E-Access to the City?
Mapping Applications for People with Disabilities

Joanna Pankau

(Adam Mickiewicz University in Poznań; joanna.pankau@amu.edu.pl)
ORCID: 0000-0002-3924-8017

Introduction

In this article, the accessibility of the city/access to the city is understood primarily as the possibility of using and creating space, shaping space together with others, and a certain ease of access: the "Legibility of the cityscape", as K. Lynch puts it (Lynch 1960, 2). The issue of the accessibility of space and "sharing" it with other co-users also requires taking into account the antagonistic character of the city, including various kinds of non-accessibility and limited accessibility. In this context, the struggle for the right to the city and the phenomenon of socio-spatial exclusion are intertwined processes, or at least they are in a continuous, dynamic relationship. The proposed approach to the phenomenon of a digitally expanding urban environment will continue to address accessibility – or lack thereof – as it is inevitably linked to problems such as increasingly technologized urban topography and mobility within it, as well as network accessibility, which is co-shaping contemporary cities as such.

The *mapping applications* mentioned in the title are an interesting and important subject for reflection on the search for new ways of facilitating social integration in urban space and, along with this, a sense of empowerment among its users. Mobile applications are treated here primarily as spaces for action; as exchange platforms through which people with disabilities – "mobile mapping residents" – become active, political urban subjects who assert and ultimately implement their spatial rights.

For Whom Is the City Accessible?

It was only when Jason DaSilva began navigating New York City with a walker—and eventually in a motorized wheelchair—that he realized how much he had once taken for granted. He'd formerly had no problem spontaneously heading out for coffee or to run an errand. Suddenly, it wasn't so easy to hop on the subway, or make it up the two steps to

get into a restaurant (...) Living in the East Village, I was finding that it could be 9 out of 10 businesses on a city block that would be inaccessible to me" (CityLab 2016).

In reflection on the relation between space and power, which was characteristic for the Spatial Turn (Foucault 1975; Bourdieu 1996; Lefebvre 1996; Soja 1989, 2009), the concentration on extracting the relation between social space (an invisible set of relations based on mutual exclusions) and physical space, in a specific arrangement of distributions, led – as E.W. Soja writes – to a "broader spatialization of our basic ideas of democracy and human rights" (Soja 2009, 1). At the same time, exclusion is also recognized as a socio-spatial construct that defines the position of social agents in relation to their "locus" or "topos" (Bourdieu 1996, 11):

> (...) the very notion of space, that is, a set of distinct and coexisting positions which are exterior to one another and which are defined in relation to one another through relations of proximity, vicinity, or distance, as well as through order relations, such as above, below, and between (Bourdieu 1996, 11; see Rashid 2019, 235).

The possibility of shaping "spatial justice" is called into question (Soja 2009) due to spatial discrimination that refuses some people "social presentation" (Bourdieu 1996, 12)[1]. Edward Soja's notion of spatial justice is bound up with the process of production, the distribution of spatial resources (including the possibility of their use), which in consequence leads to the creation of structures of privilege and, conversely, spatial (in) justice in the form of structures of segregation and exclusion. Crucially, Soja points out that forms of segregation do not have to be rigid, and often they are in fact imperceptible in "normally" functioning everyday urban life. A critical spatial perspective entails that the very concept of justice – and related concepts, such as "democracy, equality, citizenship, civil rights" (Soja, 2009, 3) – takes on a new meaning and requires in-depth consideration: not just theoretical, but opening up a whole range of opportunities for social and political practices. For Soja "the urban and spatial concept of justice is most fully expressed in Lefebvre's call for control of the right to the city and the right to difference" (Soja 2009, 4).

Henri Lefebvre (1996), seeing a strong link between the creation of space and the general mechanisms of social development, understood "the right to the city" (*le droit* à *la ville*) primarily as a right to urban life, the creation of which should not just be the right of a privileged minority. His criticism focused on the exploitation of the working-class and the living conditions of those who live in suburban ghettos:

> Is it essential to describe at length, besides the condition of youth, students and intellectuals, armies of workers with or without white collars, people from the provinces, the colonized and semi-colonized of all sorts, all those who endure a well-organized daily life, is it here necessary to exhibit the derisory and untragic misery of the inhabitant, of the suburban dweller and of the people who stay in residential ghettos, in the mouldering centres of old cities and in the proliferations lost beyond them? One only has to open one's eyes to understand

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1 To illustrate this decline of social representation, Pierre Bourdieu provides the example of homeless people.

the daily life of the one who runs from his dwelling to the station, near or far away, to the packed underground train, the office or the factory, to return the same way in the evening and come home to recuperate enough to start again the next day. The picture of this generalized misery would not go without a picture of 'satisfactions' which hides it and becomes the means to elude and break free from it (Lefebvre 1996, 159).

Lefebvre clearly saw the working class as a victim of segregation, deprived of the possibility of contributing to the shape of urban life. In his conception, the city is a field of everyday practices (individual and collective) which produce urban space. Lefebvre's manifesto "the right to the city" (originally formulated as "cry and demand" in 1967) triggered a debate on the antagonistic process of constructing urbanity. "Urbanity" became a conglomerate of various meanings, ideas, values, points of view and ideologies substituting "the right to the city". David Harvey described this conglomerate as (2012) – using E. Laclau's terms – an "empty signifier" (a concept whose content is dependent on one or another social sense-maker group).

The meaning of the right to the city expresses much more than a right to use certain resources. It generally voices the demand to be respected as a participant in urban discourse on the realisation of urban life, as it is originally "a right to express one's opinion on urban processes and spaces and how they shape life in the city, as a right to actively participate in re-shaping these processes and spaces" (Plyushteva 2009, 86). Following the development and transformation of the idea of the right to the city, which was disseminated through the activity of urban movements (although in a less revolutionary form), and which since the 1960s has fed the field of socio-political debate, A. Plyushteva proposes locating it within the discussion on the meaning and practices of urban citizenship. Two main issues are addressed at this juncture: the right of access to urban public spaces (including their full use) and the right to participate directly in urban policy processes:

> Currently, while most people would be aware that street action is legal, often necessary, and occasionally beneficial to furthering the interests of the disadvantaged and the marginalized, the vast majority will not recognise its fundamental importance to every single urban citizen. The Right to the City can be the platform which reestablished collective action not simply as the last-resort tool of especially 'political' sections of society, such as students, environmental movements, or trade unions. It can bring the urban political agenda closer to every citizen, and remind them of the instruments within their reach to insert themselves into this agenda. Without the occurrence of a struggle for other rights, the Right to the City is deprived of meaning (Plyushteva 2009, 95).

The problem of urban citizenship is not limited to the search for formal and legal regulations that grant status within the framework of urban policy, and which set out a specific set of rights and obligations: such as the introduction of urban identity cards in San Francisco, or the form of urban citizenship in Toronto, referred to as a city-asylum for illegal immigrants without national citizenship. It is rather a question of the approach proposed by E.F. Isin, which extends the concept of citizenship to the political

application of "the right to claim rights", or "the right to have rights" (H. Arendt, see Isin 2009, 371). Isin writes that the notion of citizenship has changed "substantially", but he focuses on the practice of "substantive citizenship". On the one hand, "the substance of citizenship is 'rights'" (Isin 2002, 376) but, on the other, being citizen implies "enacting political subjectivity" (cf., 377). Isin emphasizes that the fact that a person fights for the right to shape of their own fate an expression of active involvement. Such a conception of citizenship attaches more importance to norms, practices, meanings and identities than to legislation (Isin 2000, 5). In turn, as M. Kowalewski holds, in the context of urbanity and urban citizenship, it is not the citizens' right to the city's infrastructure, but rather "everyday interactions that presuppose the use of urban citizenship" (Kowalewski 2016, 57). This citizenship becomes both a practice and a form of using and living in a specific space.

It is therefore not surprising that the research team of A. McClimens, N. Partridge and E. Sexton, working with people with learning disabilities in Sheffield, in the UK, proposed that the problems of people with learning disabilities should not be reduced to their being present in the city: the issue of these people feeling that they are citizens of the city should also be addressed. It is necessary to abandon the thinking which reduces people with disabilities to a mass of passive users of services. They should be "recognized as citizens" (McClimens, Partridge, & Sexton 2014, 14). McClimens and his colleagues, focusing on the problem of being at the centre and attribution/non-attribution, have shown that the very experience of the city (especially how it is mediated by disability) gives important indications as to the intensity of the social relationships that the individual constructs in their interaction with the place. These relationships are limited and impoverished.

The study with the participation persons with learning disabilities was divided into two stages. The first stage included a joint trip around previously planned routes in Sheffield. In fact, walking or going-along meant "exploring—and subsequently improving understanding of—peoples' experiences of their local residential context" (McClimens, Partridge, & Sexton, 2014, 16). This event was recorded, so that in the second stage, during the conversation with the participants, the route could be re-examined, and initial experiences in the physical space could be compared with the collected audio-visual material. The most frequently recurring issues in the discussion were security and support. Participants considered the presence of homeless people in urban space to be a significant source of anxiety, which is an interesting aspect of marginalized groups sharing urban space. Conflict in the city is not only based on the opposition of "privileged" and "marginalized", but also shows that a need to negotiate arises when two socially marginalized groups encounter each other on the streets. As P. Bates and F. A. Davis demonstrate:

> We all have to run the gauntlet of meeting strangers from time to time and negotiate our way through thin trust in order to locate the new friends and

colleagues with whom we might enjoy thick trust, but there are extra challenges for visible minorities (Bates & Davis 2004, 200).

The issue of support, in turn, has highlighted a number of limitations related to participation in society. Some participants juxtaposed the problem of dependence on family or aid organizations with their strong need for independence and their desire to move independently around the city.

Research on the spatial presence of people with disabilities raises another important issue: self-exclusion resulting from the perception of one's own limitations (Bucholtz, Hall, & Geertz 2006; Abott & McConkey 2006). Self-exclusion can occur simply through discovering that nine out of ten companies in a building are not accessible (DaSilva). Self-exclusion is a process that takes place within a broader framework of self-regulation. It constitutes a response to the requirement to comply with – as M. Foucault (2007) would say – disciplinary action that defines what is normal (capable of conforming to a norm) in opposition to what is abnormal (i.e. incapable of conforming).

> A few yards further on we passed the main entrance to one of the largest university buildings in the city centre campus. We asked on one occasion if anyone had been inside. June said she hadn't because she didn't think she was allowed (McClimens, Partridge, & Sexton 2014, 18).

As Rob Kitchin stresses, disability as a socio-cultural construct occupies sectors of space that are cordoned off: "Urban space is implicitly and explicitly designed in such a way as to render certain spaces 'no-go areas'". They keep people with disabilities 'in their place' (or 'in the right place', which exemplifies 'normalization'). This is connected with the problem of the deeply embedded image of disabled people's "powerlessness" in the fight for equal rights (to the city) – such people must learn to "know one's place" (Kitchin 1998, 346). Kitchin does not only mention barriers installed in urban spaces, such as steps without ramps, ATMs placed too high, or uneven surfaces. He also indicates the types of "dedicated" spaces, such as separate toilets or wheelchair ramps located at the sides or rear (often accompanied by limited access to certain areas), pointing out that they also constitute specific spaces of separation, "reproducing the status and position of the disabled 'Others'". Following Kitchin, we can discuss political lines of integration or adaptation, focused around bringing people "back to 'normality'" (Kitchin 1998, 347).

Paulo Freire (1974) distinguished between processes of "integration" and those of "adaptation". Integration is *humanizing,* as it "results from the capacity to adapt oneself to reality *plus* the critical capacity make choices and transform that reality", whereas adaptation is *dehumanizing*, as it is "at most a weak form of self-defence. If man is incapable of changing reality, he adjusts himself instead" (Freire 2005, 4). As "a weak form of self-defence", adaptation is subordinated to processes of normalization. Making persons with disabilities more "normal" (Kitchin 1998) would be a clear example of this.

The ability to share and participate in space requires the deconstruction of the

homogeneous urban landscape of able-bodied people. In this landscape, people with disabilities feel like they are "out of place" (Kitchin 1998, 345-350) or are forced to stay "in their place". This is the case because:

1. "spaces are currently organised to keep disabled people 'in their place'", and

2. "spaces are social texts that convey to disabled people that they are 'out of place'" (cf., 345),

as Kitchin stresses. There is also a need to deconstruct processes that reinforce (self-) exclusion, in order to construct processes of (self-)situating in a city, using the city, and co-shaping the role of political subjects – urban citizens, who have "a sense of opportunity to express their opinion, their own views, sense of agency, and the resulting disposition to act" (Kowalewski 2016, 52). The issue here is a politics that reveals disputes and differences, and which by questioning the dominant hegemony contributes to the creation of "counter-hegemonic" communicative spaces (Mouffe 2007) and allows the voices of previously silent (or silenced) inhabitants to be heard. This is where the question arises of the potential of mobile technologies and urban applications to extract the agonistic nature inherent in the pluralism of goals, needs, values or positions – the articulation of which would undermine the "normalizing" approach.

Mobile Technologies – Accessing and Extending Spatiality

Experiences of mobility, the intermedia flow of data networks, and hybridity have become an integral part of the urban environment. The development of communication technologies, tools and systems that have contributed to the transformation of everyday experience has led to an obvious need to redefine the city as a socially constructed space – offering new spatial awareness, personalization and involvement (Marchese 2015). Nowadays, as Lev Manovich pointed out (2010), we face a kind of "augmented" physical space full of "data" (Manovich 2010, 599), in which each point of physical space has its own GPS coordinates. Crucially, each of these points contains information that can be accessed from personal mobile devices. New types of mobile internet, the variety of infrastructures (Goggin 2012), network location, etc. creating new types of interactions (Gordon & de Souza e Silva 2012) are transforming the parameters of space, giving it multidimensionality (Manovich 2010). This situation creates unprecedented opportunities, but also new challenges. After all, new spatial practices (e.g. interactive, multimedia, coding) must fit into the framework of the existing, complex and dynamic social relations. In effect, new spaces will be created, parallel to existing ones, or intersecting one with another. According

to F.T. Marchese, linking spatial and communication technologies together would create a qualitatively novel, efficient "mix". As a result, existing, already familiar channels can be connected with the new ones by means of virtual, spatiotemporal tunneling (see Marchese 2015, 226). On the one hand, the new dimensions of spatio-temporality (including its networks) offer new possibilities for using, creating and processing the city. On the other hand, they build new power relations. Specific systems, affordances, infrastructures, etc. contribute to locative technologies, and the ecological landscape (Goggin 2012, 198) can both oppose inequalities and at the same time reinforce multiple social and spatial exclusion. In this context, the analysis of available mobile applications and the problem of the accessibility of the city belong together. This approach is justified if urban space is understood – following A. de Souza Silva – as a hybrid space, in which mobility and communication intersect. The space becomes real in social networks which simultaneously develop in both kinds of space, i.e., digital and physical (de Souza e Silva 2006). Furthermore, constantly having the ability to be on-line when being mobile in the city transforms our spatial experience and connects far-off contexts with the current context (de Souza e Silva 2006).

> Mobile devices are all types of mobile technologies that promote remote and local multipersonal communication and connection to the Internet, allowing users to exchange information while moving through urban spaces. Today's third-generation cellular telephony (3G) cell phones include broadband Internet connection, multimedia messaging, text messaging, mobile pictures, and, more important, location awareness (de Souza e Silva 2006, 262).

Mobile applications based on geographical information systems have efficiently placed themselves in the center of interest in research on tourism and urban branding projects focused on the development and commercialization of available services that support the creation of an attractive city brand. At the same time, the number of urban mobile application projects dedicated to socially and spatially marginalized people is growing. It is these services that will become the subject of further analysis, since they demonstrate that they are not just a tool for use in daily "support", but also that they can contribute to the construction of specific platforms for cooperative knowledge production – indicating new problems, different experiences, needs and possible measures to counteract the phenomena of marginalization and social exclusion. According to A. Nacher (2016) the omnipresence of communication technologies (including applications) – which depend on network locations, routes, institutions, information, knowledge, groups and individuals – proves that all these entities are becoming equal partners in the "community of knowledge production", instead of being only "tools" or elements of the "external layer".

In the case of people with disabilities, the first important issue in terms of accessibility is the need to adapt devices and applications for individual users (including the blind, people with disabling hearing loss, people with alternative motor skills, and people with learning difficulties) from the technical point of view. Attention is drawn here to different types of communication caused by limitations of speech, hearing or movement,

which leads to "the emergence of new technological, logical and manual methods in the context of the virtual world" (Fiszer 2016,164). A. Fiszer addresses the problem that people with disabilities encounter in using the new media when participating in the "digital environment", namely that of gaining knowledge and independence. Referring to the ideas of Marshall McLuhan (2004), who saw media as a kind of extension of the human senses in space and time, Fiszer points out that for people with disabilities new media are often not so much an extension of the senses as a replacement for them. Hence the key challenge is to adapt devices and software enabling the use of electronic resources to different social groups. Following Fiszer, we need to focus on the demand for electronic equipment "designed for use by people with disabilities, whose main task is to transform inaccessible information into accessible information" (Fiszer 2016, 163). In terms of specially designed mobile devices and related proposals, it is worth mentioning some smartphones for the blind and visually impaired (*BlindShel*, *SmartVision*), and the *MIG JUMP* offer prepared by T-Mobile for people with hearing loss, which includes a text communicator and video calls in the subscription, instead of minutes for calls. It is also important to mention the projects which have: customized mobile phones operating on the Android system (facilitating the use of switches, adjusting the intervals for holding specific buttons, programmed color changes, voice systems); developed iPhone accessibility functions (screen-reading programs, support for control buttons, voice commands); and the creation of additional programs and applications that increase device functionality when installed.

In the case of urban mobile applications, we will focus in particular on those solutions which, along with the development of e-accessibility, increase the accessibility of the city. Catherine I. Marciniak and Łukasz Piasny (2015) devoted one of their studies to a comparative analysis of applications available on the market that support the mobility of people with disabilities in the city. Regarding the auxiliary activities carried out by Polish local governments and related legal and formal regulations contained in, *inter alia*, the Charter of Persons with Disabilities, Marciniak and Piasny state that:

> ... it becomes natural for local authorities to adapt public spaces to the needs of disabled people, so that they can also feel at ease and needed (...) We are talking here about facilities in the form of lowered kerbs, voice commands in public transport, lifts or hoists, driveways, etc., suitably adapted traffic lights, adapted playgrounds, public administration buildings made accessible, parking spaces for disabled people, adaptations to infrastructure, e.g. in the form of touch-screen signage, up to the organization of social life for people with disabilities and engaging them in it (Marciniak & Piasny 2015, 35-36)

The authors point out that despite the growing awareness of the need to introduce new solutions that take the different needs of residents into account, we can still observe numerous problems with regard to adapting Polish cities to this diversity of use. Therefore, consideration is given to the available mobile applications (dedicated to people with physical disabilities), and they are seen as one of the possible solutions of

"equal opportunities".

Analysing specific applications, such as "Wrocław – city guide", "Cities without barriers", "Virtual Warsaw" and "Parking Mobility", Marciniak and Piasny identify problems with adjusting the interface for target groups, with voice control, and (of particular importance in terms of the considerations conducted here) with the low functionality supporting independent movement in the city. We will not give separate consideration here to applications that have already been analyzed by the authors. However, we refer to one of Marciniak and Piasny's observations which will provide the starting point for further considerations in this text: there is a shortage of projects offering mapping functions with a built-in navigation system that would make it easier for people with disabilities to travel around the city in real time. This is where the need to enhance mobile mapping comes into play:

> The creation of an application based on maps – with functions for tracking, creating and optimizing routes; for enabling the 'live' preview of specific events or changes in the city, such as ongoing modernization and traffic jams; for determining the user's position and searching for designated objects – will be the fundamental feature of the application's operation, and possibly the basis of its success. The use of maps will enable users to get acquainted with the area, to learn about the street layout, to save places important to them, or to find out where they will find places or events with facilities for them, or where they will find obstacles preventing them from moving around (Marciniak & Piasny 2015, 46).

Nevertheless, it should be taken into account that the way in which maps or mapping is understood may be very problematic in itself, because, as E. Rybicka points out, a map is "a nomadic concept that circulates between scientific disciplines (geographical cartography, history, art history, psychology, sociology) and artistic practices" (Rybicka 2013, 30). At present, it should be said that the map is one of the most popularly used tools for gathering and organizing knowledge, and for identifying and solving problems. In the subsequent parts of the discussion concerning the inclusion of mapping functions in urban mobile applications, topographic mapping is connected with mental (or imaginative) mapping techniques, which, mainly due to Kevin Lynch (1960), became one of the basic tools of urban research ("the physical habitat") (Lynch 1960, 159). It will also be crucial to look at what is now called interactive and participatory mapping (Lynch 1960), in 'version 2.0', which Anna Nacher is working on.

City Mapping Applications

> Structuring and identifying the environment is a vital ability among all mobile animals. Many kinds of cues are used: the visual sensations of color, shape, motion, or polarization of light, as well as other senses such as smell, sound, touch, kinesthesia, sense of gravity, and perhaps of electric or magnetic fields (...) Psychologists have also studied this ability in man (...) To become completely lost is perhaps a rather rare experience or most people in the modern city. We are supported by the presence of others and by spatial way-finding devices: maps,

street numbers, route signs, bus placards (...) In the process of way-finding, the strategic link is the environmental image, <u>the generalized mental picture of the exterior physical world that is held by the individual</u> (Lynch 1960, 3-4).

Lynch explored the technology of such mental maps, which are based on subjective experience[2], evaluations and ideas. He drew attention to the multitude of images of the city. According to Lynch, the city is a compilation of numerous co-existing elements: borders, edges, landmarks, nodes and regions. It is from them that the inhabitant builds and shapes his or her own mental image of the city. The assignment of functions to individual objects remains dependent on the perspective taken – the way in which urban space is experienced and organized. In this sense, roads are marked by different landmarks, from different perspectives. Edges and borders can join or divide. Regions can be considered in terms of their 'interior' or 'exterior'. Lynch revalorizes the individual way of using the city. The image of a city depends on the knowledge of its area. It can be linear when someone has poor knowledge of the terrain, but better knowledge of the city 'spatializes' the user's orientation. It is easier for a knowledgeable user to adapt to changes and explore the possibility of structuring the city surroundings (Lynch 1960, cf.). Mapping involves exploring the city, acquiring spatial competence from a 'pavement perspective', and the possibility of creating a directly usable city. The very process of moving around the city is the basis for building personal mental maps. In addition:

> A vivid and integrated physical setting, capable of producing a sharp image, plays a social role as well (...) A good environmental image gives its possessor an important sense of emotional security. He can establish a harmonious relationship between himself and the outside world (...) A distinctive and legible environment not only offers security but also heightens the potential depth and intensity of human experience (...) [offering] a framework for communication or conceptual organization (Lynch 1960, 4-5).

In turn, Anna Nacher (2011) explores the practice of mapping and cartographic discourse in the contemporary context of mediatization and the development of electronic communication, employing the concept of geomedia (Thielmann & Manovich 2009) to integrate the reflections of humanistic geography with those of media theory. That is to say, the idea of combining "on the one hand, the concept of place (...), hybridized by geographical information systems, and, on the other hand, the interest in media research and cultural studies in location-based media" (Nacher 2011, 199). Nacher suggests that research on geomedia – consisting of wireless communication technologies and tracking techniques – indicates the need to blur (or even abolish) the distinction between the

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2 "Environmental images are the result of a two-way process between <u>the observer</u> and his environment. The environment suggests distinctions and relations, and the observer—with great adaptability and in the light of <u>his own purposes</u>—selects, organizes, and endows with meaning what he sees. The image so developed now limits and emphasizes what is seen, while the image itself is being tested against the filtered perceptual input in a constant interacting process. Thus the image of a given reality <u>may vary</u> significantly between different observers. The coherence of the image may arise in several ways. There may be little in the real object that is ordered or remarkable, and yet its <u>mental picture has gained identity and organization through long familiarity</u>" (Lynch 1960, 5).

"virtual" and the "real". The author also draws attention to the process of constructing a new cartographic imagination, developed within the framework of new media conditions (GPS, location media, data organization technologies, satellite imagery, etc.), seeing it above all as an "instrument of social reality shaping" (Nacher 2016, 150). She also points out that "with the crystallization of geomedia, we all become somewhat active cartographers" (Nacher 2016, 150). The social shaping of network images – a kind of mapping – shows "the transition from perceiving a map as an object to seeing it as a process, which is supported by the possibilities emerging in cyber-cartography" (Nacher 2016, 179). Nacher considers participatory mapping to be a particular type of "digital imaging", constituting a "laboratory of knowledge" – a material metaphor for working to achieve social change (Nacher 2016, 154-155).

AXSMap[3] Project

In *When I Walk* (which was awarded an Emmy), the film maker Jason DaSilva, who was diagnosed with multiple sclerosis, decided to document his everyday life – including the everyday life of city routes – and more specifically what changes they began to undergo. The need to move around the city in a motorized wheelchair confronted DaSilva with a number of difficulties, such as uneven surfaces, holes in sidewalks, and stairs that make it impossible to enter a shop, use public toilets or meet friends in a restaurant. In DaSilva's case, his existing mental picture of the city started to collapse. His mental picture changed as the disease progressed, and this forced him to search for new ways of moving around the city. DaSilva had to redefine boundaries, edges, faults, and nodes in space. The moving around the city shown in the film resembles someone crossing an obstacle course. This newly discovered urban reality led the artist to create *AXSMap* – a platform for mapping the accessibility of buildings and making this information available online, and also in the form of a mobile application. On the one hand, the successively expanded database of *AXSMap* becomes a tool supporting moving around the city in real time, due to the built-in navigation system. On the other hand, it serves to monitor urban policies, in terms of their "successes and failures" in different regions. When reviewing the accessibility of places, various criteria are taken into account, such as the width of the entrance, the number and height of stairs, sufficient wheelchair space, the location and features of the toilets. Such a detailed and multi-leveled way of collecting data allows the most comprehensive information for specific locations to be provided – including those that unjustifiably claim to be accessible locations (for example, on the Yelp platform).

AXSMap's cooperation with Evolving Technologies Corporation resulted in further work on the *AXSMap* VR (Virtual Reality) project, which allows users to visit a selected location in advance, so that they can test and evaluate it in terms of accessibility, and plan

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3 http://axslab.org/ (accessed on 20.04.2019).

a trip. The addition of photos and videos creates a more holistic view of the space. Then, moving between images using icons – "visual hotspots" (Fenton 2016) – allows users to customize their view by visiting specific places. This multidimensional spatial information solution makes *VRA XSMap* an important support tool for increasing awareness, and thus also the sense of security.

The tens of thousands of people who use *AXSMap* are currently supplementing the database, exchanging knowledge, comments and experience. In this way, they demonstrate the strength of their own voice by following political decisions, monitoring new infrastructure investments and actively articulating their own needs. In other words, they are becoming an increasingly audible voice in the struggle for the right to the city. *AXSMap* is an example of a social movement which, due to its cooperation, tries to counteract the "civil death" of people with disabilities: "At its core, AXS Map is a tool for creating social inclusion for people with disabilities, and bringing mobility freedom to this minority group historically excluded"[4]. In this way, mapping is becoming a way of activating, which is also clearly indicated by initiatives such as *AXSMap Mapathon*, which brings together people "from the neighborhood" in order to accurately map specific urban areas. Everyone can create their own (local) *Mapathon*, inviting other users to a competition which involves reviewing as many places as possible in a set time – also determined by the players themselves.

For DaSilva, the map has become a basic work tool, a way of sharing knowledge, and a method of social activation which reveals the spatial logic of social inequalities. *AXSMap* also indicates the potential of mapping applications as tools that support the daily practice of urban life – and thus its co-shaping. In this case, the map emerges as an example of a tool for cultural participation (and, following Nacher, we could say participatory mapping) in the process of sharing space together.

Talking Map[5]

On the Polish market, one of the most interesting projects of urban mobile applications is *Mówiąca Mapa* (Talking Map) – a project involving scientists from the Gdańsk University of Technology in cooperation with OPEGIEKA and the Polish Association of the Blind in Elbląg. It is a voice application that supports blind and partially sighted people when they move around the city. *Talking Map* works on Android using a built-in GPS receiver. The purpose of the application is to determine the most convenient route leading to the point designated by the user (it can be both an address and a less-detailed search for a service, e.g. the nearest pharmacy). The application first "places" users on a digital map and then directs them along the chosen route, informing them

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4 https://actipedia.org/project/axs-lab (dostęp 19.04.2019).

5 https://pg.edu.pl/aktualnosci/-/asset_publisher/hWGncmoQv7K0/content/mowiace-mapy-czyli-pomoc-dla-niewidomych (accessed on 20.04.2019).

about obstacles that appear on the way: curbs, holes in the pavement, parked cars, signs, etc. In contrast to classic GPS navigation, this application has not only been adapted specifically for pedestrians, but also, due to the specially selected database, meets the needs of blind people. In addition to the commonly used GPS navigation functions (distance, time, direction), *Talking Map* also offers users the opportunity to listen to the last message or description of the environment. The system is additionally equipped with a "panic button", which dials the phone number of a family member or technical support.

It should be noted that *Talking Map* is not just a product launched on the market, but also the whole mapping process that preceded its launch, in cooperation with the Polish Association of the Blind in Elbląg. The system required thorough testing both in terms of service and the mapping of the city itself – adapting the database, the detailed highlighting of obstacles, matching appropriate routes, and a more general description of the environment. Therefore, this can be described as a process involving the collective exchange of experience and knowledge, in a participatory process of creating a tool that would support movement around a particular city. In addition, the continued development of the application is largely dependent on the help of Internet users, who will supplement the system with new data on an ongoing basis. After all, urban space never takes on a "finite" form but is subject to continuous transformations that should be taken into account in the application through constant editing and updating of data. In this sense, it can be said that mobile mapping applications, like the city, are subject to a continuous process of creation – they are developing along with the city.

Summary

When properly adapted in mobile applications, mapping systems can significantly support city organization, including through shaping personal, multi-sensory mental maps (with different regions, landmarks, edges, roads, nodes), determined by different intensities of visual, sound or haptic dimensions. The map is not only a tool for making it easier to move around the city, but is also an example of the active exploration of the city "from within". Another issue is the contribution of mapping applications to building cooperative processes focused on the participatory production of spatial knowledge. Such knowledge emerges from a critical approach, i.e. revealing problems such as inequalities in access to everyday urban life or even inaccessibility. Importantly, apart from the need to reveal such problems, there is also a need to look for solutions and ways to dismantle spatial-social "normalization". In this sense, people with disabilities who are mobile-mapping residents, and thus shape specific exchange platforms with the help of applications, are placed in the position of active, urban political subjects who assert their spatial rights.

In this article I focused on the potentials of mapping applications, showing how they can serve as a tool in the fight for the right to the city, open new spaces and develop

strategies for this fight. It is expected that new mapping technologies will not only develop, but will also increasingly address different groups of people: people who move differently, experience differently, see the world from the perspective of different needs or interests – people who share space with others asymmetrically, but equally.

The question of the usefulness of technology in shaping the market image of cities as brands needs to be developed further, as inequalities here are considerable. Mapping policy which promotes the homogenization of urban space "for sale" (e.g. mapping representative tourist routes) is in need of reconsideration. The information about users and their spatial habits that is gathered by the municipal location media is "one of the most important forms of the currency of information capitalism" (Nacher 2014, 75). Reflection on city space, mapping technologies, policies and political power, in the light of access to the city and the potential of mapping applications for people with disabilities, will surely broaden the horizon of the debate on the contemporary city. It will reveal the disputes over its accessibility – in terms of price, ownership, profit, consumer rights, producers and, essentially, its users.

References

Abbott S. & McConkey R. 2006. "The Barriers to Social Inclusion As Perceived By People With Intellectual Disabilities." *Journal of Intellectual Disabilities* 10(3)**:**275-87.

Bates P. & Davis F. A. 2004. "Social Capital, Social Inclusion and Services for People with Learning Disabilities." *Disabil Soc* 19(3):195-207.

Bourdieu P. 1996. *Physical Space, Social Space and Habitus*. Oslo: Department of Sociology, University of Oslo & Institute for Social Research.

Bucholtz K., Hall C., & Geertz C. (Eds.) 2006. *A Companion to Linguistic Anthropology*, vol. 1 (pp. 369-394). Town: Publisher.

Fiszer A. 2016. „Nowe media jako narzędzie usprawniające życie osób niepełnosprawnych." *Studia Krytyczne* 2:16174

Freire P. 2005. *Education for Critical Consciousness*. London – New York: Continuum.

Goggin G. 2012. "Encoding Place: The Politics of Mobile Location Technologies." In: R. Wilken & G. Goggin (Eds.), *Mobile Technology and Place* (pp. 189-2012). New York – London: Routledge.

Gordon E. & de Souza e Silva A. 2012. "The Urban Dynamics of Net Localities. How Mobile and Location-Aware Technologies Are Transforming Places." In: R. Wilken & G. Goggin (Eds.), *Mobile Technology and Place* (pp. 89-102). New York – London: Routledge.

Harvey D. 2012. *Bunt miast. Prawo do miasta i miejska rewolucja*. Warszawa: Bęc Zmiana.

Isin E. F. 2000. "Introduction: Democracy, Citizenship and the City." In: E. F. Isin (Ed.), *Democracy, Citizenship and the Global City* (pp. 1-21). London: Routledge.

Isin E. F. 2002. *Being Political: Genealogies of Citizenship*. Minneapolis: University of Minnesota Press.

Isin E. F. 2009. "Citizenship in Flux: The Figure of the Activist Citizen." *Subjectivity* 29:367-388.

Kitchin R. 1998. "«Out of Place», «Knowing One's Place»: Space, Power and the Exclusion of Disabled People." *Disability & Society* 13(3):343-56.

Kowalewski M. 2016. *Protest miejski. Przestrzenie, tożsamości i praktyki niezadowolonych obywateli miast*. Kraków: Nomos.

Lefebvre H. 1996. "The Right to the City." in: E. Kofman & E. Lebas (Eds.), *Writings on Cities* (pp. 147-59). Oxford: Blackwell.

Lynch K. 1960. *The Image of the City*. Cabridge, Mass. – London, England: The MIT Press.

Manovich L. 2006. „The Poetics of Augmented Space." *Visual Communication* 5(2):219-40.

Marchese F. T. 2015. 'The Art of Urban Engagement." In: F. T. Marchese (Ed.), *Media Art and the Urban Environment. Engendering Public Engagement with Urban Ecology* (pp. 225-46). New York: Springer.

Marciniak I. K. & Piasny Ł. 2015. „Aplikacje wspomagające poruszanie się osób niepełnosprawnych w mieście. Wstępne studium badań." *Informatyka ekonomiczna* 2(36):34-49.

McClimens A., Partridge N., & Sexton E. 2014. "How Do People with Learning Disability Experience the City Centre? A Sheffield Case Study." *Health & Place* 28:14-21.

Nacher A. 2016. *Media lokacyjne. Ukryte życie obrazów*, Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego.

Nacher A. 2014. „Teletechnologie, linie i cyfrowe ślady: od sytuacjonizmu i land artu do sztuki mediów lokacyjnych." *Sztuka i Dokumentacja* 11: 71-78.

Nacher A. 2011. „Geomedia – między mediami a lokalizacją." In: P. Celiński (Ed.), *Kulturowe kody technologii cyfrowych* (pp. 197-208). Lubin: WSPA.

Rashid M. 2019. "Space Synthacs: A Network-Based Configurational Approach to Studying Urban Morphology." In: L. D'Acci (Ed.), *The Mathematics of Urban Morphology* (pp. 199-253). Springer Nature Switzerland: Birkhäuser.

Rybicka E. 2013. „Mapy. Od metafory do kartografii krytycznej." *Teksty Drugie* 4:30-47.

Soja E. 2009. "The City and Spatial Justice." http://www.jssj.org (dostęp19.04.2019).

de Souza e Silva A. 2006. "From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces." *Space and Culture* 9(3):261-78.

Internet Sources:

DaSilva J. 2015. "When I Walk. AXS Map." https://www.wheniwalk.com/ (accessed on 19.04.2019).

Fenton W. 2016. https://www.pcmag.com/commentary/345341/this-mapping-app-is-helping-disabled-new-yorkers-get-around (accessed on 19.04.2019).

Poon L. 2016. https://www.citylab.com/life/2016/06/how-apps-help-people-with-disabilities-navigate-the-city/489128/ (accessed on 19.04.2019).

AXS. Lab. http://axslab.org/ (accessed on 20.04.2019).

AXS Lab. 2015. "The Center for Artistic Activism.": https://actipedia.org/project/axs-lab (accessed on 19.04.2019).

Politechnika Gdańska 2015. „Mówiące mapy, czyli pomoc dla niewidomych." https://pg.edu.pl/aktualnosci/-/asset_publisher/hWGncmoQv7K0/content/mowiace-mapy-czyli-pomoc-dla-niewidomych (accessed on 20.04.2019).

Joanna Pankau, Poznań

E-Access to the City? Mapping Applications for People with Disabilities[6]

Abstract: The article focuses on the socio-spatial accessibility of the city, taking into account the phenomenon of a digitally expanding urban environment: new-media mobility conditions, intermedia dataflow, hybrid space. Therefore, turning to the problem of access and to urban mobile applications complements the problem of access to the city itself. Particular attention is focused on mapping applications, considering mapping as an expression of active city exploration "from the inside" and the process of cooperative spatial knowledge production, characterized by a critical approach. Urban mapping applications dedicated to people with disabilities can be not only a form of support when they move around the city, but also a kind of tool for co-shaping urban space – exposing inequalities and seeking ways to deconstruct socio-spatial "normalization". In this perspective, people with disabilities, taking advantage of the new spaces of mobile accessibility, place themselves in the role of political subjects, co-creators of space, "mapping citizens" fighting for their rights as urban citizens.

Keywords: access to the city; right to the city; urban citizenship; city imageability; urban mapping applications; hybrid space.