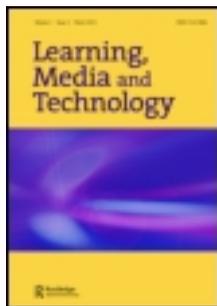


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### Participatory mapping with urban youth: the visual elicitation of socio-spatial research data

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## Participatory mapping with urban youth: the visual elicitation of socio-spatial research data

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Participatory mapping attempts to engage youth in the generation of personalized maps, as a way to both harness the value of individual knowledge about geographic space, and to concurrently empower the research participants by inviting them to take an active stake in the representation and explication of their spatial environment. Engagement in the mapping exercise facilitates a nuanced process of reflection – often unrealizable through purely textual methods – and can stimulate youth empowerment by seeding critical conversations around personal safety, mobility and technologies of spatial representation. Findings from a study that implemented participatory mapping in the context of an after-school program for urban high school students are used to demonstrate the potential of this research strategy as a participatory pedagogical intervention, and to extract methodological recommendations for its effective implementation in urban educational settings.

**Keywords:** participatory mapping; urban youth; visual research; participatory research; empowerment

From the very beginning of human civilization, people have created maps as a schematic way of depicting their surrounding environment. Indeed, researchers claim that mapping is an innate human tendency with both socio-cultural (myth-making) and technical (utilitarian) functions (Lydon 2003). Indigenous people from all corners of the world have represented their physical environment in sand, on tree trunks, on animal hides or cave walls, in various styles and with different degrees of schematic complexity (Aberley 1993). Importantly, maps are also characterized by political and ideological dimensions, and have tended to represent the worldview and particular interests of dominant powers. Thus, beyond their function as a source of knowledge, maps have complex implications in regards to the empowerment – or lack thereof – of the communities that populate these spatial realms. Participatory mapping, as a visual research methodology, recognizes these power dynamics and offers an inclusive, co-constructed take on the process of mapmaking. Specifically,

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it attempts to engage communities in the active generation of personalized maps, as a way to both harness the value of individual knowledge, and to concurrently empower community members by inviting them to take an active stake in the visual representation of their spatial environment.

This article aims to fill critical gaps in the literature on participatory mapping by exploring its use in research and participatory pedagogical practice with urban youth. In evaluating the strategy, and in providing some preliminary methodological recommendations, I will draw on a literature review of similar initiatives and implementations of participatory mapping in global contexts, as well as on a case study documenting my own experience as the organizer and facilitator of a participatory mapping project in the context of an after-school pilot program for high school youth. This pilot study, which I implemented at the Robert F. Kennedy (RFK) Community Schools in Los Angeles, California, used participatory mapping to better understand how urban high school students represent their personal geographies of comfort and fear, defined as the spaces where they feel most comfortable or, respectively, most apprehensive. In addition, the activity functioned as an introduction to several mapping technologies, where the digital representation of urban space was contrasted to the personalized geographies drawn and then narrated by the students.

This article seeks to provide a critical analysis of participatory mapping as both visual research and participatory pedagogy, with the aim of determining how this strategy can be used most effectively to elicit geo-spatial information and stimulate self- and social empowerment among urban adolescent populations. After a comprehensive literature review of its versatile applications, the article will describe the pilot study at RFK Community Schools, provide methodological recommendations that should help other researchers and practitioners employ this method in the most effective and productive manner, and summarize the results of this study in regards to the participants' representation of their personal geographies. Subsequently, since the study was principally concerned with evaluating the methodological effectiveness and prosocial potential of participatory mapping, the final sections will be devoted to discussing the advantages and, respectively, limitations of this strategy when used with urban youth populations.

### **Participatory mapping: a versatile strategy**

A survey of previous studies employing participatory mapping techniques reveals the wide applicability and versatility of this method, albeit marked by a predominant focus on adult, and often indigenous, populations. Herlihy and Knapp (2003) distinguish between two types of participatory mapping, based on the specific goals of the activity: participatory action research (PAR) mapping, aimed at facilitating social action and implementing positive changes in the community, and, respectively, participatory research mapping,

which is aimed primarily at research and knowledge generation. However, this distinction is not categorical, since the two goals are often interrelated, and the process of knowledge generation may act as the first step within a larger social action campaign.

When used with adult populations, participatory mapping has been employed extensively with indigenous communities in an effort to map land claims and to protect community resources (Baohua 2005; Chapin and Threlkeld 2001; Fox 2002; Peluso 1995; Poole 1995; Saipothong, Kojornrungrot, and Thomas 2005), as well as to mediate local and regional conflicts regarding land use and resource ownership (Cronkleton et al. 2010; Sarem, Ironside, and Van Rooijen 2005). Another popular application of participatory mapping has been in the context of social perceptions of crime and safety (Liebermann and Coulson 2004; Matei and Ball-Rokeach 2005; Matei, Ball-Rokeach, and Qiu 2001), and the localization of social problems such as prostitution (Kruse et al. 2003) or drug trafficking (Chambers 2006). Especially in recent years, many of these initiatives have also complemented the pen-and-paper approach with digital mapping activities, such as GIS (Geographic information system) or GPS (Global positioning system) integration (Bujang 2005; Everett and Towle 2005).

In research with children and youth, the vast majority of participatory mapping research has focused on the development of spatial cognition in young children, and thus research activities using child-generated maps have aimed primarily at determining the extent of children's spatial awareness and their ability to both produce and interpret maps at varying ages. In line with the Piagetian school of thought, until about the 1980s it was believed that very young children do not possess the cognitive and operational skills to interpret maps before the age of seven or eight (Liben and Downs 1989; Miller 1967; Piaget and Inhelder 1956; Towler 1970; Towler and Nelson 1968). More recent studies, however, have found that children as young as four have the ability to understand basic maps and aerial photographs (Blaut et al. 2003). A particularly interesting study by Blades et al. (1998) attempted to measure the cross-cultural differences in the map interpretation abilities of four-year-old children. The authors found that children from all five cultural contexts explored in the study exhibited basic map-reading abilities, but admit that they cannot generalize the findings beyond urban environments with high literacy rates.

As far as children's mapmaking skills are concerned, studies have attempted to measure both the qualitative changes in mapmaking abilities by age (Beck and Wood 1976; Matthews 1980) and the quantitative gain in environmental knowledge, as determined by the informational content of child-generated maps (Andrews 1973; Smith, Shaw, and Huckle 1979). With age, both the level of detail and the extension of children's maps increase (Hardwick, McIntyre, and Pick 1976), although this is not a linear process, but one that is highly dependent on contextual factors such as the child's social, educational and cultural background (Matthews 1984).

Beyond the use of participatory mapping to determine – as illustrated by the studies cited so far – the ability of children to represent spatial knowledge in a schematic manner, there have also been several research projects that used this participatory visual method in order to gain information from children on specific topics of personal relevance. Young and Barrett (2001), for instance, used participatory mapping with street children in Kampala, Uganda, to gain an understanding of the urban spaces frequented by these homeless youth, primarily in relation to illegal activities and overnight shelter. Darbyshire, MacDougall, and Shiller (2005) used child-generated maps as a source of information about physical activity spaces within an obesity prevention project, while Blanchet-Cohen, Ragan, and Amsden (2003) employed participatory mapping with children in order to assess youth perceptions of environmental change.

Such projects, albeit successful, have been surprisingly rare. Given the many advantages of using participatory mapping methods with children and youth – in terms of both richness of content and ethical and practical benefits – researchers and practitioners have not made full use of the strategy's potential to uncover youngsters' valuable knowledge on topics of personal relevance, nor have they significantly harnessed the potential for empowerment and social action that can follow from such activities. This is especially applicable in regards to critical issues of personal safety, crime, ethnic prejudice and children's perceptions of comfortable or, conversely, dangerous spaces within their socio-spatial environments. There is also a critical need for research assessing the effectiveness of participatory mapping with older children or adolescents. Finally, from the perspective of digital media and learning, we need to gain a better understanding of how digital tools (in particular, geospatial technologies like mapping software or virtual imaging tools) can be incorporated within such pedagogical activities, and how they can be best employed to stimulate both empowerment and skill acquisition.

### **Case study: participatory mapping with Los Angeles high school students**

To exemplify the strategy of participatory mapping in research with urban youth, and to assess its methodological efficiency, a participatory mapping initiative was conducted with high school students at the RFK Community Schools in central Los Angeles. The activity was implemented, as a special module, as part of an after-school pilot program focused on new media literacies and digital citizenship, and organized by PLAY!, our research team at the University of Southern California's Annenberg Innovation Lab. As the researcher in charge of this module, I was both the creator and the facilitator of this activity; two other members of the research group, who regularly attended the program sessions, assisted in the data collection process by taking field notes and recording the session.

The after-school program was a pilot initiative aimed to test out the five principles of participatory learning, which form the framework of our work

(Felt et al. 2012). Specifically, our research found that participatory learning flourishes in an environment where:

- (1) Participants have many chances to exercise creativity through diverse media, tools and practices;
- (2) Participants adopt an ethos of co-learning, respecting each person's skills and knowledge;
- (3) Participants experience heightened motivation and engagement through meaningful play;
- (4) Activities feel relevant to learners' identities and interests;
- (5) An integrated learning system – or learning ecosystem – honors rich connections between home, school, community and world (Reilly et al. 2012).

In view of my strong belief that it is vital to use research tools that support program goals, participatory mapping emerged as a valuable and versatile research strategy to employ in this context, since it indeed exhibits these principles of participatory learning and – as I shall argue later – offers significant pedagogical benefits in terms of the students' acquisition of new media literacies and social and emotional learning skills. Furthermore, the complementary integration of digital tools represented a relevant and valuable strategy of honing the students' technological skills, which was an important goal of the after-school program.

### ***Sample***

The participants in this activity were 12 high school students enrolled in the after-school program. The students ranged in ages from 15 to 17; as for gender, eight were male and four were female. Given the particular location of this public high school in central Los Angeles, their ethnicity reflected the predominant ethnic make-up of these areas: eight students were Hispanic, and four were Asian.

### ***Method***

After facilitating a general conversation about maps and mapmaking, the researcher introduced the participatory mapping activity. The students were given two generic maps representing the area around their school (a smaller-scale neighborhood map and a larger city map), as well as colored pencils or markers. Using the colored markers, they were asked to color-code their surrounding environment – a methodology recommended by Matei and Ball-Rokeach (2005) within their study of Los Angeles geo-ethnic spaces – emphasizing the areas they consider comfortable and, conversely, unwelcoming. Comfort spaces would be colored in green, uncomfortable areas in red and unknown or unfamiliar areas in blue. After the students completed their

maps, they shared them with their peers within a group discussion facilitated by the researcher. This post-mapping discussion allowed the students to explicate the reasons behind their choices, and provide their personal views on urban space and geographic mobility.

In the final part of the session, after sharing and discussing the maps, the researcher-facilitator steered the conversation toward the representational nature of maps – both analog and digital – and the relationship between mapping and spatial or geographical knowledge. The facilitator then introduced *Google Maps* (a GPS-based web mapping service) and *Google Earth* (a navigable virtual globe) as digital mapmaking and map-reading tools, and the students were able to compare their personal maps with their digital counterparts. They learned how to use the features of *Google Maps* and *Google Earth* to both interpret and generate digital maps. Finally, at the end of the session, the students used *Google Maps*' powerful Street View feature (which offers 360° panoramic street-level visualizations of specific locations) to visualize each other's urban comfort spaces, and to investigate – and, in a sense, demystify – the areas that they or their peers had marked as uncomfortable or unwelcoming.

In terms of both pedagogy and research ethics, the activity was conceived as an embodiment of PAR. Illustrating the core characteristics of PAR – and more, specifically youth PAR (YPAR) – the implementation of the participatory mapping module in the context of the digital citizenship after-school program valued the youth participants as important knowledge-makers engaged in critical thinking, active reflection and problem-solving (Altrichter et al. 2002; McIntyre 2000). Furthermore, the activation of youth as 'legitimate and essential collaborators' is crucial when attempting to gain insight into social or cultural problems that have a direct impact on their lives (Morrell 2008, 158). Because the students at RFK High Schools are personally affected by issues relating to the safety and hospitableness of their surrounding spatial environment, it only made sense to involve them in the process of generating personal knowledge and troubleshooting this urban space. The non-hierarchical and collaborative impetus behind YPAR thus materialized in both the pedagogical approach to the activity – which emphasized co-learning as one of the five principles of participatory learning – and in the research design, where the choice of participatory mapping as an ethical, non-positivist and collaborative methodology reaffirmed our commitment to the values of participatory research. As Morrell (2008) notes, this inclusive approach is especially important when working with youth from disadvantaged or low-income communities, since their role as potential knowledge-producers is rarely recognized.

### ***Data analysis***

At the end of the exercise, 24 maps (two for each student) were collected by the researcher-facilitator for visual analysis. In addition to the maps, complementary data were collected during the activity in the form of ethnographic field

notes written by fellow research group members, and video recordings of the session. The field notes captured important dialogue and key moments, and also contained an engagement index that documented participants' attention across activities. The audio/visual data obtained from the video recording were not subjected to formal content analysis, but used as a visual record documenting the activity.

A vital, yet challenging, aspect of data analysis in participatory mapping research concerns the inherent subjectivities of visual interpretation. Although all qualitative data are – to a certain extent – molded by the way it is interpreted and presented by the researcher *ex post facto*, visual data are even more problematic in this sense due to its comparative openness (Gauntlett 2005). In order to avoid the dangers of misinterpretation or over-interpretation, Rose (2001) advises researchers working with visual data to employ a 'critical visual methodology', which considers – in addition to the visual information encoded in the maps – the circumstances in which these images were produced, circulated and consumed. In analyzing the maps drawn by the youth in this study, we were careful to treat them – like Mitchell (2006) aptly recommends – as 'a departure point for apprehending something of [the youths'] worlds and world-making' rather than a 'mimetic or complete' depiction of their knowledge or perceptions (63).

The challenges of visual interpretation reiterate the importance of the post-mapping discussion, and of the complementary data collection strategies (field notes and video recording), which can contextualize the content and meanings of the maps. As noted in previous studies (Banks 2001; Gauntlett 2005, 2007; Mitchell 2006; Young and Barrett 2001), it is absolutely crucial for visual research data like personal maps to be analyzed in combination with the participants' own explanations and narratives. The discussion immediately following the mapping exercise is therefore a vital part of the activity, and functions to give the participants an avenue to explain and reflect on their visual representations, within the larger group. Importantly, inviting the research participants to interpret their own maps can further facilitate a sense of youth empowerment, as the researcher becomes a respectful listener and the participants are encouraged to take charge of the discussion.

### ***Methodological recommendations***

For an effective application of this research strategy, the first methodological choice that needs to be made is whether to implement the participatory mapping activity as an individual or group session. While a private, individual session relieves the sense of peer pressure and can empower students that are generally less outspoken in a group setting, it can also mean a more uncomfortable and unnatural experience for the young participants, and a considerable logistical challenge for the researchers. Group sessions, on the other hand, are a comparatively more natural and comfortable situation for the participants

and can foster meaningful discussions amongst the group members, but there is the danger of copying and emulation, as well as an increased risk of attention diversion and misbehavior. If the researcher chooses to implement this activity in groups, the groups need to be small in size.

Since participatory mapping is a quintessentially co-constructed research method, the activity must begin with establishing an atmosphere of trust between the facilitator and the participants. This can generally be done in the shape of an informal introduction and discussion, but, if time allows, playing games or icebreakers can also enhance this sense of comfort and trust. The researcher must then clarify the scope of the activity, carefully and patiently explaining the entire process, including how the findings will be used, and whether the session will be recorded. After answering any questions that the participants might have about the mapping procedure or the research study in general, the facilitator should give them ample time to complete these maps without a sense of pressure or rush.

In terms of the process of map generation, the researcher can decide between giving the participants printed maps to color or fill out, or, alternatively, having them draw their maps from scratch on blank sheets of paper. There are advantages and disadvantages to both approaches. Filling in a generic printed map might help some participants orient themselves geographically, and may ease some of their self-conscious concerns regarding their drawing ability, but at the same time it is a more limiting and less flexible approach when compared to the alternative of starting from a blank sheet of paper. In the maps generated within this study at RFK Community Schools, where the students were given printed *Google Maps* to color and fill in, the students relied heavily on the textual information found on the printed maps, sometimes merely circling or coloring the *name* of a street or park, rather than coloring those particular visual spaces on the map (Figure 1); a more open-ended approach, starting from a blank piece of paper, would have perhaps given the participants more flexibility in choosing how to depict their personal geographies.

Flexibility and open-endedness are key characteristics of this exercise and, if fostered, will yield richer, more personal results. The maps differed in scale, or area covered, in order to give students the utmost freedom of choice and expression. Thus, students could freely decide on the extension and scope of their maps: they were told that focusing on the immediate area around their house or school is just as acceptable as mapping the whole neighborhood or the entire metropolis, since the choice of scope is a significant reflection of the students' self-perception of their personal urban spaces. Furthermore, in explaining the parameters of the exercise, the facilitator should frame them in a highly open-ended manner, refraining from giving specific examples of comfortable and uncomfortable spaces, since this could influence the participants' responses and limit their own personal interpretation of these concepts.

The post-mapping discussion should attempt to establish the personal relevance of these maps to the participants' lived experiences, and the motivations

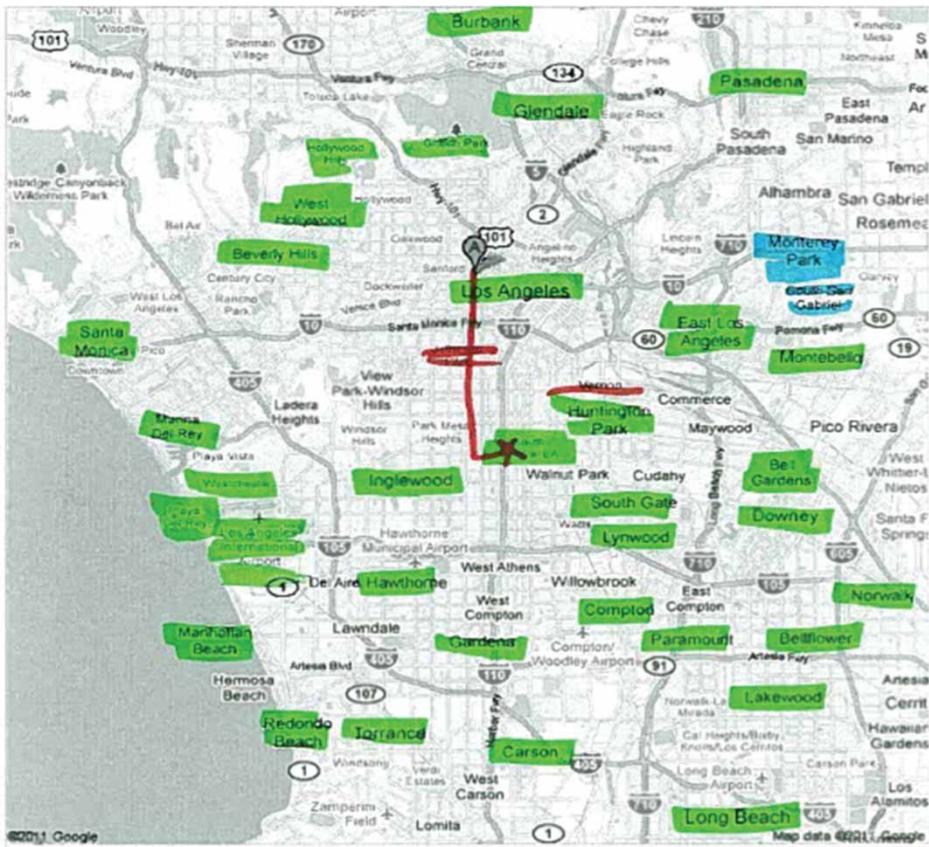


Figure 1. Example of colored map: the participant chose to color the name of specific areas, rather than their spatial extent.

for considering certain areas welcoming or, conversely, uncomfortable. Students must be encouraged to identify the source of these perceptions: are certain areas considered unsafe because of personal experience, ‘reputation’ or media depictions? Is an area deemed uncomfortable because of high crime rates, ethnic or racial prejudice, social stratification, gentrification, lack of youth-friendliness or what other specific factors? In view of its significant potential to stimulate or reinforce youth empowerment, it is important for the discussion to be constructive and positively framed; even though, given the nature of this exercise, many of the elements drawn on the map will relate to crime, harassment or ethnic prejudice, the conversation can also brainstorm solutions and possible ways to engage the larger community or the public authorities in alleviating these social problems.

Finally, in terms of data collection, it is important to let the students keep their personal maps after the completion of the exercise. In the case study at RFK Community Schools, for instance, I realized that, after insisting so

much on the personal nature of the maps and encouraging the students to really take ownership of representing their ‘personal Los Angeles’, I took the maps away from them at the end of the lesson in order to analyze them. Realizing my mistake, I then scanned all the maps and gave the originals back to the students the following week. This was a vital lesson about the importance of archiving the maps but always returning the originals to the participants, and respecting the personal and emotional dimensions of the youth-generated maps.

### ***Summary of findings***

The analysis of the youth-generated maps, in conjunction with the post-mapping discussion, reveals several insightful findings regarding youth depictions of comfortable and uncomfortable urban spaces. Specifically, participants tended to associate comfort spaces with a sense of familiarity (representing areas that are well-known to them, such as their home, school, neighborhoods where their friends and relatives live, etc.), as well as pleasant experiences, especially as they relate to leisure, entertainment and social gatherings (for instance, cinemas, malls, gaming arcades, soccer fields and so on) (Figure 2). In representing uncomfortable spaces, they associated a lack of comfort with a perceived sense of danger or being unwelcomed there (Figure 3). Thus, common depictions included gang territories, local hubs for robbery, prostitution and other illegal activities, dark or unpopulated areas, but also places that are ethnically or culturally different from the participants’ own background. Given that the participants in this study were Hispanic and Korean, many of the areas deemed uncomfortable were upper-class white neighborhoods or newly gentrified areas.

The influence of media representations on the students’ perceptions of different neighborhoods in Los Angeles also emerged as an important factor in their mapping choices. For example, the majority of the students chose the ill-famed Compton as the most uncomfortable area of Los Angeles, but in the ensuing discussion it emerged that none of them had actually been to Compton. Similarly, in the study done by Matei and Ball-Rokeach (2005), Watts was perceived to be the most dangerous area of Los Angeles, and the authors acknowledge that this is highly related to news stories about that area, and the historical significance of Watts as a site for riots and racial conflict.

Both the content and the visual style of the map were determined to a great extent by the level of detail and the extensiveness of the maps. However, this in turn was affected by a set of inherent factors that characterize the students’ experiences and life situations. Of these, geographic mobility is a major factor. Some teenagers had greater access to cars and transportation, and many of them had part-time jobs that require them to travel to a different part of the city – therefore, their maps were more detailed and more extensive in geographic scope. In regards to gender, boys drew maps that were more extensive than those of the girls’, since boys generally have a higher degree of

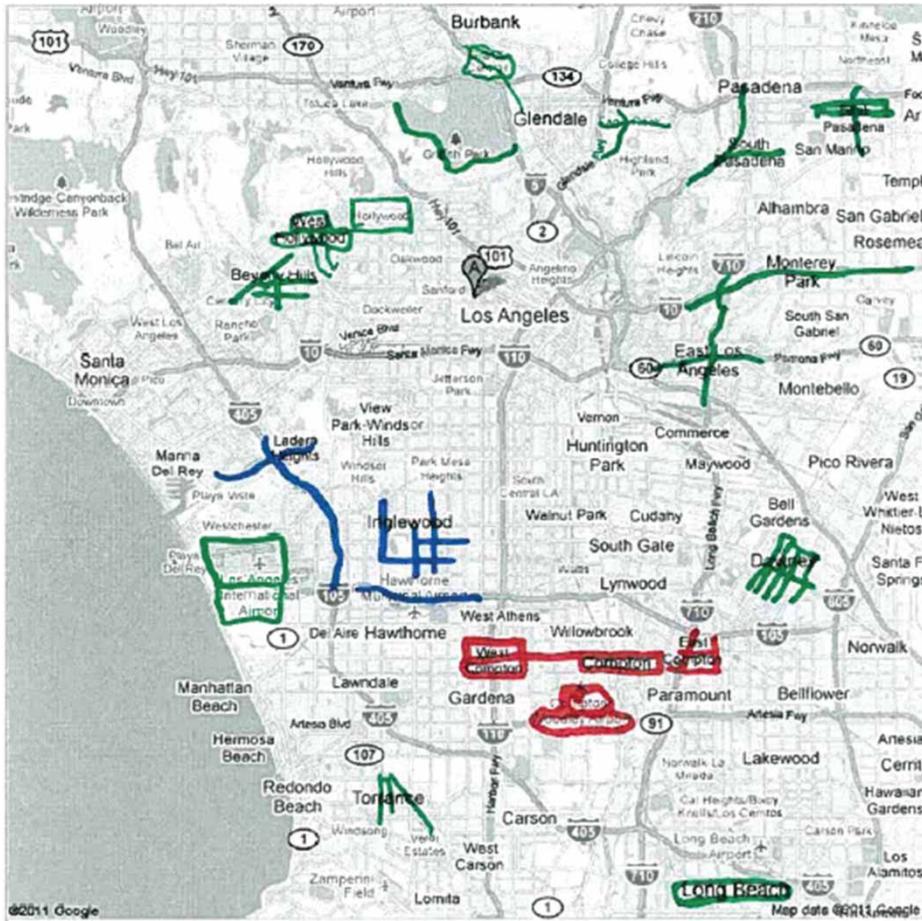


Figure 2. Compton was deemed by this student to be the only uncomfortable area in Los Angeles. His post-mapping narration explained how the green areas were associated with pleasant memories and trips with his family.

mobility and can venture more easily into suspect areas where girls may be cat-called or harassed.

### Using participatory mapping with urban youth populations: advantages and limitations

Beyond the specific theme of the mapping exercise (adolescents' perceptions regarding urban spaces of fear and comfort), this pilot study was principally interested in determining the effectiveness of participatory mapping as a research strategy and participatory pedagogical practice with urban youth populations. The following section will provide – based on this original study and on a review of other implementations – an analysis of the advantages and the challenges involved in using this rather novel methodology.

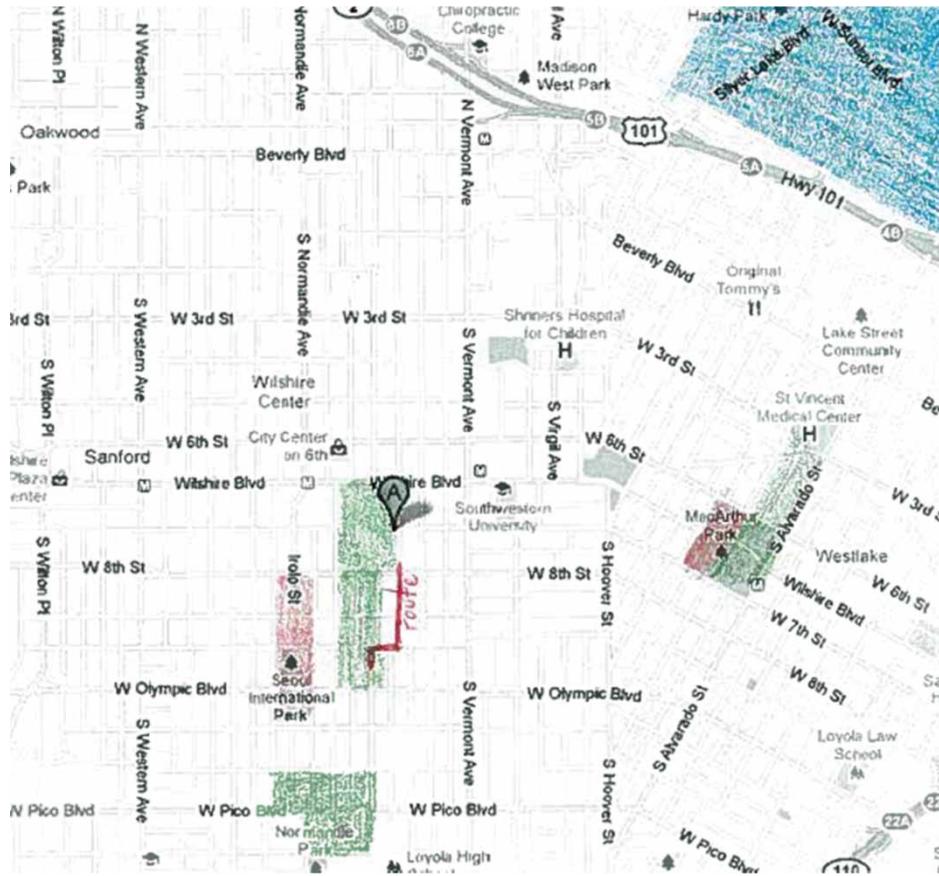


Figure 3. This participant considered half of the notorious MacArthur Park to be unsafe, and the other half to be safe. He explained that ‘junkies live in that [unsafe] side, but on this side there are lots of missionaries and stuff. And I trust church people’.

### *Advantages in using participatory mapping with urban youth*

In regards to the students’ response to this activity, the general engagement levels during the mapping and the subsequent discussion can be considered a significant indicator of methodological efficiency. The activity was very well received by the students, who enjoyed both the process of hands-on map-generation and the post-mapping discussion. The high engagement levels qualify this strategy as a feasible and enjoyable research or pedagogical practice with children and adolescents, especially considering the difficulty of keeping youth focused and engaged during traditional research activities.

Due to its visual nature, participatory mapping is a valuable tool in eliciting rich descriptions of individual and social perceptions, and can often surpass the modal affordances of purely textual methods. This comparative advantage is seen most powerfully in two outcomes of the methodology: first, the quality and depth of the knowledge produced as part of this process, and, second,

the sense of empowerment and efficacy that young people gain from engaging in the activity. The first advantage lies principally in the fact that the resulting maps, coupled with a subsequent discussion of their personal relevance by the mapmakers themselves, allow for a comparatively more nuanced process of description, elaboration and theorization (Emmel 2008). A significant benefit of employing visual methods is that, unlike in interviews or focus group sessions where an instantaneous response is expected, the research participants have time to reflect on their responses; the visual representation becomes a process of ‘working through’, rather than spontaneously responding (Gauntlett 2007). Furthermore, the physical tangibility of the maps allows for identifying specific foci and revisiting particular items of importance (Emmel 2008), which enables the researcher to address – within the post-mapping discussion – some of the most crucial or most ambiguous aspects of the maps.

The second strength of the methodology is that participatory mapping, in view of its engaging and co-constructed nature, can be a comparatively more ethical research strategy, and one that has the potential of stimulating empowerment among the participants. Rattine-Flaherty and Singhal (2007) convincingly argue that visual participatory research methods like participatory mapping are a feminist approach, since they inherently privilege emotionality, connections and community. They claim that

the feminist viewpoint questions the hegemony of knowledge that is printed, arguing for the recognition of other forms of expression, and that by providing participants the tools of producing knowledge, such as markers and cameras, as well as opportunities for public performance of their narratives, feminist approaches enhance individual agency and solidarity. (Rattine-Flaherty and Singhal 2007, 2)

The process of sharing their maps with the larger group and narrating their visual choices can also strengthen participants’ feelings of empowerment through the facilitation of self- and collective efficacy. The notion of self-efficacy is understood as an individual’s needed confidence in his or her own skills and ability to implement specific prosocial behaviors; collective efficacy, on the other hand, is the degree to which individuals within a system believe that they can effectively organize and carry out courses of action in order to achieve collective goals (Bandura 2001). The participatory mapping process gives youth an opportunity to address issues that are directly relevant to their lived experiences; the discussion of these subjects within the classroom – a public and institutional forum – further validates the significance of these individual perceptions and reinforces the youth’s confidence in that their voice is important and worth listening to. The collective aspect of the exercise is also crucial because, in openly discussing their personal experiences, participants can achieve a sense of community and collective efficacy by connecting with their peers over social or civic issues that are important to them (Rattine-Flaherty and Singhal 2007). In the study at RFK Community Schools, the

post-mapping discussion touched on several critical but sensitive subjects – racism, gentrification, gang violence, and sexual harassment – which would otherwise have been hard to breach with this group of students; their passionate yet respectful engagement with these topics in the post-mapping discussion was, in this sense, a welcomed moment of openness and mature debate. In addition, when these issues relate to social problems like crime or ethnic discrimination – as they did in this case study – the mapping activity can also be a potential building block for improving negative perceptions and advocating for social action in regards to these dangerous or youth-unfriendly spaces. In this sense, youth empowerment – both social and spatial – can also be promoted through the demystification of ill-famed areas, especially when augmented, as demonstrated in this preliminary study, by geographic imaging tools like *Google Maps Street View* or *Google Earth*.

In terms of pedagogical advantages, it is vital – as previously mentioned – to use tools that match contemporary educational agendas and enhance youths' social and cultural development. In the case of participatory mapping, these educational benefits are manifold, encouraging the acquisition and refinement of critical twenty-first century literacies. According to Papert's constructionist paradigm, we learn by *making* things, and thus the very act of generating or coloring a map is a valuable learning opportunity (Papert and Harel 1991). The practice of participatory mapping also fits well within the new media literacies pedagogical framework, as it exhibits all five characteristics of participatory learning: creativity, co-constructed expertise, motivation and engagement, relevance and, respectively, connection (Reilly et al. 2012). In addition, it can foster crucial new media literacies – primarily, but not exclusively, visualization, simulation and distributed cognition – as well as social and emotional learning skills such as self- and social awareness (Durlak et al. 2011; Jenkins et al. 2006). When integrated with mapping and visualization technologies, furthermore, the participatory mapping activity can also serve as a valuable introduction to digital tools such as *Google Maps*, *Google Earth* or GIS/GPS systems, which are becoming increasingly consequential in today's society.

### **Limitations**

In spite of the many advantages of employing participatory mapping with youth, there are certain limitations to this methodology. Due to logistical constraints and the quintessentially participatory nature of this method, the size of the sample will generally be small and will most often resist a wider generalization. Furthermore, when this method is implemented as a group session, there can be copying and stylistic emulation among the participants, as previously mentioned. Some participants, in addition, may not want to divulge highly personal information in the presence of their peer group, or may under- or overemphasize certain aspects of their maps as a result of peer pressure. Participants may also feel self-conscious about their drawing abilities,

which will result in a lower level of engagement, although this is more common with adults and not so much with younger participants. In terms of map content, the pressure of social desirability and the Hawthorne effect might also lead the students to try to prioritize the accuracy and informational complexity of the map, *in lieu* of their personal perceptions, which they may consider as less important.

A popular critique of participatory mapping studies has been the fact that they are not designed longitudinally, and thus offer a mere ‘snapshot’ of complex processes and transformations (Chambers 1991). The content of the participants’ maps should therefore be viewed as such, acknowledging the fact that these maps are indeed bounded representations of the respondents’ perceptions at the time of the study. In addition, to further validate the veracity of the findings, the data obtained from participatory mapping should be triangulated with other ethnographic research methods, such as – depending on the topic of the study – interviews, focus groups, direct observation, diary methods, participatory drawing or photo diaries.

Last but not least, a serious ethical problem that needs to be thoroughly considered is the possibility of exposing the participants to danger if they divulge information related to crime and the location of illegal activities. Given the scope of the exercise, many participants will motivate their representation of uncomfortable urban spaces by talking about illegal activities, violence, gangs or turf wars. If news of the mapping exercise reaches those involved in such suspicious or illegal activities, the safety of the research participants may be in jeopardy.

## Conclusion

Participatory mapping, if implemented correctly, can be an efficient and engaging strategy of gauging youth perspectives on a wide array of topics and in multiple cultural contexts. The ethical and practical advantages of using this research method, as illustrated in this study, are multifold. However, beyond the advantages for the researcher, the strategy presents significant benefits for the participants as well. Participatory mapping is gaining momentum as a pedagogical tool in K-12 education (Dombóvári 2012; Sobel 1998, 2004), especially when used in combination with complementary digital resources and software; the popularization of these applications is a further testimony to the critical need for comprehensive research in this area. Future research initiatives are therefore encouraged to take up the task of illuminating and evaluating these benefits, especially in regards to the pedagogical value of participatory mapping exercises, and to their potential of stimulating empowerment, self-efficacy and collective efficacy among the participants.

Another worthwhile direction for future research in this area concerns the practical and ethical understandings of youth involvement in participatory research studies. Some voices in the field of qualitative research with children

and youth claim that participatory research methods are only truly participatory if they allow young to become ‘co-researchers’ and have significant input at every stage of the research process: choosing a topic, planning, collecting and analyzing data, and disseminating findings (Kellett, Forrest, and Dent 2004). However, as Connolly (2008) concludes, such an involvement on the part of the youth is not always desirable, effective or ethical, due to a variety of practical and ethical considerations, primarily children and youths’ capacity for critical agenda-setting in social research contexts. Future studies in this field are therefore encouraged to engage questions of methodological epistemology and approach the research process with a maximum degree of reflexivity (Connolly 2008), in an effort to determine the opportunities and limits of youth engagement throughout the research process.

Amidst the rise of visual and participatory methodologies in social scientific research, we should expect to see a wider and more diverse application of this methodology in the near future. As this article has attempted to demonstrate, the potential of this method to elicit nuanced interpretations of social and geographic perceptions qualifies it as a promising strategy within the toolbox of both the teacher and the educational researcher. In terms of immediate practical applications, given the topics that can be explored in participatory mapping exercises, this activity could represent an important starting point in an educational discussion of safe routes to school, crime and violence, or appropriate ways to respond to street harassment or catcalling. Furthermore, in the realm of strategic communication campaigns, these personal maps can help identify critical social issues and contribute to the formative research or needs assessment phase within larger initiatives of advocacy and social action aimed at implementing positive changes in the youths’ communities. By taking part in the participatory mapping exercise, and by sharing these maps with their own communities, young people can gain a further degree of social and spatial empowerment, as well as a sense of ownership over the cities they call home.

### Notes on contributor

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