Placemaking in Practice

VOLUME 2

Engagement in Placemaking: Methods, Strategies, Approaches

Edited by
Francesco Rotondo, Aleksandra Djukic, Preben Hansen, Edmond Manahasa, Mastoureh Fathi, and Juan A. García-Esparza

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Digital Collaborative Mapping Tools for Engaging Residents in Placemaking

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Abstract

The main objective of this chapter is to present and assess research approaches designed to involve urban residents in placemaking processes. A critical examination of these research approaches, which utilise digital collaborative mapping tools to engage residents and gather data on their perceptions of public places in urban environments, reveals their potential to support subsequent placemaking efforts. Through three case studies we mainly demonstrate how these research approaches, based on the use of digital collaborative mapping tools, can engage people and encourage them to share their perceptions of public places. We show the data these approaches provide and, more broadly, how the data impact placemaking. The first case study, conducted in Olomouc (Czech Republic), utilised mental mapping to identify public places where

residents experience fear of crime. The survey employed a computer-assisted web interviewing method to engage local residents in data collection. The second study, conducted in Vienna (Austria), aimed to explore how perception influences navigation choices, in order to enhance route-planning services. The EmoMap project developed a digital system to collect affective evaluations of the environment as a means of understanding how these evaluations influence people's navigation decisions. The third case study presents research conducted in Bergamo (Italy), where perception was methodologically used to explore the "happy relationship" between inhabitants and places. The Happy Places digital consultation system was employed to identify common traits shared by various places, based on people's experiences. Despite the different spatial contexts and methodological limitations of the evaluated approaches, our findings demonstrate the importance of digital tools for engaging communities in the processes involved in the transformation and sustainable development of urban environments. In this sense, digital collaborative mapping tools represent an opportunity for future efforts to capture data concerning the knowledge of local residents. Only by using this data can the reproduction and transformation of the urban environment be effectively and sustainably planned to best meet the needs of its users.

Keywords

collaborative mapping – participation – perception

1 Introduction

In order to engage inhabitants in placemaking it is necessary to consider that they hold spatial capital that can be investigated through cartography. The concept of spatial capital is defined by Lévy (2003) as the set of geographic experiences transformed into heritage and the attitude to make use of this heritage in order to manage places. Indeed, it offers the opportunity to reflect on the role of the individual who makes their expertise available in the production of public goods (Lévy, 2003, pp. 124–126). Therefore, it seems useful to adopt methodologies that involve inhabitants through their participation in the recovery of spatial capital, which encompasses the knowledge that the inhabitants possess, just through having built and inhabited a territory over time, as well as their skills to manage and enhance it (Burini, 2016, p. 104). Spatial capital constitutes the set of experiences and skills of citizens that are assets in territorial planning and are therefore important resources in the construction of other social goods. For this reason, such capital is configured as the inheritance provided by inhabitants, and its study is an indispensable point in

any research process that aims to investigate the relationship between inhabitants and territory, and between inhabitants and territorial configurations.

Going beyond the purely economic dimension, making use of spatial capital means enhancing an original form of social protagonism among the inhabitants. It fosters interesting consequences in the sphere of democratic participation and the governance of spatial planning. The increase in bottom-up processes has allowed citizens to take part in the decision-making process regarding the management of their territory, due to facilitated access to digital tools (Haklay, 2013, p. 114). Indeed, we have to consider that "the digital" has become central to both the praxes and focus of contemporary geographical scholarship and this chapter should provide evidence of the evolving and intensifying digital turn (Ash et al., 2018, p. 27).

Digital geographies have become a pivotal aspect of research, delving into how space and place interact with, and are influenced by digital technologies. The advent of new platforms, technologies and different data types has facilitated the involvement of fresh participants in mapping endeavours, whether deliberately or as subjects of surveillance via the extraction of social media and other data. This evolution has mandated digital geographers to grapple with an array of novel subjects for analysis and to utilise new avenues for involvement. In essence, this intertwining of the social and technical realms has been and continues to be mutually constitutive (Thatcher et al., 2019).

With these premises, cartography takes on the role of a complex communicative system that goes beyond the topographic dimensions of a map and enhances the social and chorographic features of a territory. In the cases that will be presented below, the role of cartography from this perspective is fundamental: it proves to be an indispensable element in the analysis and understanding of territory. The inhabitants interact with the map in two ways: by making it or by interpreting it. It is a fact that there is a diverse array of communities and cartographic approaches. In the era of digitisation, there has been a surge in community mapping projects that offer rich environments for collaborative efforts and the incorporation of diverse perspectives. A key objective of community mapping is to authentically inform policies by integrating community input on sustainability and other issues. Numerous challenges arise in the democratisation of cartography and community engagement, including the imperative to educate individuals about maps and mapping techniques, particularly in the context of digital cartographic practices. Issues also extend to ensuring inclusivity in terms of various styles of knowledge and communication (Pyne, 2019, p. 225).

Among the different methodological approaches that utilise digital tools within geographic information technologies for participatory processes, an element to pay attention to is the role played by citizens in achieving effective

Inhabitant participation/ mapping process	ACTIVE		PASSIVE
	VOLUNTARY	SOLICITED	DERIVED
CARTOGRAPHER	**Web users** participating in a collective mapping project on a voluntary basis	**Collective cartographer including** actors involved in a territorial project and solicited inhabitants	**Experts** produce a map from georeferenced digital traces transmitted by Web users or "citizens as sensors"
DATA COLLECTION	**Voluntary and individual contributions** of a mapping system for collective use	**Individual or collective collection** carried out from the request of an external actor	**Derived collection of digital and georeferenced traces** of the inhabitants (cell phones, mobile apps or services, social networks, Wi-Fi, Bluetooth terminals)
CONTENT	**Places and routes experienced by citizens**	**Information on territorial resources** (accessibility, use and organization; skills and knowledge of the inhabitants, conflicting interests, etc.)	**Digital traces** left by the individual's connectivity (travel, catering, tourism, community events, sports activities, etc.)
GOALS	**Production of knowledge of collective interest** solving problems of spatial accessibility or rescue in times of crisis	**Co-design for territorial development and planning**	**Dynamic representation of spatiotemporal dimension** of digital traces produced by the inhabitants
METRICS	**Topography**	**Topography/ chorography**	**Topography/ chorography**
PRAGMATICS	**Accessibility and experience of the territory,** as organization of emergency services, resolution of environmental problems, etc.	**Decision-making** on land-use planning based on the needs of inhabitants	**Decision-making** the movement of inhabitants generate new knowledge about the use of places
EXAMPLES	Open Street Map, Wiki-GIS, Crisis Maps, Citizen science, etc.	Participatory maps, cyber cartography, etc.	Mapping of social networks, the Web, heat-maps generated by big geodata, etc.

FIGURE 10.1 Collaborative mapping systems and levels of inhabitant participation
SOURCE: BURINI (2022, P. 79)

empowerment of communities. This can indeed vary from passive and unaware data providers to protagonists who actively contribute in all phases of the process, from defining objectives to managing results (Brown & Kyttä, 2014, p. 134).

Burini (2022, p. 78) differentiates collaborative mapping systems precisely, based on the role that the cartographic interpreter (who can be an individual or a collective actor) takes in the production of information and in relation to the degree of activity/passivity in their participation (Figure 10.1). Collaborative cartographic systems with active participation include systems that have solicited data and receive it voluntarily: these are implemented by inhabitants actively engaged in the collection of data deemed necessary to cause some positive actions in a territory or to produce spatial knowledge. Derived systems involve the passive participation of inhabitants in the production of geo-referenced digital traces, and whether they are aware of it or not, they transmit information through a web connection or geolocation system.

In the case of cartographic systems solicited with active participation, multiple interpreters collaborate in producing a map: various actors participating in spatial projects, as well as different categories of questioned inhabitants. The participation of inhabitants, both individually and collectively, in producing a map (on paper or in digital format) is direct, and occurs at the request of external actors, especially in areas affected by spatial planning or development projects. The motivations for initiating this type of collaborative process can be varied, but the goal is always to promote local governance and citizen or community participation (Burini, 2022, p. 80).

In active and voluntary mapping systems, inhabitants voluntarily produce geo-referenced data. As web users they share their knowledge and expertise within a collectively oriented project. Due to this voluntary aspect, it is challenging to predict in advance the number and categories of inhabitants who decide to participate in a project. By providing information about places and routes they know, web users transform their personal experiences into a collective cartographic asset for other inhabitants; if this information is used by governmental or institutional actors, its collective value increases (Burini, 2022, p. 83).

The preceding text emphasises the importance of bottom-up approaches that actively employ digital collaborative mapping tools to engage residents in sharing their spatial knowledge for spatial planning. Despite this observation, it is noteworthy that there is limited utilisation of digital collaborative mapping tools in involving residents in placemaking activities. We aim to address this reality in the following text, where we will critically evaluate the application of digital collaborative mapping tools in the context of resident participation in placemaking activities. Thus, the main objective of this chapter is to present and assess research approaches designed to involve urban residents in placemaking processes. A critical examination of these research approaches, which use digital collaborative mapping tools to engage residents and gather data on their perceptions of public places in urban environments, reveals their potential to support subsequent placemaking efforts. The following text is organised by first critically presenting three case studies in which cartographic digital tools were used for the purpose of resident participation. We then present the lessons learned from these case studies and conclude the chapter by formulating the main findings.

2 Cases

The following text presents three case studies conducted, respectively, at Palacký University Olomouc (Czech Republic), the Vienna University of Technology (Austria) and the University of Bergamo (Italy). These studies delineate three distinct methodological approaches, based on the use of digital tools to engage local residents in sharing their knowledge and to investigate emotions concerning urban environments.

2.1 *Case 1 – Mapping Fear of Crime* (*Czech Republic*)

2.1.1 Introduction

Fear of crime has become a major social phenomenon that we encounter every day. People don't necessarily have to be present during criminal acts to be afraid. They can receive information about crime due to the abundance of

media coverage of crime, as well as through hearsay. As a consequence, crime has become an integral part of our lives. It's not just the actual occurrence of crime that matters, but also the perception of crime itself, which significantly influences people's overall satisfaction, their quality of life and their spatial behaviour.

While there are numerous indicators of quality of life, safety stands out as one of the most crucial. The necessity for security is widely acknowledged as a fundamental human need (Maslow, 1943). Crime ranks among the primary factors that disrupt the sense of security. Consequently, due to a diminished sense of security stemming from the fear of crime, individuals' decision-making and behaviour in space and time can undergo undesirable changes.

Fear of crime is subjective and depends on various aspects of human life, leading to differing perceptions of danger among individuals in particular environments. Nonetheless, the environment itself plays a pivotal role in shaping the perception of (un)safety.

Furthermore, fear of crime is now recognised as a pressing social problem that requires attention. Even a significant reduction in crime does not necessarily guarantee an increase in the feeling of safety among the population (Tulumello, 2015; Šimáček et al., 2020). Hence, fear of crime has emerged as a focal point for research across multiple disciplines. Tracking this phenomenon across space and time can aid in subsequent efforts aimed at reducing fear of crime.

Geographical research plays a significant role in exploring the fear of crime because space and fear of crime interact. On one hand, space can generate fear of crime; on the other hand, these fears also affect spatial relations and their distribution. One of the most important causes of fear of crime is the environment in which an individual finds themselves. According to several studies (e.g. Koskela, 1999; Tulumello, 2015; Šerý et al., 2023), the appearance of the physical setting affects the sense of security among residents. Places with physical settings in poor condition are often perceived as associated with deviant behaviour, disorder and violence. The social dimension of places can also raise the fear of crime. This emotion may not be directly related to criminal behaviour, but the fear of crime can be developed by the existence of pathological phenomena. Ramsay (1989) highlights the excessive use of alcohol in public, which adversely affects the population and can reduce the sense of security. Other circumstances that can evoke fear of crime include vandalism, disorder and graffiti (Matthews, 1992), as well as the presence of people under the influence of drugs, homeless individuals, youth gatherings and members of ethnic minorities (Šimáček et al., 2020).

However, a confluence of various factors plays an important role in the fear of crime. These factors include, for example, the time of day, weather conditions, the place's image and public lighting. This case study focuses on two key aspects. First, it introduces a supporting digital tool for data collection. The second aspect involves presenting partial results from research carried out in the city of Olomouc. Here, the identification of places inducing fear of crime was achieved through collaboration with local citizens, who shared their mental images of the city. Subsequently, potential placemaking activities for these identified places were proposed based on this data.

2.1.2 Methodology of Data Collection

The concept of mental maps (see e.g. Gould & White, 2005) was methodologically utilised to identify places that evoke fear of crime within the study area. Mental maps enable the expression of subjective perceptions of a place (Šerý & Šimáček, 2012). A questionnaire was developed specifically for identifying places associated with fear of crime. The research was conducted among residents and regular visitors to the city of Olomouc using the ArcGIS Survey123 web-based application (see Figure 10.2), and this significantly contributed to more efficient mapping of places where citizens feel unsafe.

Previously, such focused studies would have required trained field workers to administer traditional paper questionnaires to respondents. However, even this web-based application has its strengths and weaknesses in comparison

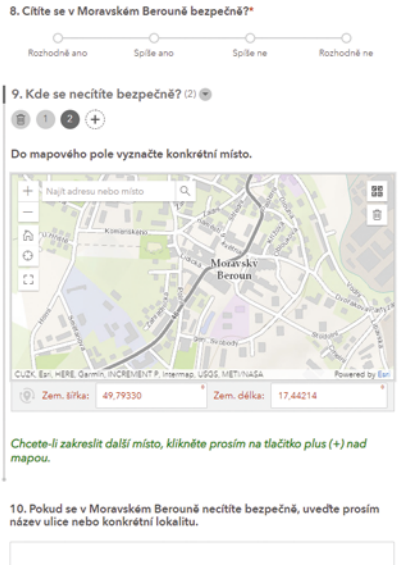

FIGURE 10.2
Preview of the ArcGIS Survey123 application
SOURCE: ESRI (2024)

to the traditional paper version of the questionnaire. The primary advantages of the application we utilised in our research are as follows: (a) relatively easy data collection without the need for personal contact in the field (the questionnaire is available online for anyone interested in participating in the research); (b) significant time and financial savings due to the absence of the need for in-person interviews; (c) accurate plotting of a mental image (owing to the ability to adjust the scale of the base map and thereby incorporate detailed map information that might not be legible on a paper map); (d) automatic linking of drawings with other responses provided by the respondent, facilitating further analytical processing; (e) automatic conversion of questionnaires into a format suitable for subsequent electronic processing in specialised software or spreadsheets (eliminating the need to transcribe or redraw the respondent's answers from a pen-and-paper questionnaire); (f) a preliminary analysis of the responses generated automatically by the software; (g) easy replication of the survey across different spaces and time frames.

However, the application demonstrated the following disadvantages: (a) the graphical interface of the web application requires customisation for the survey; (b) clarity and conciseness are essential in the questionnaire (as the respondents lack the option to ask for clarification from an interviewer if needed); (c) it is difficult to guarantee the application's usage to ensure a representative sample in terms of socio-demographic profiles when utilising quota sampling; (d) the use of the application in research might deter older generations, although this perception is likely to change in the future; (e) the requirement to obtain a licence arises from the fact that ArcGIS Survey123 is a commercial product.

The advantages of the web-based application certainly outweigh the drawbacks, making the web-based application a highly suitable tool for gathering diverse data on people's spatial perceptions. Thus, it can be readily utilised for placemaking purposes. Nevertheless, the outputs may bear certain limitations stemming from the use of the mental mapping method (for more detailed information, refer to Gould & White, 2005). However, none of these aforementioned drawbacks are new, nor are they primarily induced by the necessity to use the web-based application. All the issues mentioned also arise when employing the traditional pen-and-paper questionnaire, albeit in a somewhat modified manner.

2.1.3 Results

In total, 811 residents participated in the survey, with 637 individuals included in this research (310 men and 327 women). Unfortunately, 174 respondents had

to be excluded as they did not comply with the research design. The gender, age and residential distribution of the respondents (evaluated across various parts of the city) corresponded to the socio-demographic profile of the population of Olomouc (based on χ^2 test assessment at a significance level of $\alpha = 0.05$).

Participants answered the questions and they also marked on the map the places where they felt unsafe. These responses were automatically saved in the ArcGIS Survey123 web-based application and an online mapping interface. Subsequently, after the survey concluded, these responses were processed for further analysis. Beside plotting on the map, respondents associated additional attributes to each marked area, including the reason, level and time of their perceived fear of crime. All recorded places, along with supplementary information, were exported in a format conducive to subsequent processing within a geographic information system (GIS) software environment.

Altogether, 1,256 locations were collected, with men recording more places than women (M = 54.5%; W = 45.5%). On a per capita basis, each man recorded 2.2 places (average area 0.2 km^2), while women recorded 1.7 places (average area 0.5 km^2). Comparing the number and area of recorded public places, it can be deduced that, for men, places of fear represent specific locations, whereas women experience fear over a larger area. In terms of perceived fear levels, there was no significant difference, with men reporting an average fear level of 1.9, while women reported 2.1 (on a three-point scale where 3 represents maximum fear). Regarding the time of day, 46.8% of marked places induced fear of crime throughout the day, while 51.1% did so only after sunset. There is also a small number of places inducing fear of crime exclusively during daylight.

2.2 *Case 2 – the EmoMap Project: Crowdsourcing-Based Emotion Mapping (Austria)*

2.2.1 Introduction

Environmental features are perceived and evaluated subjectively by individuals. Such evaluations may influence a person's behaviour and decision-making in space. Hence, with the EmoMap project (funded by the Austrian Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology [BMVIT] and managed by the Austrian Research Promotion Agency [FFG], within the IV2Splus strategic programme) we aim to gather people's affective responses to space via their mobile phones and to model and visualise these data. This can then be incorporated into geospatial services and applications, particularly into navigation services for pedestrians. In general, the affective data collected in this study allow for the investigation of people's evaluations

of space. At an individual level, these data can be used to study the similarities and differences in experience and interpretations of public places between and within individuals. The data can also be aggregated to study the impact of environmental characteristics on people's affective responses, as well as how these responses differ among people with different characteristics, and in different contexts. All the data contribute to a better understanding of human–environment interaction, as studied in the disciplines of environmental psychology, geography, urban planning and architecture. As a result, the affective data can be aggregated to provide smart location-based services (LBSs). For example, affective data can be aggregated to produce collective emotion maps in mobile city guides to show places of interest or unsafe parts of a city. This layer of subjective information may enhance people's experiences while exploring a city (e.g. tourists). Mobile pedestrian navigation systems can also benefit from affective data.

2.2.2 Emotion–Space Model

As a first task, an emotion-space model has to be laid out with the aim of making subjective data about space easily reportable. Hence, a hierarchical structure for collecting affective data in space is used to consider people's emotional granularity. Second, the model is aimed at collecting more distinct information about peoples' subjective perceptions of space. Consequently, affective responses are collected in two steps:

1. *Level of comfort*. According to Wierzbicka (1999) and Barrett et al. (2007), the "level of comfort" can be easily perceived and reported by any person, independent of culture, language, emotional vocabulary and granularity or age. Consequently, the level of comfort in a given environment is used as the basic level for gathering space-related affective data. In particular, we asked the participants to rate their level of comfort in the environment they were in: from comfortable to uncomfortable, on a 7-point Likert scale.
2. *Level of distinct affective environmental qualities*. In the second step, we ask the participants to rate the affective qualities of the current environment. The affect-denoted parameters used in this project were obtained using a multistage method in several iterations: compiled by participants of a focus group (N = 9), reduced in a web-based questionnaire (N = 102) and aggregated through factor analysis. In particular, participants are asked to rate their surroundings regarding safety (unsafe/safe), attractiveness (unattractive/appealing), diversity (monotonous/diverse) and relaxation (hectic/calm).

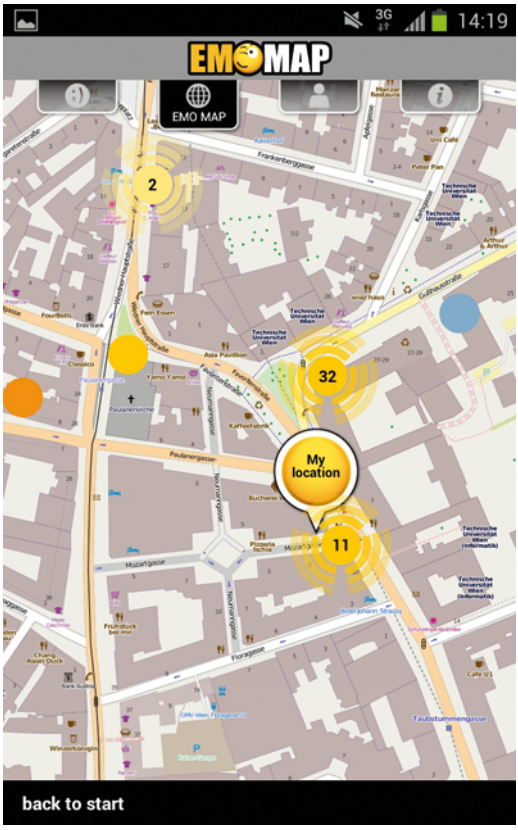

FIGURE 10.3
A preview of the EmoMap application
SOURCE: HUANG ET AL. (2014)

2.2.3 Data Collection

Due to the ubiquitous use of smartphones, we collected affective geographic data via crowdsourcing – from people using their smartphones to contribute data. Based on the emotion-space model, a mobile application was set up to enable people to report their affective responses to public places anytime and anywhere. The application (working on smartphones with Android; see Figure 10.3) was available in English and German, and it could be downloaded free from the project website. Due to GPS positions being automatically matched to OpenStreetMap, data could be contributed without spatial restrictions. With this crowdsourcing approach, we are able to acquire subjective data directly from the users – without further retrospective interpretation needed – reported in fine detail regarding space and automatically linked to the physical environment. The approach is aimed at the direct, efficient, real-time collection of data, evoked by realistic scenarios and leading to highly ecologically valid results.

2.2.4 Results

In total, 2,178 contributions were collected from 125 people (72 female and 53 male). The contributions come from Austria, Germany, Switzerland, the Czech Republic, Slovakia, Slovenia and China. However, about 97% of the contributions are related to the city of Vienna, Austria. For analysis, we selected a particular area around the Vienna University of Technology with 473 contributions from 79 participants. In order to visually compare people's affective responses to urban places, we depict these affective responses with interpolated maps for each urban setting. For interpolation, we use the inverse distance weighting (IDW) method, which is an effective way to visualise the spatial distribution patterns of emotions (affective responses) (Jang, 2012). IDW estimates the value of an unknown point as a weighted average of the neighbouring known points, while the weights are assigned as the inverse of the distance to each known point.

(*A*) *The impact of environmental characteristics*

How are different types of environment perceived differently? In order to investigate the impact of environmental characteristics on people's affective responses, we subdivide the area into three distinctive urban settings according to their level of traffic and vegetation: (a) green urban area (urban-green); (b) urban area with light or no traffic (pedestrian lanes and one-lane streets, urban-light traffic); and (c) urban area with heavy traffic (roads ranging from two to three lanes, urban-heavy traffic). The selected area is characterised mainly by five-storey houses, built around 1900. These three urban settings are compared according to the participants' reported levels of comfort, safety, diversity, attractiveness and relaxation. The results suggest that the ratings significantly differ between the three environmental settings regarding all affective parameters: comfort ($H(2) = 103.4$, $p < 0.001$), safety ($H(2) = 24.9$, $p < 0.001$), diversity ($H(2) = 16.3$, $p < 0.001$), attractiveness ($H(2) = 68.3$, $p < 0.001$), and relaxation ($H(2) = 90.2$, $p < 0.001$).

In general, urban green areas show the most positive ratings of the three urban settings in all of the affective parameters, followed by areas with urban-light traffic. Urban areas with heavy traffic, on the other hand, show highly negative ratings (particularly relaxation: $M = -1.74$, SD = 1.12; comfort: $M = -0.62$, SD = 1.47; attractiveness: $M = -0.61$, SD = 1.69).

(*B*) *The impact of individual characteristics and context*

Do people with different characteristics and backgrounds rate the environment differently? For this analysis, individual characteristics and contextual

factors were taken as parameters for the calculations. In particular, the company at the time of contribution, the respondent's familiarity with the area and their gender are used to analyse their effect on environmental ratings.

(*C*) *Accompanied/unaccompanied*
A total of 227 contributions (48%) have been reported by participants in the company and 246 contributions (52%) have been reported from people in no company. In this study, company had a highly significant effect on the perceived level of comfort (U = 23741, p = 0.004). People in company showed significantly higher levels of comfort (M = 0.89, SD = 1.64), than people who were alone (M = 0.52, SD = 1.6). However, the company showed no significant effect on the other environmental qualities of safety, diversity, attractiveness and relaxation (Mann–Whitney *U* test, with a significance level of $p < 0.05$).

(*D*) *Familiarity*
A total of 358 (75.7%) ratings were contributed at familiar places, whereas 115 contributions (24.3%) are ratings at unfamiliar places. The levels of attractiveness and diversity differed significantly between people who visited an area for the first time and those who were familiar with it (attractiveness: U = 17865.5, p = 0.03; diversity: U = 17816.5, p = 0.03). Participants who were familiar with a place reported the environment to be more attractive and more diverse than did people new to the area.

(*E*) *Gender*
In total 257 contributions from females (54.3%) and 216 contributions from males (45.7%) were collected. The results indicate no significant influence of the participants' gender regarding the reported levels of comfort, safety, diversity, attractiveness and relaxation (Mann–Whitney *U* test, with a significance level of $p < 0.05$).

2.3 *Case 3 – the Happy Places Map* (*Italy*)

2.3.1 Introduction

The third case study is not intended to analyse and work on a specific place through the involvement of the inhabitants, but rather to use the spatial capital of the inhabitants by enhancing the experiences and emotions they have felt in places and, specifically, their perceptions of happiness.

In contrast to mapping systems involving areas identified by spatial planning or development projects – within which the inhabitants concerned convey knowledge about aspects related to spatial resources, such as the one

analysed in the previous case – the intent here was to identify common characteristics of places designated as happy by accessing the inhabitants' experiences through the development of the Happy Places Map digital consultation system. The unique aspect of the mapping is that it was not intended to be focused on a specific territory in order to analyse a peculiarity or criticality, but to make use of the perspective of well-being and happiness to identify common features shared by the different places identified by users based on their experiences in those places.

For the inhabitants, it is the dimension of experiences that defines place, as geographer Yi-Fu Tuan has shown in his studies, namely the sum of feelings and thoughts, not as a discrete succession of sensations, but as a flow managed by memory and expectations (Tuan, 1975, p. 152). According to many studies, what gives a place its specificity is not its long internalised history, but a particular constellation of social relations that meet and intertwine in that specific place (Massey, 2018, pp. 155–156). Indeed, place not only presents the material and physical dimension, but also the intangible and qualitative dimension of experience, which makes it meaningful for human beings. This experience includes emotions; the subjective feeling one has about (and in relation to) places, spaces, landscapes and environments (Bondi, 2009, p. 446). Thus, the research has moved along interdependent steps that address the spatial dimension of well-being and happiness from different perspectives and at different scales, including through digital participation.

2.3.2 Data Collection

The Happy Places Map digital consultation system was conceived and elaborated on in the solicited consultation phase, with the objective of enhancing the spatial dimension of the relationship between inhabitants and places. However, the need to focus on a specific territorial case on a smaller scale than the everyday dimension gave rise to a targeted consultation in which privileged interlocutors from four Bergamo neighbourhoods were involved and asked, on the one hand, which, in their experience, were the places of well-being and which, on the other hand, they considered to be places of discomfort and social criticality. The web application could be accessed online (at happyplacesmap.com) (Figure 10.4). The interlocutors were asked to log in to allow the aggregation of responses with unique codes.

The questionnaire begins with a section identifying the inhabitant, followed by a request to name the place where the participant feels happy and, in the third section, questions are asked to investigate the reasons for this connection in the dimension of the relationship, the functions that take place there, the

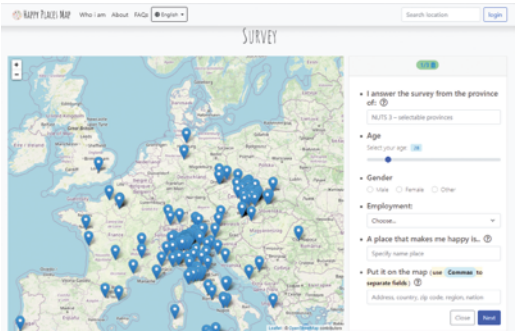

FIGURE 10.4
Homepage of the Happy Places Map system
SOURCE: OWN PROCESSING

period in which the respondent frequents the place (in order to understand whether this belongs to the everyday dimension) and the emotional aspects (the motivations that lead the place to be perceived as happy) that bind the person to that place.

Categories were provided for users to identify the place selected in order to allow them to reflect on which aspect they favoured; whether it was a relational one or the aesthetics of the landscape, or the naturalistic aspects in relation to the environmental quality. However, space was provided for open-ended responses that were not directly related to specific research questions.

Responses pertaining to the level of experience were suggested, including the memorial aspect and experiences meaningful to each individual; responses related to the "filia" relationship, such as finding an affective bond with the indicated place and caring for that place. In order to investigate the relational dimension of a place, it was useful to ask the respondents if they visited the indicated place alone or accompanied. A number of suggestions are identified (alone; in the company of family or friends; with a community, i.e. a set of people who identify with a particular group; together with people the respondent does not know, delineating a dimension of collectivity).

The last two questions refer to the time of polycrisis that is characteristic of contemporary living. In particular, the user is asked whether and how his or her relationship with the indicated place has changed since the pandemic started, and how much the environmental crisis has impacted the identified place.

In total, 202 locations have been identified: 50% of them from individuals from the province of Bergamo, 28% from Olomouc and the remaining 22% are related to other Italian and foreign provinces, including Vienna. Due to this diversity the surveyed target cannot be considered homogeneous.

From analysing the occupations of users, it is evident that the majority of participants belong to the category of university students (91 people,

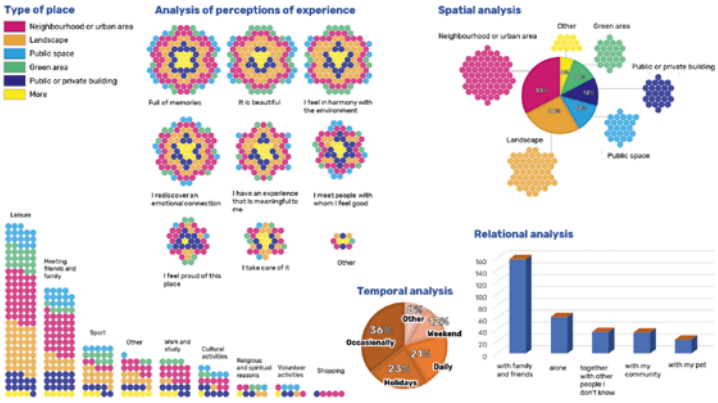

FIGURE 10.5 Selected results of the analysi
SOURCE: OWN PROCESSING

corresponding to 45%), with a predominance of females. The second category is workers (26.2%), followed by older students (17.3%). Only 2.5% of people are unemployed, predominantly women, and 9% are retirees.

The population is divided into three age groups: young people aged 18 to 34; adults in the 35–64 age range and the elderly over 65 years. It is apparent that 48% of users are between 18 and 24 years old, the adult category makes up 16%, and the elderly over 65 category is 4%.

2.3.3 Results

The results (see Figure 10.5) strongly suggest that the places where people feel happy are mainly visited occasionally and during vacations; only a small percentage are in the sphere of everyday life. People tend to visit the places where they feel happy in their leisure time and to maintain relationships with friends and family. Places indicated as happy bring memories of past experiences and have a strong aesthetic value. The questionnaire that was activated as part of the web mapping showed that the memorial and aesthetic dimensions take on a significant role in delineating the places that are considered happy; at the same time, the relational aspect – which includes human and non-human agents – is highlighted, together with the characteristics of leisure and recreation.

In addition to the empirical results, this phase provided an opportunity for methodological reflection on the use of cartography for data processing. Indeed, in this case, cartographic representation, while useful for data collection, highlights critical issues when it is used to show the spatialisation of

the information collected. In fact, the aspects we wanted to focus on were the intrinsic values of the places and their locations were not relevant. The spatialisation of the data collected with the Happy Places Map system was therefore misleading, because it is related to the target audience to which the questionnaire was submitted. Cartography, at this stage, was considered to be a useful system for collecting qualitative data produced by the inhabitants, but – since it still contains the localisation aspect – it was not adoptable for the spatialisation of the results.

At the methodological level, the main points of criticality are highlighted below. First and foremost, the choice to offer mostly closed answers, without sufficient space for sharing opinions and reflections more openly can be considered a limitation given the sensitivity of the subject matter and the multiplicity of interpretations that can be given for each answer.

The temporal dimension was excluded, with particular reference to the everyday dimension, that is, the rhythmicity given by the passing of the hours of the day. The temporality of place is an important variable for analysing the perceptions that inhabitants experience and the dynamicity of a place, and it takes on particular importance when investigating emotions such as fear (Šimáček et al., 2020, p. 309). This is precisely because the time-geographic approach provides conceptual tools and a notation system useful for investigating processes of societal change. It helps to analyse how one and the same need is satisfied differently depending on where, when and by whom activities are performed (Ellegård, 2019, p. 3).

Adopting a topographical map for the compilation of web mapping allowed us to test first-hand the difficulty of representing the social values of places and to assess the ineffectiveness of cartographic representation in this specific context, leading us to consider the future usefulness of multimedia systems that, in addition to geo-referencing a place, include images, photographs and descriptions in order to restore the chorographic aspect of places.

The relational dimension and leisure and recreation time can be considered the conditions for a place to be seen as happy when the research is conducted in the summer months. It would be interesting to understand if the same answers are given when the investigation is carried out at a different time of the year. Limiting the analysis to "happy places" provided a partial look at the emotional dimension of places; analysing places that elicited other perceptions would have provided a broader perspective, but the premise of the research led us to be aware of this limitation from the beginning, as stated in the introduction.

3 Lessons Learned

The ArcGIS Survey123 web application has proven to be a highly effective tool for collecting data from city residents. This application allows us to explore residents' perceptions, not only regarding the current state of a given phenomenon, but also to track its evolution over time. Analytically comparing the spatial delimitation of the monitored phenomenon across different time horizons is easily achievable. This comparison reveals possible expansions, contractions and shifts in location. While the application provides a foundation for analysis, more detailed data from respondents prove invaluable. This encompasses the perceived intensity of the phenomenon, the reasons behind citizens' perspectives and essential socio-demographic parameters. These parameters, such as potential differences in the definition of a perceived phenomenon between genders or age groups, are also subject to analysis. Utilising simple visual or advanced analytical comparisons of results across various time horizons, the application serves as a supplementary tool for evaluating the effectiveness of previously implemented measures aimed at addressing the issue.

The findings from the EmoMap project suggest that affective responses varied significantly across all three environmental settings, with urban-green areas receiving the highest positive ratings and heavy traffic urban areas receiving the lowest ratings. These results echo key research that indicates a preference for green, natural places. The study also highlighted that not only the physical characteristics of an environment, but also contextual factors (such as companionship) and familiarity influence an individual's perception of space. It's essential to note that the study primarily involved students, forming a relatively homogeneous group. Hence, gender-based differences in space evaluation might be more pronounced in a different, more heterogeneous sample. The results suggest that various urban places evoke distinct affective experiences. As evidenced in the literature, these affective responses significantly impact daily behaviour and spatial decisions (Borst et al., 2009; Coley et al., 1997; Sullivan et al., 2004). To better cater to users' needs and preferences, geospatial applications, particularly location-based services (LBSs), must consider both objective location attributes and people's subjective perceptions of space. Our next step involves integrating these affective data into mobile pedestrian navigation systems – among the most popular LBS applications – to provide emotion-aware route planning for pedestrians. Furthermore, the data analysis underscores the importance of modelling affective responses not only based on location, but also on the contributing context, such as companionship (with others versus alone) and familiarity (first-time visit versus return visit).

In the Happy Places Map project, due to the scarcity of available open social data, sentiment analysis was not utilised to analyse respondents' thoughts about "happy places". However, future researchers could consider implementing such methods of analysis to complement existing approaches. The Happy Places Map consultation system showcased an innovative use of digital and cartographic tools for spatial analysis, and revealed the intersection of topography with topology, while also highlighting its limitations. Despite encountering critical issues during its development, this web mapping provided valuable insights into the intangible and non-commensurable dimensions of places, encompassing relational, emotional and environmental aspects. Consequently, such an application could serve as a valuable reflective tool in urban space design and planning. Additionally, the analyses conducted in this research underscored the importance of comparing a range of geography-based research to comprehend inhabitants' experiences of places across relational, emotional and environmental dimensions. The integration of semi-structured or unstructured qualitative surveys, along with various methodologies and tools, proved beneficial in achieving a comprehensive understanding.

In general, there are certain advantages as well as disadvantages in using digital collaborative mapping tools. Among the main advantages are the relatively easy deployment of the survey within the target population with the potential to collect a larger amount of data in a relatively short time, automatic digitisation of records ready for further analysis, often followed by automatic preliminary analysis of results, and easy replication of the survey for different time periods or various cities. Regarding the main disadvantages, we can mention the challenge of including older people in the online survey (though it is likely a matter of time for this problem to diminish) or the issue that often only people who are interested in local development (both experts and laymen) tend to participate.

4 Conclusions

The research and evaluation conducted in the case studies above provided valuable insights into digital participatory processes, and into methods for engaging residents in sharing their spatial knowledge. This knowledge is crucial for subsequent placemaking activities. Web questionnaires containing online maps and standalone map applications have proven to be effective tools for gathering data from the public. The data collection methods and community engagement in the acquisition of local knowledge about specific places have

demonstrated the power and ability of digital collaborative mapping tools to generate a robust database for subsequent placemaking processes.

These findings present a compelling argument for understanding the use of digital collaborative mapping tools in placemaking processes as significant. The application of these tools to decision-making processes seems to hold great potential for acquiring primary spatial data. Indeed, implementing interventions in the urban environment, aimed at improving the living conditions of the inhabitants, is hardly possible without this type of data. Such interventions may include placemaking activities. If placemaking activities are driven by a top-down approach, there is no point in implementing them in public places unless they are supported by an analysis of high-quality primary data based on resident participation.

The digital collaborative mapping tools introduced and discussed in this chapter have demonstrated the ability to actively engage residents in sharing their spatial knowledge and experiences, as well as in participatory processes in general. Thus, it seems that they may represent a suitable method of data collection for evidence-based placemaking processes in the future. Only such guided placemaking processes can meaningfully contribute to the design of public places in the urban environment to best meet the needs of 21st-century urban residents.

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