



ANALYSIS OF PUBLIC SPACE AND LANDSCAPE OF CZECH SMALL TOWNS BASED ON EMOTIONAL MAPS

A. Chalupová, M. Jebavý

Czech University of Life Sciences Prague, Faculty of Food, Agrobiolology and Natural Sciences, Department of Landscape Architecture, Prague, Czech Republic

In Europe, many small towns (< 20 000 inhabitants) are facing a number of current challenges. These include considerable stagnation, suburbanisation, and loss of connection to the place. One's relationship to a small town is closely linked with the ease of orientation, understanding the place and its environment, and identifiability with the place. An emotional mapping survey is a way to engage locals and make them aware of their relationship to the town. We performed emotional mapping of two selected Czech towns with contrasting landscape characteristics – the North Bohemian town of Duchcov, located in a devastated post-mining landscape, and the town of Vodňany, situated in a harmonious landscape of South Bohemia with plenty of ponds. Our analysis was based on a field survey combined with a personal contact with residents who responded to our questionnaire. The analysis using emotional maps seems to be a very timeless form of how to involve local inhabitants in the development planning of individual urban quarters and places as well as the city as a whole including adjacent landscape. The method can be further improved and adapted to specific goals to address a specific town or environment. It can be used for small town development planning.

landscape, urban space, small town, perception, emotions, inhabitants

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INTRODUCTION

The system of small towns in the landscape and their interconnection with the rural settlements and external landscape environment is a typical feature of the Czech landscape. The arrangement and mutual relationships must also be dealt with from the viewpoint of local inhabitants. One of the characteristics of a small town is its spatial proximity, which makes the town feel familiar and personal to its inhabitants. The so-called walking distance plays an important role here. Gehl (2000) added it to substantial measures of the experience distance, which occupies a large part of the total physical distance. Defining urban areas within Europe is addressed by a Finnish study that measures urban populations and seeks to define them. By assuming that the urban space is defined, it will help to formulate the urban area concept, both for scientific and media communication with the public and authorities. However, the criteria vary widely across Europe, both in terms of population density and the proportion of urban areas compared to available land (Vanhatalo, Partanen, 2022).

Kwiatk-Soltys (2011) mentions the economic potential of each small town located near a larger city. According to Kwiatk-Soltys (2011), these towns are developing much faster and are taking over especially the residential function, when the population of a large city is leaving for a small one, or are taking over the productive function, such as the creation of administrative zones. However, small towns are often neglected in terms of the strategy of the so-called SMART cities, especially in terms of social, economic and political support of the population (Balco et al., 2021), and thus the potential economic growth of the whole region.

Natural components are important parts of every settlement and, especially in the urban environment, they complement its spatial, functional and operational structures (Wittmann et al., 2012). Blumlová (2012) explains the relationship between the living and the landscape, the relationship between the way of life and the landscape: the landscape is a source of livelihood, the dwelling then provides protection of the human community, it is his abode. The landscape is mostly a source of raw material, the dwelling is the place

of their processing (refining), exchange and especially consumption. At the same time, one deeply and intrinsically experiences that the material/object belongs to nature. Man cares for the part of the country entrusted to him, feels part of it, realizes that he draws energy from it in the broadest sense of the word, and that the effort to break free from its action often ends in a dead end of cutting off resources and roots with the acute threat of the collapse of the entire civilization model. *Sanesi, Chiarello* (2006) address the relationship between citizens and urban greenery and argue that greenery is one of the citizens' major public space requirements. *Hofmann et al.* (2012) write that urban greenery is a very important indicator of satisfaction. What people prefer should be a key criterion in solving the design of greenery and public spaces. Designing urban greenery thus seems to be increasingly important in terms of optimizing the living and living satisfaction of the city's inhabitants (*Hofmann et al.*, 2012). According to *Wittmann et al.* (2012), it is up to the architect and urban planner, who with their creative work and with the help of spatial planning tools, can fundamentally influence the character and quality of settlements and adjoining landscapes. They define the character and conditions for living, working, recreation, rest and social life. As a result, they can also affect the quality of life of the population, which is a condition of social sustainability and is determined by the social potential of the city and at the same time affect the overall sustainable development of the city (*Wittmann et al.*, 2012).

According to *Klimplová, Stejskal* (1993), the problematic parts of cities can be summarized as follows:

(1) Industrial zones whose function has changed over time. This applies in particular to industrial buildings that no longer serve their purpose and, if left unaddressed, the city falls into disrepair. Their potential lies in a new function that can be linked to infrastructure, services and public space. The city can thus gain a new image and prosperity.

(2) The city outskirts often lack the quality of the city centre. It is either a neglected industrial part or a newly created agglomeration, which lacks the individuality and functions of the city.

(3) Public spaces and urban greenery without proper care, maintenance and planning. A comprehensive approach is needed to create quality, functional and aesthetically valuable spaces.

(4) City centres, especially their historic centres, which are often marked by new inappropriate architecture with the so-called international style. To preserve the historic cores, it is necessary to respect local traditions, culture, choose the right materials and focus on the multifunctionality of the environment.

Future trends should emphasize the concept of a 'compact city', thus avoiding the growing problem of suburbanization and related anonymity of small towns

(*Hnilická*, 2005; *Farid*, 2011). This theory is thus confronted with the current uncontrolled sprawl of towns and municipalities beyond their cores and the deepening social inequalities within spatial segregation. Reconstruction of the city is also a 'natural' phenomenon in the long term perspective. Due care must be taken for the city landscape (*Farid*, 2011). Regeneration, renewal, revitalization and reconstruction, issues of spatial planning of the city, issues of the centre, transport, quality of housing, acceptance of natural elements, care for the city image and the level of urban environment are very important in resolving urban problems (*Koutny*, 2004), but also better understanding the characteristic of the environment and the psychological mechanisms that support recovery and can be an important part of achieving more sustainable and healthier planning of everyday environment (*Scopellity et al.*, 2012). *Balco et al.* (2021) work with the idea of so-called SMART cities (*Matl, Jaburkova*, 2010), trying to motivate municipalities to create an attractive environment, especially for young people. They emphasize services modernization and sustainable development of cities and their environment, approaches leading to the formation of residential and, especially, of urban space.

According to *Wittmann et al.* (2012) it is desirable to monitor and indicate some significant intentional creative approaches to the formation of residential and urban space.

The aim of our research is to participate in the planning process together with the inhabitants of the cities and to show that emotional maps are a suitable analysis method that will contribute to develop the overall solution for specific places within a small town. This is because the form of settlements and the environment help constitute man in his humanity. According to European research (*European Commission*, 2005), the key factor for success is the formation of a 'coordination group' to represent interest groups, the city council, builders, planning professionals and local residents. An integral part should be the clear political vision and commitment of the board to solve problems and, last but not least, it is an important part of public involvement with opinion polls before and after realization of the project.

METHODS

Two Czech towns were selected for the research and analysed using emotional mapping – Vodňany and Duchcov. As part of the survey, maps of both towns were created and provided to their residents. The analysis of the area according to the emotional maps was inspired by the project of the civic association 'Vodňany žijou', applied in the town of Vodňany in 2010. The method of the 'maps of feelings' consists of communicating with residents, while they mark the



Fig. 1. Location of the towns Duchcov and Vodňany on the map of the Czech Republic

place in the map according to the established common legend. In this way, they think more deeply about the place they live in, they are able to define individual territories and thus identify with certain parts of the town. The research in Duchcov was supplemented by a field sociological survey. It consisted in responding to a basic demographic questionnaire. The questions concerned the gender and age of the respondents, their education, employment, nationality, but also whether the respondent was living directly in Duchcov and for how long.

In Vodňany, about 700 people of different age and gender were interviewed. The survey was organized by the civic association 'Vodňany žijou'. The mapping took place at 14 locations in the city, including a visit to Vodňany schools.

In Duchcov, the survey using emotional maps took place from August 9 to 14, 2013. It was attended by 250 participants, representing 3.4 % of Duchcov total population, and 6.78 % of the selected population age categories of people from 11 to 80 years. The questionnaires were evaluated and processed into tables and diagrams.

Analysis through emotional maps

The analysis using 'emotional maps' is based on field research combined with personal contact with local residents, who are asked who are asked the following questions: Where in the area do you most often spend your spare time? What do you regard a landmark? Where do you experience love/go on a date?

Where in the city do you feel the greatest boredom? Where you don't like it? Where in the city can you feel afraid/unsafe? Each of these kinds of experience has its own colour, which is marked in the attached legend at the blind map of the city. Citizens assign their feelings to the appropriate places where they experience the feeling. Citizens use coloured stickers to mark places on the map. Each citizen can use a different number of stickers for a given experience if he/she experiences the same feeling in several places in the given area, or they can omit any point from the legend completely if they have never experienced the given feeling in the territory. The result of the analysis using emotional maps is the display of places with the greatest concentration of citizens' interest. For the inhabitants themselves, the method is valuable for their self-reflection, the realization that the city belongs to them. The places that have been marked on the map mean something to them, the places are identifiable and memorable. The most important fact is not what label a place gets, but that it gets one at all, shows that it means/stands for/represents something.

Selection of the study towns

The selected towns, Vodňany and Duchcov, have a different physical structure, associated with their uniqueness, which necessitates a different approach to designing quality public spaces. The two contrasting towns, however, have the same problem of stagnation, there is a lack of energy of people using the city's premises, the city centres are almost lifeless. The



Fig. 2a. Orthophotomap of the town of Vodňany with the adjacent mosaic of landscape



Fig. 2b. The square in Vodňany – currently used mainly as a car park, with an unsightly building on the left, dating back to the socialist era, and historical ‘burgher houses’ on the right



Fig. 2c. Vodňany district called ‘Little Venice’ with picturesque rural architecture

phenomenon is closely related to the coexistence of local inhabitants and spending time in public spaces. ‘Bustling cities where people are in contact with other people are always stimulating because they are rich in experiences, unlike non-bustling cities, which can rarely avoid poverty experiences, so they are monotonous no matter how colourful and interesting buildings stand there.’ (Gehl, 2000).

The towns were selected on the basis of the contrasting characteristics of their geographical location, internal structure and overall landscape. According to Horky, Vorel (1995), the geographical location decisively influences the character of landscape and the composition of its components. The South Bohemian town of Vodňany thus differs significantly from Duchcov in North Bohemia in vegetation diversity, the character of settlements, and economic

activity. The internal structure of both towns is also clearly contrasting.

According to the degree of predominant interventions, landscape can be divided into a natural landscape, i.e. without human intervention, and a man-made landscape (Horky, Vorel, 1995), which significantly dominates in the Czech Republic. Sklenicka (2003) speaks of this landscape as of a cultural landscape and further divides it in the same way as Horky, Vorel (1995), who introduce further categorization into harmonious, disturbed and devastated landscapes. Vodňany represents a town lying in a civilized harmonious landscape with a balanced relationship between nature and man. Duchcov then represents a town with civilizational interventions. The town situated in the devastated post mining landscape was chosen mainly because the effect of greenery is more appreciated



Fig. 3a. Orthophotomap of the town of Duchcov with the adjacent mining landscape



Fig. 3b. A view of the town from the church tower: City park in the forefront, dominating towers of the church in the square, chateau, spoil tips, rehabilitated areas, and the Ore Mountains skyline

here and its modifications require a completely different approach.

The town of Vodňany

The town of Vodňany covers an area of 36.35 km² with population exceeding 7 000. The town forms a link between the towns of Strakonice, Písek and České Budějovice. Gradually, the town became the centre of South Bohemian fishing and pond farming and Vodňany is currently the largest town upon the River Blanice. The landscape around the city is characterized by swamps, streams and meadows. The town is located in an open landscape with numerous ponds, oak alleys and in the south it is bordered by the Šumava Mts. peaks (Cepakova, 2006). The town of Vodňany is characterized by its colonization lay out with a regular network of streets and a large

square in the central part. Medieval walls, defensive bastions and a moat have been preserved. The dominant feature of the square is the church from the 14th century (Cepakova, 2006). (Fig. 2a-c)

The Vodňany suburban landscape is formed of predominant areas of non-irrigated arable land, which surround the town from the entire southern and western part. In the northern surroundings there prevail mainly agricultural areas with a significant share of natural vegetation, which are followed by ponds and mixed forests. The eastern outskirts consist of industrial and commercial areas (Fig. 2a-c).

The town of Duchcov

The North Bohemian town of Duchcov is located in Krušné hory Mts., in the Most Basin, at an altitude of 201 m a.s.l. It is a small town (15.4 km², 8 685 residents) situated about 7 km west of the city of Teplice. The landscape in the immediate vicinity of the town is flat. The Osecký stream flows through the town, other streams flow from the slopes of the Krušné hory Mts. towards the Bílina River in the southeast. Surface mines have significantly reshaped the adjacent landscape. Until the 1930s, the town of Duchcov itself had formed, despite certain ecological disturbances of the surroundings, an exceptionally high quality unit with a significant share of greenery. In the 1980s, most of the city's surroundings were undermined, which had far-reaching implications for the communications network (Kuča, 1996). (Fig. 3a,b)

At present, Duchcov is a cultural rather than an industrial town. However, its mining history is imprinted in the character of the surrounding landscape, which has

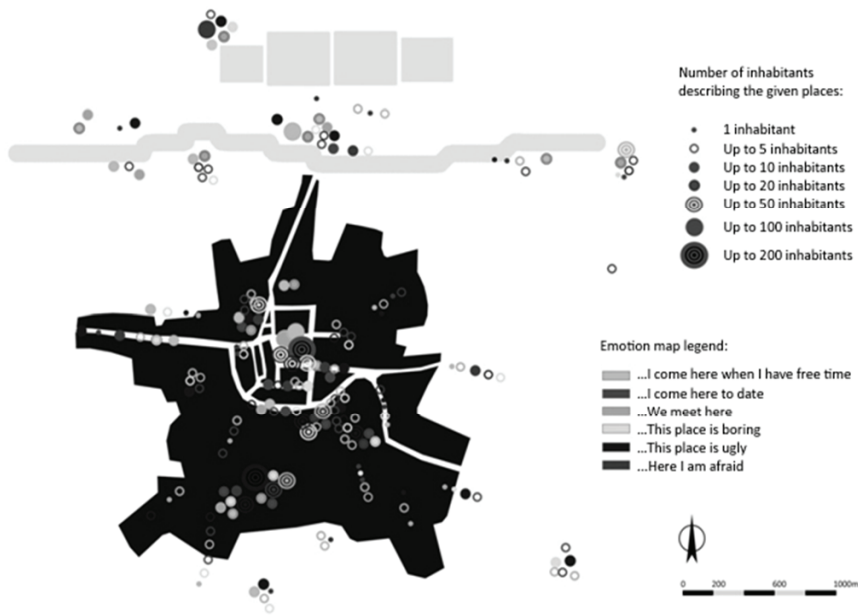


Fig. 4. Emotion map of the town of Vodňany created based on all the source maps provided by the Civic Association 'Vodňany žijou'

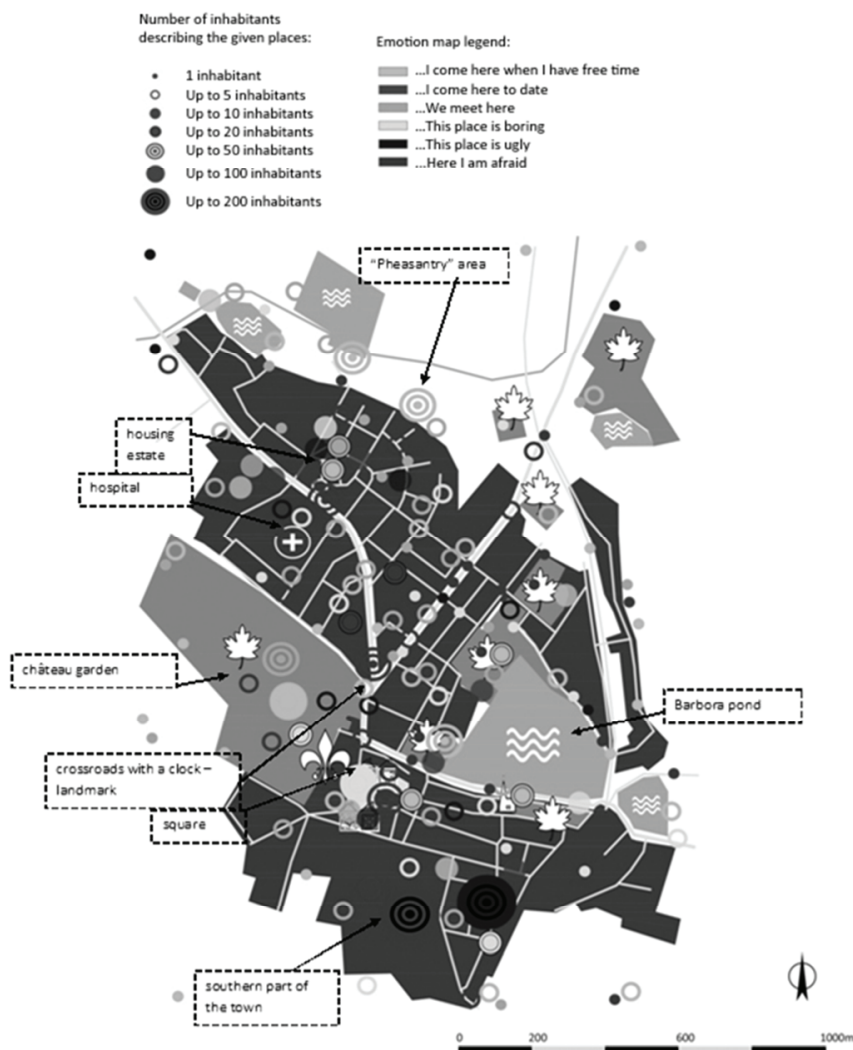


Fig. 5. The final emotion map of the town of Duchcov comprises all layers of the legend received from all the survey participants and thus it creates a colourful mosaic of emotions

been considerably altered. Nevertheless, the landscape impacted by extensive mining activity for hundreds of years, creates a co-part of Bohemian landscape. According to J e l i n e k , K y s u c a n (2014), the landscape is gradually regenerating and rare species of organisms have appeared in some places.

The use of the landscape is becoming more recreational due to the carried out reclamation and the gradual development of tourist routes. The town of Duchcov offers cultural activities within the state chateau Duchcov and the adjacent French garden (Fig.3a,b).

RESULTS AND DISCUSSION

The survey took place in two small Bohemian towns, Vodňany and Duchcov. The result of emotional map research is the definition of certain places of interest in the city that local people perceive in some way. The respondents were aware of the city's problems, especially with regard to the situation of the square, which is 'lifeless', and to the relocation of a new centre of events. (Fig. 4)

The present research has also pointed to other important factors – the distance to the green area, the time a person spends there, and the reason why to spend time outdoors. (Fig. 5)

From the evaluation of both selected towns it can be concluded that people prefer to spend their free time near water bodies or streams and in places with maintained public greenery. The places where people spend their free time and experience love came out similarly in both cases, and have very similar characteristics. In Vodňany, it is the surroundings of the Blanice River, the surroundings of the ponds and the Mill of Mostecký, the gardening colony, the Škorna swimming pool complex, but also the cemetery behind the ponds. The place, where people spend their free time, is also the square and the community centre. In Duchcov, people like to spend their free time and experience love in the castle garden, in the area of the pheasantry with a skating ring, and also around ponds. Popular places include some city parks, and a reclaimed suburban landscape in the northern part of the town. K o n v i č k a (2006) confirms the special position of water bodies and especially rivers complemented by coastal greenery in urban and suburban environments. Especially in city centres, the river often forms the dominant, spatially aesthetic urban element, which is accompanied by the waterfront and creates a natural contact space. In many cases this area forms the basis of the local aesthetic and psychological identity. According to K o n v i č k a (2006) the river and other water areas form an ideal landscape natural space for recreation, tourism and sports activities, especially in the outskirts of the city, and the adjacent river floodplain then allows the distribution of a wide range of sports facilities combined with greenery and

water, as confirmed by our emotional map research in both towns. The author further claims that the urban environment with a plenty of greenery today is not only an aesthetic, but also an increasingly economic discipline, e.g. related to the health and psyche of population, tourism, the entry of new investors, etc.

Most survey participants from both towns have responded that the meeting place, or the most unambiguous landmark, is the square. In Duchcov, there is a noticeable shift of the centre to the north and a very significant point is the intersection between Osecká and Teplická streets, which is the busiest point where people meet. It is a place with a clock that is visible from all directions.

In both cases, boredom is identified in various parts of the city, from housing estates to school premises. An important finding, however, is the fact that people experience the greatest boredom in the squares, in Vodňany also near the cultural centre or the railway station. For Duchcov inhabitants, the square is a clear place where nothing happens, despite its historical value, the location of the town hall, café, church and the main entrance to the castle, the square is deserted for most of the day and serves only as a parking lot.

The ugliest places, and at the same time places where people often feel fear, are neglected and unmaintained places in both towns, public greenery and public spaces and places with social housing. According to research, the ugliest place in Vodňany is the Škorna swimming pool complex and the adjoining housing estate. Many do not like the train station, squares, poultry houses, cemeteries, but also the town exits. People often feel fear in orchards, in the area between the culture house and the bus station, or at the train station, but also at crossroads and pedestrian crossings. In Duchcov, the least popular is its southern part, which received the most stickers 'it is ugly here'. In terms of architecture, this is very charming quarter of town houses, reminiscent of the time when Duchcov was a rich and cultural city. At present, however, houses decorated with magnificent and decorative facades are ruthlessly decaying, despite some of the city's efforts to maintain and reconstruct them. The southern part of the town is mostly inhabited by Roma families, who pass on their culture to this part, which does not too care about the place they live in. Due to this atmosphere, the southern outskirts became the least popular part of Duchcov. When asked where people feel most afraid in the city, the majority of the population answered that in the southern part, as marked by stickers. People feel the least afraid in the northern housing estate, in the castle garden and occasionally in the city parks.(Fig. 6, 7)

It is important to supplement the survey with a sociological survey or questionnaires, because one can perceive the aesthetic quality of the landscape and environment in accordance with one's mood or current pragmatic relationship to the landscape, based on one's expectations at the moment and according to



Fig. 6a. Emotion map of the town of Vodňany showing the concentration of places where people spend their free time

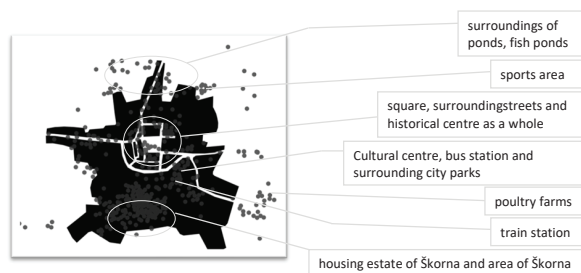


Fig. 6e. Emotion map of the town of Vodňany showing the concentration of places where people think it is ugly

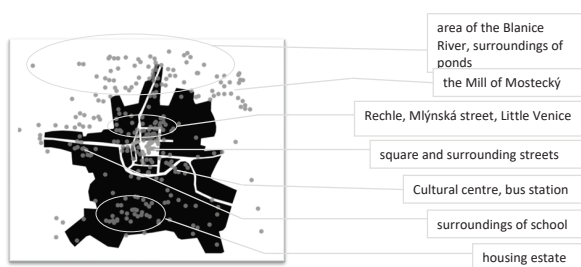


Fig. 6b. Emotion map of the town of Vodňany showing the concentration of places where people experience love or have a date

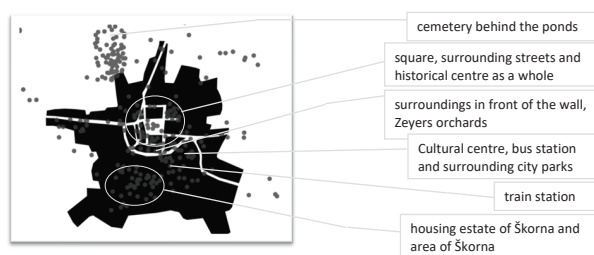


Fig. 6f. Emotion map of the town of Vodňany showing the concentration of places where people can experience fear

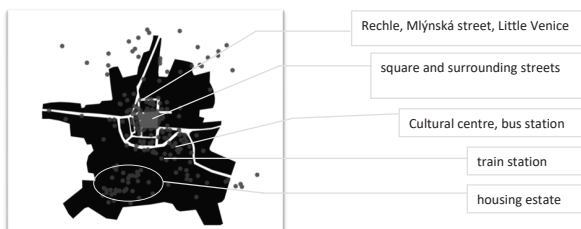


Fig. 6c. Emotion map of the town of Vodňany showing the concentration of meeting points (landmarks)

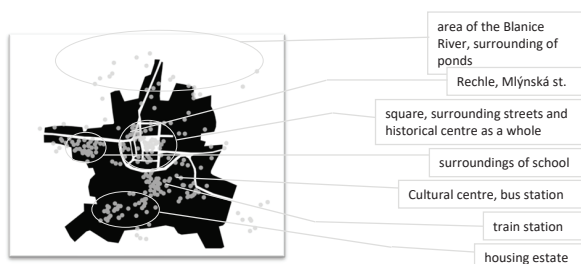


Fig. 6d. Emotion map of the town of Vodňany showing the concentration of places where people experience the greatest boredom in the town

what one can do there: relaxing or doing a business (Valenta, 2008). (Fig. 8, Fig. 9, Table 1)

Similar research is being conducted abroad because of its great potential for future public space planning. The public should be involved in the creation or modification of public spaces, in order to reflect their views and attitudes. Research on the involvement and feedback of civil society in the regional planning process conducted in Finland has provided reports on the information exchange and co-goal setting through interviews, specific workshops, presentations of records and findings on past and current developments. The results of the research also provided recommendations on how to facilitate communication with civil society (Roman, Fellhofer, 2022). Thanks to these sociological surveys, people also realize their relationship to a given place or locality. Evaluation can therefore be useful in design, but also in the context of nature conservation and environmental education of the population (Perelman et al., 2012). Scopelliti et al. (2012) conducted a research on the perception of different biodiversities of urban greenery. The research included environments with minimal diversity, such as squares, parks, urban forests (pine), botanical gardens as well as high diversity areas such as suburban green areas. Further sociological research has looked at how people perceive the character of public greenery in terms of colour, where, for example, lighter shades

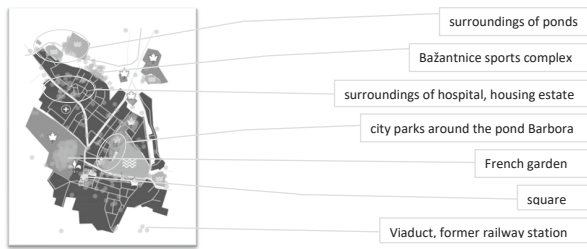


Fig. 7a. Emotion map of the town of Duchcov showing the concentration of places where people spend their free time

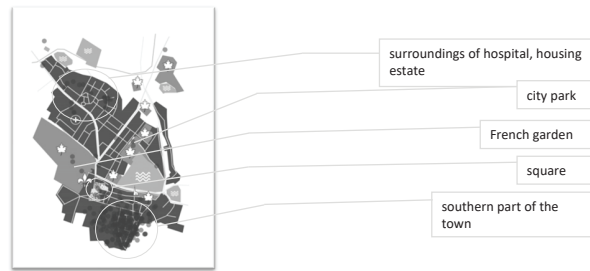


Fig. 7e. Emotion map of the town of Duchcov showing the concentration of places where people think it is ugly

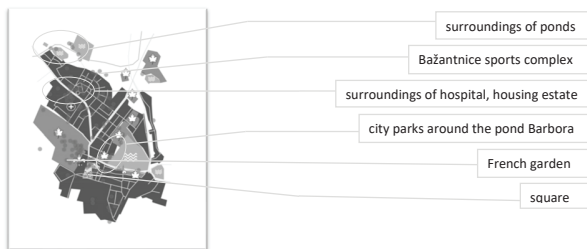


Fig. 7b. Emotion map of the town of Duchcov showing the concentration of places where people experience love or have a date

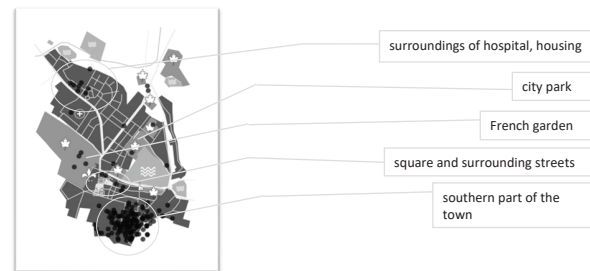


Fig. 7f. Emotion map of the town of Duchcov showing the concentration of places where people can experience fear

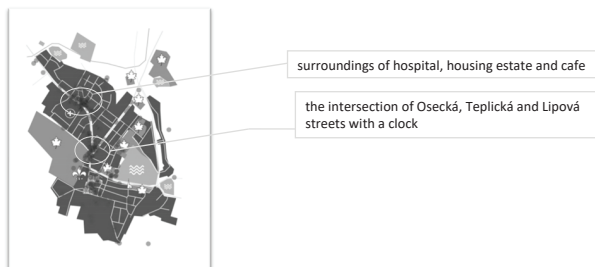


Fig. 7c. Emotion map of the town of Duchcov showing the concentration of meeting points (landmarks)

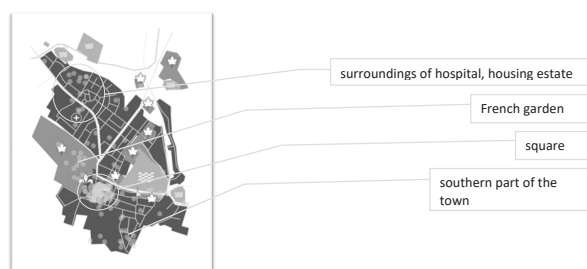


Fig. 7d. Emotion map of the town of Duchcov showing the concentration of places where people experience the greatest boredom in the town

of green seemed friendlier, height, area, layout and overall image (Quin et al., 2013). The European Urban Population Survey focused on neighbourhood satisfaction, including physical characteristics such as proximity to the city centre, population density, urban amenities, park availability and the nature of greenery, perceived characteristics such as security, noise environment and social cohesion of the population and social ties. The research took the form of questionnaire surveys in the Norwegian capital Oslo and in the Greek city of Thessaloniki. Among the many findings, the importance of urban greenery and the amenities of the city can be highlighted, which provide great benefits and thus contribute to the quality of life in the city (Mouratidis, Yiannakou, 2022). In line with Hnilicka (2005) and Farid (2011), these researches emphasize the importance of a compact city, which appears to be friendly and at the same time sustainable from an ecological and economic point of view. The authors mention that the quality of life in the city should be at the heart of urban planning.

According to Konvicka (2006), it is necessary to realize that the level of urban and landscape environment significantly reflects its time, culture and the development of society, both its prosperity, stagnation or possible decline.

Table 1. The survey respondents composition by age and gender

| Age category | Respondents composition by gender | | | |
|-----------------------------|-----------------------------------|------|-----------------|------|
| | number of men | (%) | number of women | (%) |
| 11–20 | 33 | 6.68 | 19 | 4.32 |
| 21–29 | 14 | 2.43 | 18 | 3.50 |
| 30–39 | 18 | 2.61 | 36 | 5.50 |
| 40–49 | 14 | 2.32 | 31 | 5.31 |
| 50–59 | 12 | 2.21 | 29 | 5.50 |
| 60–80 | 10 | 1.32 | 16 | 1.62 |
| Totals for men and women | 101 | 2.76 | 149 | 4.02 |
| Survey respondents in total | 250 | | | |

The regeneration of the city, especially the regeneration of the city centre, is addressed in a New Zealand study, which also mentions the current problem of suburbanization and decline of city centres. This is identified to be due to lack of investor interest and development problems focused on suburban areas. *Levy et al. (2021)* also emphasize the compact city trend that needs to be promoted.

With awareness of the importance and significance of a quality urban and landscape environment, according to *M. Konvička (Konvička, 2006)*, there arises a question why in some of our cities, the process of rehabilitation of the urban environment and overall well-being, especially in city centres is so slow and inconsistent. It is evident in both the cities dealt with in the present study. People perceive their town as one of the least attractive. According to *Konvička (2006)*, the management of municipal authorities is partly to blame for the clutter and inadequacy of public spaces and parks and ‘permanent’ construction (part of the blame is perhaps also in the lack of financial resources). The author further states that, unfortunately, in many cases, guilt and its causes are broader and more related to the philosophical approach, awareness

and mentality of the nation. ‘Many people have long lacked respect not only for cultural heritage, but also for nature and its values’ (*Konvička, 2006*).

All data obtained in the surveys will be used in the planning of the urban and cultural landscape of the towns of Vodňany and Duchcov.

CONCLUSION

Emotional mapping is a relatively new method that reveals how the citizens perceive and use their city. The output from the emotional map analysis is the identification of public spaces with the greatest concentration of citizens’ interest. For the inhabitants themselves, the method is valuable for their self-reflection and strengthening the realization that the city belongs to them. The results of the survey can be directly used in the planning of modifications of public spaces and the city landscape and can be followed up by other solutions.

At present, the survey results should serve to identify the potentials of the towns Vodňany and Duchcov. The survey revealed many possibilities of how to revive

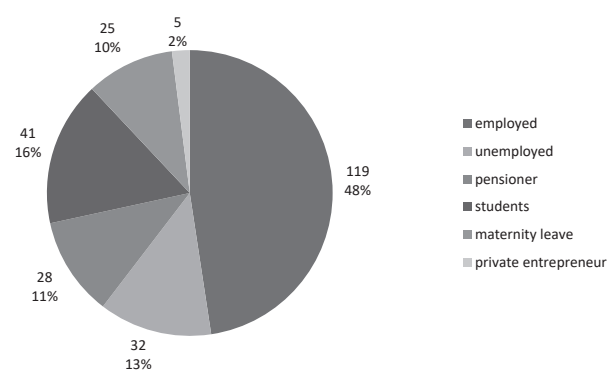


Fig. 8. Diagram illustrating the working status of local inhabitants

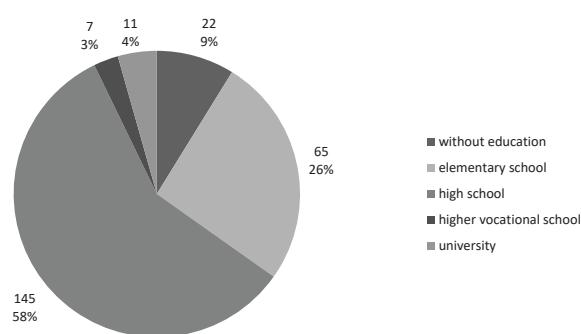


Fig. 9. Diagram illustrating the level of education of local inhabitants

the cities, both in terms of cultural development and recreation, as well as of specific modifications of public spaces and suburban landscape. In both cities, it is necessary to modify and revitalize the historic city centres. Interventions in the suburbs and adjoining suburban landscapes are also needed, which would make the landscape more readable and public spaces more residential.

The results of the analyses clearly show the need to address each city individually with a sensitive approach and respect for the city, its conditions and needs.

The potential of this method lies in the fact that it can be adapted and supplemented according to specific needs. It is also possible to choose different types of designs or applications to get the results. This article presents a field survey that took place in two cities and its advantages consist in that the researcher experiences the city at the same time as its inhabitants. He can see directly where people move, where and how they spend their time. The analyses can be digitized and the population addressed via the internet with a specific application that includes a map and a questionnaire.

Emotional maps, directly reflecting the citizens' opinion, will be an important basis for resolving problematic public and landscape areas of both cities, clearly showing an architect or urban planner which parts of the city space should be in their focus.

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Corresponding Author:

Ing. Adéla Chalupová, Czech University of Life Sciences Prague, Faculty of Food, Agrobiolology and Natural Sciences, Department of Landscape Architecture, Kamýčká 129, 165 00 Prague 6-Suchbát, Czech Republic, e-mail: svecovaa@af.czu.cz
