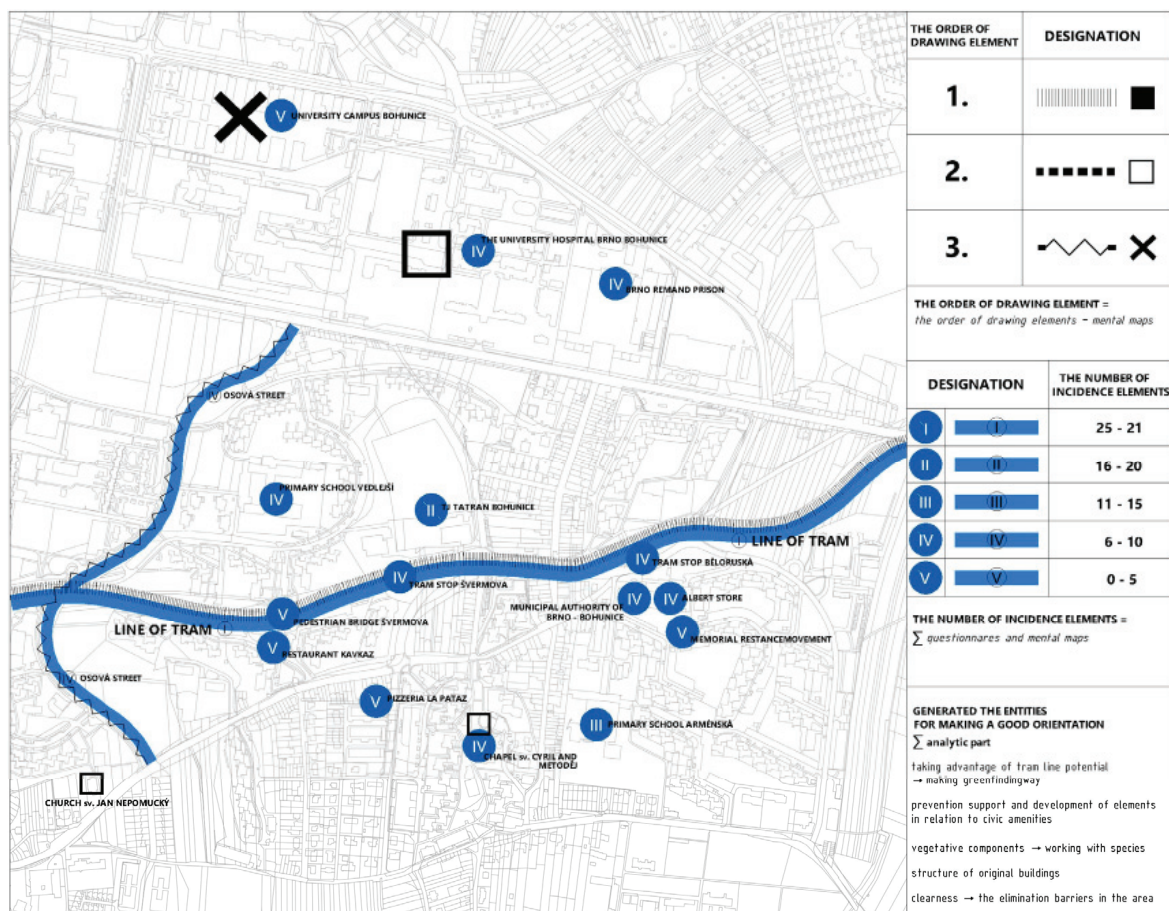
which has practical assertion for strategic and urban planning (Fig. 1).

The positive aspect and the contribution of information obtained from mental mapping as a basis for urban practice also lies in the fact that compared to public involvement in processes of designing a particular intention, here the communication partners do not associate their answers with a particular intention in the area and, potentially, with the fact that it could affect their own personal interests. In terms of urban design, using a mental map seems to be an “unbiased” public involvement in the search for civil interests in the public space, obtaining unbiased user information.

B) The result arising from the formation of mental maps by the communication partners is an evaluation that the entity which was drawn as the first one within the process of drawing was the linear element to which they added other compositional points or lines into a spatial framework. It is important that they mapped linear elements, not points, areas or networks. These were the decisive orientation lines in relation to the locality analyzed as well as from the aspect of the entire city; lines as route orientation on the basis of the urban structure, urban maps.

This discussion leads to an assumption of a definite preference of route concept of space – a spatial line. Its grasping by means of landscape architect's devices in relation to urban formation instruments is the definition of urban greenway → *greenfinding-way* as a basic orientation line and their system. It is demanded that it is of a multifunctional character in relation to the definition of a connecting line as human movement, when the movement can even be a stay – the goal. The expression of *greenfinding-way* results from greenway (the green route) which basically arises from the definition of the parkway.

C) The study results further point out the fact that for strong spatial anchoring of *greenfinding-way* it is important to link this line and their complex to the entities which have the dominance of memorability in the urban space. By linking to the lines anchored on one side in the urban area, and on the other side in the subjective perception of those who use the urban space, it is a natural and nonviolent urban method to create an orientation line in the urban surroundings. These multifunctional line routes are set and supported in parallel linkups to sustainable mobility forms – public transport, particularly trams and railway transport. With a natural line of water flow, which is not an unusual combination, there is more



1: Wayfinding map of Brno-Bohunice. Authors 2013 (source: www.cuzk.cz)

emphasis on multifunction, inserting various clues – orientation entities guiding on the way and contributing to the segmentation of the way and assuring of the correctness of the path executed. At the same time they contribute to their memorability. They are subject to the requirement to multiply meanings and applicability of these orientation elements which are not orientations elements themselves; however, they become orientation elements by their meaning, use, architectural design, scale or attractiveness. They carry the characteristics of multifunction which creates a diverse group of users who come at different times and for different reasons.

DISCUSSION

Making of mental maps is one of the fundamental principles of *wayfinding* that can be defined in four basic points: orientation (determination of the place where I am), decision (determination of the route, to get to the end), mental mapping (knowledge of the environment based on experience) and conclusion (I am at the right place).

As early as in the mid-1950s, I. Hallowell in his book *Culture and Experience* (1955) indicated the need of individuals to identify themselves with the environment and to be able to create a schematic isometric image of their surroundings as essential factors affecting participation in social relations (Muliček *et al.*, 2013).

What is crucial for the studied issue is the transmission of mental mapping method from psychological sciences in spatial sciences instruments which was made by American urban planner Kevin Andrew Lynch. The book *Image of the City*, published in 1960, deals with the visual quality of American residences, evaluated by the help of studying the mental image of the city, which is created by the residents themselves (Lynch, 1960). Model localities of this study were central areas of three American cities Boston, Jersey City and Los Angeles. The selected acreage of the central area was not larger than 2.5 × 1.5 miles. For each city two methods were used. Firstly, it was the researcher's systematic survey directly in the field, which evaluated strong and weak sides of the image of the locality selected, mapped various elements and their clarity. It was a subjective evaluation of immediate perception of environmental elements. The second part was interviews with 30 respondents in Boston, with 15 respondents in Jersey City and with 15 respondents in Los Angeles. In Boston, the respondents were in addition submitted photographs for identification and passers-by were interviewed about a certain place. Lynch brings to the spatial perception of the environment concept *image (picture)*, *imageability (ability of an object to make the impression)* and *wayfinding (path selection)*.

In the 1970s, J. O'Keefe and L. Nadel in their publication *The Hippocampus as a Cognitive*

Map (1978) follow, besides other things, the issue of the difference between a map representing two-dimensional image and a path representing string *stimulus-response-stimulus*. Thus they link to Tolman's cognitive mapping, in which neither he nor his students tried to further specify characteristics of a map and a path. O'Keefe and Nadel discuss ways of navigation with the help of a route and a map and they monitor their positives and negatives.

Navigation on the path is seen as navigation to targets that are motivation, whereas an information chain navigating to sub-targets creates a description of the whole route. Such a way of navigation appears to be inflexible, any diversion of the given route which may result from misunderstanding or forgetting one chain segment leads to disorientation. The route does not allow the traveller any freedom of choice. However, its indisputable advantage is simplicity. This route property is an important factor in terms of dynamics of contemporaneity, when simplicity is equal to speed and in proportion to the decision-making based on the shortest time.

On the contrary, map reading is far more complex, there is a need of identifying the initial point, goal and then the given route, in which the traveller has already a freedom of choice. In case of navigation interruption it is easy to find an alternative. Its characteristics is also safety, the traveller can constantly control his movement by means of elements in the map.

Another important source of inspiration is the field of Environmental Graphic Design (EGD). Basically, it is a graphic design in the public space which accompanies our every step. Its task is to tell stories or convey information through the built city environment. EGD takes complex information and makes it simple, easy to understand. Therefore, EGD is becoming a multidisciplinary field without borders that covers many fields across graphics, architecture, interior, garden landscape creation, industrial design, and unites all of these fields in the form of a single visual concept identifying itself with a given place. Currently, the field of Environmental Graphic Design is divided into three main parts – *Signage & Wayfinding* (creation of orientation points and their mutual logical interconnection, it helps to navigate inhabitants), *Interpretation* (storytelling, transmission of ideas, respecting the history), *Placemaking* (specific conveying of information, identification with the place, designing and especially cooperation of more fields: architecture, landscape architecture, graphics, engineering, etc.).

P. Arthur and R. Passini have fundamental importance of the development of wayfinding. If the work of K. Lynch is introduced as providing geographical, architectural and landscape parameters to understand the urban environment, the research of Arthur and Passini then provides the basis for elaborating principles of wayfinding in the context of information design and human behaviour. The authors in their book *Wayfinding:*

People, Signs and Architecture (1992) as the first define architecture and information elements affecting wayfinding, they mention the importance of accurate navigation – make the right decisions that lead the navigator from the point of beginning to the end. The authors call for the accurate spatial solutions and readability of the built environment.

The Norwegian historian and architecture theoretician Christian Norberg-Schulz also deals with the identification of a place; in his book, *Genius loci: landscape, place, architecture* (2010), he pays attention to the philosophical and ethical subtext of the identification issue. He emphasizes the importance of significant places – foci within the residence as areas to which the road network converges. Place identity is then determined by the location, overall spatial configuration and articulation of character, whereas it does not marginalize the presence of intangible substance – an atmosphere that participates in the final image of the place. Similarly, Christopher Day deals with the urban space and the spirit of the place in his book *Spirit and Place* (2004), where he refers to the loss of environment individuality.

Working with mental maps in this study follows up with a debate taking place over the study of space as such on the base of the definition of city distribution into five basic elements called *paths, edges, areas, nodes and landmarks* (Lynch, 1960). In follow-up surveys there are side by side those who argue that the essential element is the path, whereas others argue that it is landmarks that are essential, and last but not least, those who hold the view that it is the overall image. There are those who extend essential elements, and on the other side those who eliminate them. A number of other architects and theoreticians started from Lynch's definition of basic elements and create additional

categorizations (Trieb, 1974; Vágner, 1982; Zibrin, 1998).

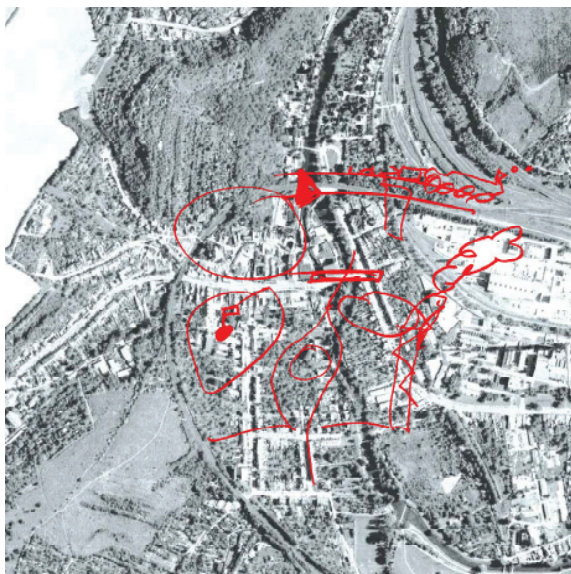
Reginald George Colledge follows up with his research on this debate by his *anchor-point theory*. According to him, the essence is the significance of places which is based on the frequency of contact with them.

One of the elemental methodological phases of the study in terms of spatial orientation issue in the urban space was to capture which element the communication partners drew in the mental map first (Fig. 2A, 2B). It is the first entity that is, in subjective perception, a reflective element for establishing of all the other components in the space. It reveals the significance of the perceived entities for orientation in the urban space. Their initial arising in subjective image is a reflection of their readability and easy recognisability as well as memorability.

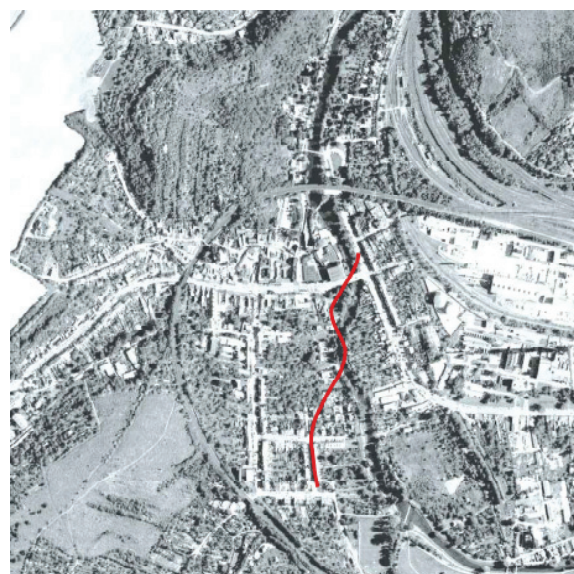
The totally overwhelming majority of communication partners, it was a linear element to which they added other compositional points or lines into a spatial framework. In the case of random interviewing, the element helping to guide was the natural line element – water flow that was very significantly competed with the traffic line of the tram line, which completely dominated in localities without the presence of the water line element (Fig. 3). A railway line, if present in the locality, was indicated only during the map drawing. Another linear element that came from the evaluation of mental mapping in the synthesis with field questionnaires is the railway line.

"You will walk down towards the tram. Where you can see the rails, turn left. It is the third street" (M,45, 10/2013)

"Keep going up the street until you cross the tram rails and then go right out of Brno." (M, 60, 10/2013)



2A: Compare mental map of Brno-Obrany with real state



2B: Compare mental map of Brno-Obrany with real state – the first drawn element

order of drawing the elements into the mental maps	the respondents							the relevance elements by drawing order
	male 37Age	male 58Age	male 78Age	female 27Age	male 33Age	male 56Age	male 50Age	
1 st drawn element	TRAM	TRAM	CHURCH	PLAYING FIELD	TRAM	HOSPITAL	JHLAVSKÁ	1 st TRAM (LINE OF TRAM)
transfer elements from higher level			CHURCH	PLAYING FIELD		HOSPITAL	JHLAVSKÁ	2. CHURCH sv. JANA NEPOMUCKÉHO CHAPEL sv. CYRIL AND METODĚJ THE UNIVERSITY HOSPITAL BRNO
2 nd drawn element	CHURCH	CHAPEL	ROAD	CHAPEL	HOSPITAL	CAMPUS	TRAM	3. UNIVERSITY CAMPUS BOHUNICE OSOVA STREET
transfer elements from higher level			ROAD	PLAYING FIELD		CAMPUS	JHLAVSKÁ	
3 rd drawn element	SCHOOL BUILDING	BLOCK OF FLATS	HOSPITAL	BUILDING	ROAD	PRISON	ARCHIVE	

3: Evaluation of relevance elements by drawing order

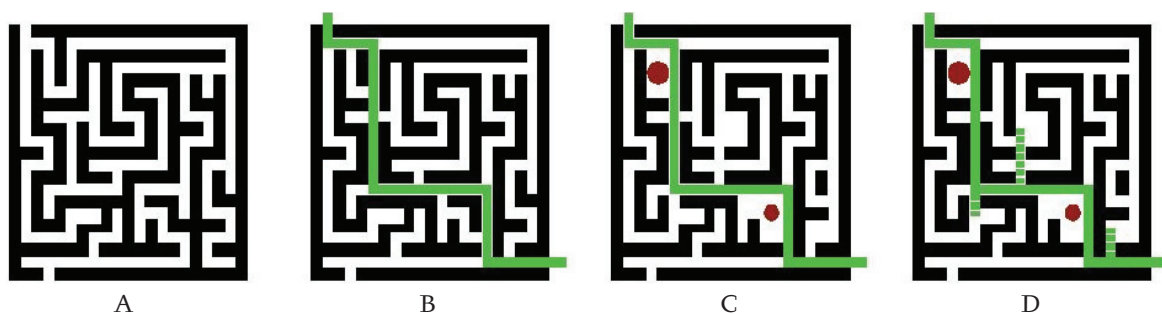
Grasping of this spatial line by the means of a landscape architect is finding and defining the urban greenway → greenfinding-way as a basic “green” orientation line, fundamentally based on greenway with a developmental predecessor being the parkway.

Greenway is an identifiable product which is permanently gaining an increasing importance in the urban space and it does not have to be of a purely natural character. Live greenway system is supposed to provide people with a link between the place where they live and destinations of natural as well as urban character. Greenway is a system of areas containing linear elements which are planned, formed and managed for multipurpose use – ecological, recreational, cultural, aesthetic and other – in the concept of sustainable land use (Ahern, 1995). The presented study extends this definition to characteristics of an orientation line contributing to the quality of the urban environment from the aspect of psychological well-being of its users that is not only a path but also a target itself. The strength of spatial anchoring and a stable position in the urban space is multiplied by linking to a natural or artificially formed element that was the result of mental mapping and that was also confirmed by the analytical part of the research. The green guiding orientation line set and supported in parallel linkups to sustainable mobility forms – city transport, particularly trams and rail transport. As for the natural line of water flow, which is not an unusual combination, in the study there

has been a greater emphasis on multifunctional linking of these areas, proper placement of guiding elements and path segmentation. These are the factor of the memorability of the greenway and its daily use. The guiding elements will be of different pattern with carefully selected variety and placement. Here we come to the imaginary edge between general conclusions of the research done and the urban design itself. The only thing discussed here is the scheme of guiding element insertion applicability – orientation entities that support path memorability in the hegemony of an urban structure compact map which is more diverse, but more complicatedly readable. According to them, we navigate and give the direction towards them.

This study introduces the requirement of inserting the guiding elements into the *greenfinding-way* (Fig. 4). In relation to urban planning the relation between particular guiding elements, their diversity and scale are also significant. Here we get to the discussion with the theory already mentioned, in which landmarks are considered as the bases for mental maps; landmarks have the potential of orientation elements within the path. From the aspect of practical use in urban practice, the study puts forward the demand for multiplication of meanings and usability of these entities. We express a general definition of guiding elements inserted in the basic *greenfinding-way*.

Characteristics that came from the mental mapping of the participants confirmed the professional opinion to create multifunctional



4: The principle of spatial expression: 4A: Urban structure, 4B: Greenfinding-way anchoring in the urban structure, 4C: Orientation entities guiding on the way and contributing to the segmentation of the way and assuring of the correctness of the path executed, 4D: The hierarchy principle of orientation entities in urban structure

urban and architectonic hybrids. Specifically, we can name cultural facilities in leisure time and their participation in all types of educational facilities, further sports facilities as well as other types of public facilities, primarily of non-commercial nature with clear spatial grasp supported by quality architecture. This cohesion and clear legibility and recognisability in the urban space is a basic framework for traffic works to be moved to sustainable transport forms within everyday mobility.

Creating of multifunctional structures made a demand on the openness of the path in the sense of inserting a basic clearly spatially anchored concept, to which a variety of scenarios is linked; the scenarios have the potential to provide the path segmentation. Then there is the true requirement for a mixture of various functions attracting as great number of diverse people as possible within the least time span with a large variety of interests and objectives (Jacobs, 1975).

“...these must be important places, not only elements for orientations themselves. Elements that primarily serve as something else than orientation, the orientation property results from them for me. They meet the secondary purpose of orientation better than elements for doing so, for example arrows or signboards.” (Ps 20, 11/2013)

Cohesion with other sustainable mobility forms is a very important matter of fact. The aim of the study was to find a natural orientation system by a landscape architect's means that are well legible with respect to spatiotemporal convergence (Giddens, 1998), easily recognizable without complex cognitive processes. The discussed result of the study is the generating of the linear concept preference – lines as basic compositional entities in the hierarchy of urban elements. The natural orientation line of the *greenfinding-way* in relation to other compositional entities as a natural and logical counterbalance of road corridors that are a result of unilateral transport area understanding as a transit corridor. The corridor creates barriers in the urban environment and enhances physical separation of humans within their transport. It corresponds to a purely individual nature of car transport. A path formulated this way is a mere isolated movement, which becomes in the subjective perception a space without further meaning and ideas. This statement is confirmed by mental mapping outputs when, within the interviews, the communication partners were describing journeys by cars very tersely or not at all. The only orientation elements during these ways were negatively perceived traffic jams if occurred on the way, or road intersections mentioned in a few cases. The movement performed in the urban environment at this speed and isolation has adverse effects on the urban form.

Instead, people using trams talk about the path, they list details that are interested for them within the way, or alternatively state their dissatisfaction

with excessive isolation of the tram route from their surroundings which is contrary to the generally applicable principle, on which the study is based. The movement within the space with small information presence seems to be longer for the participants. On the contrary, an interesting and attractive path is perceived by the participants shorter than it actually is. Cognitive distance is directly proportional to the path quality, the fine spatial definition and anchoring of the path. These are the basic criteria for the path selection that are reflected in the urban space quality.

“The tram is on the way to the centre in a hollow, it is not possible to see anything, just behind the crematorium when going downhill there is a nice view of the city.” (F, 27, 12/2013)

The fundamental solution for the assessment of elements that support spatial orientation in the urban space was work with the entity of everyday path *place of residence – place of work*, which was supplemented by the study and assessment of other two usual repetitive paths in which there was no more condition of everyday character.

The data obtained in this study by following these routine movements show the planning practice of previous years which created cities of long distances and enormous movements between these everyday basic targets, *the place of residence – the place of work*. Daily commuting takes place in the ever-growing urban space. As a decisive criterion when selecting a path, the communication partners mentioned the time, the second most frequent response was the shortest path. In the interview they also admit with the question: “*Would you change anything about your path?*” the preference for pedestrian movement. It was conditioned by the presence of quieter parts and their quality which is characterized mainly by avoiding major routes.

“I would be glad if it was possible to walk a little bit, through a quieter part, but because it is next to the exhibition ground... and in the morning one needs to be at work pretty quickly. However, if I worked somewhere where it would be possible, I would like that – to walk a little bit through a pleasant city part.” (Ps 37, 11/2013)

Besides permanently repeated importance of planning cities of compact structures and close neighbourhoods, one of the options of how not to create only forced movements between places is to modify the path itself to become a goal, an experience, that would be a goal itself. This idea has its support in the current requirements for the formation of multifunctional interlinked schemes instead of monofunctional separation of individual zones. Multifunctional urban patterns formed on the basis of spatial compactness of urban forms are the factor influencing the distinction and diversity of open spaces through their clear orientation formula in the urban space.

Last but not least, there is a finding, presented in the discussion, that is located on the very confines of urban design. During talks and random questioning a great number of orientation spots arose in relation to the events and activities performed in them and particularly the relationships to these events and their subjective importance for the communication partners appeared to be determining for orientation in the urban space within the repeated everyday life. If we do not perceive the subjectivity of these orientation spots but focus on their high frequency which accompanied the phase of mental mapping and field interviewing, this value becomes important in the data of this study (Tab. I, Fig. 5). Besides the physical elements studied in the urban space, it was social contacts and events of a regular character having direct relation to the place atmosphere that appear to be much more significant from the aspect of orientation assessment and orientation elements. These are more important from the perspective of memorability than the physical form providing the framework for this action.

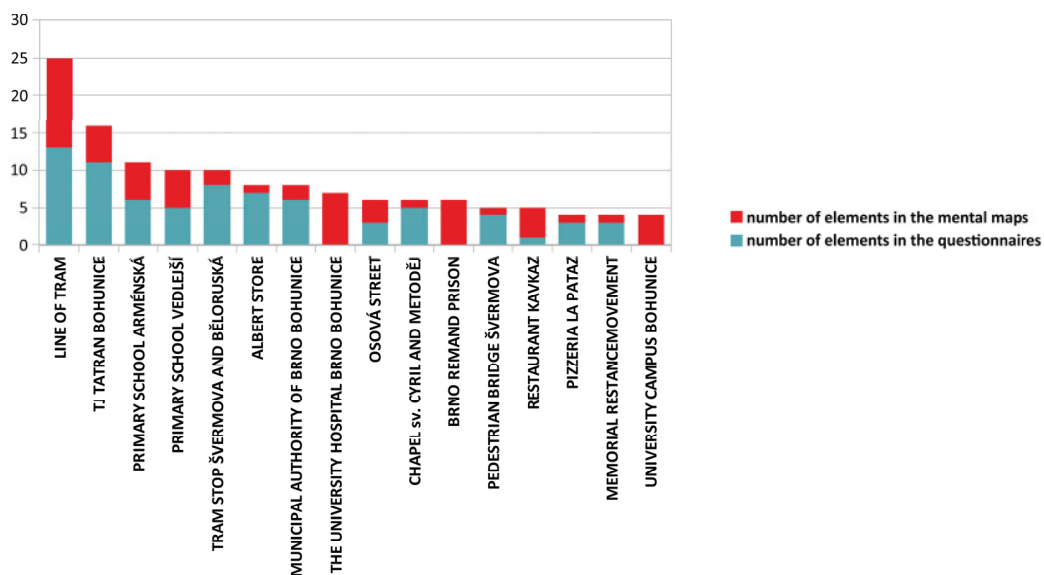
"It is actually a journey that has a few clues. The first stop is probably always garbage sorting... so we take the garbage with us, it is always a way across the park, there are some of those fitness machines so the kids play on them. After that we pass by this house where we always look if our friends are at home or we now and then meet somebody..." (E, 37, 11/2013)

"Early in the morning it is dark. When the bus stops there you can smell fresh bread rolls." (M, 50, 11/2013)

In practical application, it is possible to apply this principle on repetitive and organized events – activities, actions in the urban space. The condition is cyclic repeatability at relatively the same time. These events as orientation elements – guiding elements meet the demand that has already been discussed in the study and it is that an event is obviously not an orientation element itself, but it is primarily attraction, experience product reflected in the quality of public life. The character of the elements, based on which we orientate ourselves, secondarily arises from it by its meaning and memorability in the cognitive image of humans.

I: The number of incidence elements

number	element	NUMBER OF INCIDENCE THE ELEMENTS				scale of number
		number of elements in the questionnaires	number of elements in the mental maps	total		
1	LINE OF TRAM	13	12	25		I (21 - 25)
2	TJ TATRAN BOHUNICE	11	5	16		II (16 - 20)
3	PRIMARY SCHOOL ARMÉNSKÁ	6	5	11		III (11 - 15)
4	PRIMARY SCHOOL VEDLEJŠÍ	5	5	10		IV (6 - 10)
5	TRAM STOP ŠVERMOVA AND BĚLORUSKÁ	8	2	10		
6	ALBERT STORE	7	1	8		
7	MUNICIPAL AUTHORITY OF BRNO BOHUNICE	6	2	8		
8	THE UNIVERSITY HOSPITAL BRNO BOHUNICE	0	7	7		
9	OSOVÁ STREET	3	3	6		
10	CHAPEL sv. CYRIL AND METODĚJ	5	1	6		
11	BRNO REMAND PRISON	0	6	6		
12	PEDESTRIAN BRIDGE ŠVERMOVA	4	1	5		V (0 - 5)
13	RESTAURANT KAVKAZ	1	4	5		
14	PIZZERIA LA PATAZ	3	1	4		
15	MEMORIAL RESTANCEMOVEMENT	3	1	4		
16	UNIVERSITY CAMPUS BOHUNICE	0	4	4		



5: Graph number of incidence elements

SUMMARY

The presented work deals with the study of spatial orientation in the urban space. It analyses and searches for opportunities to apply instruments of a landscape architect as a means of improving spatial orientation and readability of the city. Methodical steps of the study include a professional urban attitude and a subjective personal image of individual urban space users. The study creates a synthesis of all the data obtained from the environment model. It discussed qualitative data obtained from interviews and mental map drawing of the *lynch* type, quantitative data from interviewing passers-by and questioning on the basis of verbal questions or questioning on the basis of photographs. For the research there were six model localities selected in the area of Brno. Based on the evaluation of the data obtained, the so-called *wayfinding maps* containing a synthesis of all the information obtained were created.

The total synthesis was preceded by an intermediate stage of classification which was a comparison of the mental map with the reality to obtain "memorable" elements in the urban space, when it was fundamental to intercept the entity which the communication partner drew first and what the entity is about in terms of spatial urban structure. Another parameter was the frequency of occurrence method.

The presented study responds to this intense spatial anchoring of the memorable orientation entity with the definition of a landscape element which is supplemented by the aspect of spatial orientation. It is defined on the basis of the developmental series parkway-greenway → *greenfindingway*. Its substantiation is multiplied not only from the aspect of spatial economy but also in correlation to the dynamic recreational pattern, psychological well-being or the preference of sustainable mobility. The final document of the study in the form of the so-called *wayfinding map* has the potential of a foundation material which can be applied to strategic and urban designing as a sum of unbiased data in correlation to the involvement of the public in the process of creating the urban space.

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