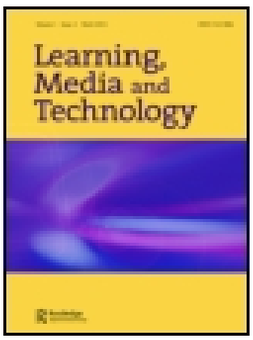

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Dis-placing place-making: how African-American and immigrant youth realize their rights to the city

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ABSTRACT

Notions of place-making assume that individuals and groups of people have legitimate 'rights to the city.' This paper unsettles these notions to incorporate the politically and legally tenuous relationships African-American and Immigrant youth have to their cities. We describe a community-based digital STEAM curriculum called Mobile City Science that invited youth to engage in place-making efforts using mobile and location-aware technologies. The design study relied on a contradiction that is fundamental to youth place-making in an era of white nationalism: for African-American and Immigrant youth to engage power structures in community development processes, they had to engage in a series of *dis-placements* that removed them from embodied experiences and in-location perceptions of their communities. *Self-censoring, witnessing, historicizing,* and *re-veiwing* were all examples of dis-placements youth enacted to speak truth to power with digital and mobile tools.

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Place-making; African-American youth; immigrant youth; wearable cameras; govern-mentality

Introduction

Public education suffers from a crisis of place. By and large, classroom instruction is abstracted and separated from the greater neighborhood and community contexts of schools (e.g., Nespor 2000). Often, what students learn in class bears no direct or explicit relationship to what is happening outside those four walls. Classrooms, as a simulacrum of society, represent a larger trend toward placelessness in a renewed era of ICE raids, gentrification and displacement, and corporate standardization of land (Weiss-Berman 2018). But why is this placelessness a 'crisis?' As human geographers have argued, the only way to grasp the complexity of living globally – including the magnitude of threats facing our planet – is to examine and comprehend the local contexts we inhabit (Tuan 1974; Relph 1976).

As a potential antidote to this crisis of place, some researchers and designers of learning and teaching environments have turned to versions of place-making (e.g., Gruenewald 2003) with mobile and location-aware tools as an educational endeavor (Shapiro, Hall, and Owens 2017; Taylor 2017). But current notions of place-making – collectively reimagining and reinventing public spaces (Project for Public Spaces 2018) – assume that individuals and groups of people have legitimate rights to the city (Lepofsky and Fraser 2003). These rights provide residents with the freedom to remake one's self and future possibilities by reimagining and re-making one's city (Lefebvre 1974; Harvey 2008). But such assumptions of universal rights are unsettled when we consider the politically and legally tenuous relationships underserved and Black and Brown youth have to their cities (Kahne and

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Middaugh 2008), especially when adults position them as being at-risk in or posing risks to community well-being (Driskell 2017).

Excluding youth from place-making excludes them from rare educational exchanges in which residents and professionals learn from and teach each other different perspectives on local, spatial inequities and possibilities (e.g., Taylor and Hall 2013; Tate IV and Hoegrebe 2011; Taylor 2011). Youth do not get to learn about the invisible histories of how their cities developed (e.g., Wertsch 2002), nor are they able to access the professional practices and visions that drive community change (Radinsky 2008). In the absence of youth learning hidden histories and practices essential for equitable and collective place-making, is it any wonder that inequities continue reproducing in civic spaces?

This paper unsettles notions of universal rights for place-making; we build an equity-oriented theory of place-making to include a perspective on Black and Brown youth teaching the city about their lived experiences using newer and forgotten technologies (Ma 2016; Barajas-López and Bang 2018). To do this theory-building work, we incorporate the politically and legally tenuous relationships Immigrant and African-American youth have with their cities, especially as the white gaze (Cohen 2010) has intensified on Black and Brown bodies during the current sociopolitical climate (e.g., Sargent 2016). We also examine the changing modes of participation for place-making afforded by mobile, location-aware technologies; these tools have yet to be substantively analyzed for their precarity and potential to re-place youth learning and engagement in and about community spaces to make educational experiences public-facing (Taylor 2017).

We draw our empirical material from a community-based digital STEAM curriculum called Mobile City Science (MCS) that invited urban youth to engage in place-making efforts using mobile and location-aware technologies. In this study, we ask the following research question: *How do mobile and location-aware technologies in public-facing educational designs surface youth agency and resistance in processes of place-making?* We found that these tools – GPS devices, wearable cameras, paper and digital maps – within the design of MCS, helped to surface a contradiction that is fundamental to Black and Brown youth place-making in a continued age of white nationalism: for African-American and Immigrant youth to engage power structures in community development processes – to argue to adult stakeholders and imagine youth relevant places – they had to engage in a series of *dis-placements* that removed them from embodied experiences and in-location perceptions of community spaces for which we designed. *Self-censoring, witnessing,* and *historicizing* their neighborhoods were all examples of dis-placements youth used to speak (or show) truth to power with digital and mobile tools.

In this paper, we focus on two of these dis-placements surfaced by youth's use and construction of wearable cameras in our designed activities to re-place learning. These two forms of dis-placement are *self-censoring* and *witnessing*. Specifically, in asking young people to 'notice' and document aspects of their communities, youth constructed wearable cameras as both:

- Co-agents of govern-mentality that prompted them to self-censor their participation within the curriculum, and;
- Instruments for witnessing community issues toward advocacy objectives.

We think of these different uses and constructions of wearable cameras as dis-placements; during these moments, youth temporally and spatially removed themselves from the immediate and place-specific goals of our designed activities to consider future-oriented threats and possibilities of the digital gaze. In this way, dis-placements represent youth resistance and agency in place-making processes that are dominated by white, adult, professionals (we implicate ourselves here as white, adult social scientists).[1]

While displacements have been important to the contradictory nature of communities of practice (Lave and Wenger 1991) and capitalism (Marx 1906), this paper builds from and expands on notions of displacements from both Latour (1990, 1991, 1999) and Star (2015); scientific 'discovery' is a contradiction in that understanding something *in* the world requires removing it *from* the world in such a way that it becomes consequential to (a) particular community(ies). With the help of wearable and

geolocative technologies, young people moved between re-placements and dis-placements to provide faithful translations of the place to the map, the place to the image, and the place to the memory. We argue that these digitally mediated translations provided youth agency and membership (albeit marginal) in place-making efforts typically led by powerful adults (e.g., white urban planners, educators).

Framing concepts

Place-making as a learning process

Place-making has become a catchall term for civic engagement in community planning processes. The use of this term often ignores how collaborating parties are learning from and teaching one another about different aspects of the city (e.g., Tate IV and Hoegrebe 2011). Residents often teach planners and other professional stakeholders about experiences at the daily scale and provide an historical perspective on developmental consequences (e.g., urban renewal; Taylor). Planners teach residents about a professional version of future development that is, for better or worse, driving the allocation of resources (Taylor, Hall, and Leander 2010).

Like all teaching and learning exchanges, place-making is fundamentally *powered*; those with direct access to resources to implement change have more power than those with little or no direct access. This power manifests in systematized modes of interaction (e.g., design charrettes), and it reproduces ways of being and knowing for the continuation of a dominant culture deemed appropriate by those in power – white, straight, cisgender, affluent men (e.g., Wortham 2004; Bang 2017). Ideally, the practice of place-making opens up possibilities for identifying and learning about the disparities of access to resources (Leander, Phillips, and Taylor 2010). When learning and teaching exchanges occur between stakeholders, more opportunities for imagining and implementing equitable change become possible.

The exclusion of certain communities from place-making activities especially extends to young people (Driskell 2002). While education systems tout a demand for students to be civically engaged in their community, there are few prospects for youth to do so in validated ways (Mirra and Garcia 2017). Separated from situated activities where ideas are put into practice, youth opportunity to identify, observe, and engage in learning about community needs and issues is limited. Viewed as 'at-risk' or posing risk to community well-being by adults (Taylor and Hall 2013), young people are often denied legitimate rights to the city (Harvey 2008; Taylor and Hall 2013).

We conceptualize place-making as an intergenerational, pedagogical endeavor in which opportunities become available for youth to analyze the political, social, digital, and economic dimensions of their daily lives (Comber 2011). Issues that seem to loom on a future, global stage – climate change, dwindling resources, corruption – gain urgency and attention when put within a local context (Relph 1976). Experiences in which youth are involved in place-making provide access to professional knowledge and skills related to geography, architecture, city-planning, nature, politics, and technologies (Gruenewald 2003; Ritchie 2015). Products of place-making are cultural and digital artifacts (e.g., maps) that instantiate positionality and agency (Star 1991; Cole 1998) toward possible futures.

Place-making through mobile, location-aware technologies

Given that we are particularly interested in the perspectives of young people as they read and write their community (Taylor 2017), we wrestled with how they authored their stories (e.g., Ehret and Hollett 2013; Wargo 2015) through video data they generated with body-mounted cameras (Pink 2015; Umphress and Sherin 2015). Along with the (re)distribution of agency through youth participation in place-making, ethical dilemmas associated with underserved and Black and Brown youth using location-aware technologies and video cameras were exposed. While extant theory about the technical arrangement of how we should approach collecting relevant data through camera-use guided our practices (Hall 2000), our analysis of student activities focused our attention on the

unintended outcomes of such technical arrangements with underserved communities. More directly, we repositioned our analytic lens to attend to notions of surveillance and the technological gaze associated with place-linked sociotechnical assemblages (Foucault 1975; Vossoughi and Escude 2016).

Foucault's (2009) thinking about governmentality, the panoptic capabilities of government surveillance, guided our understanding of how participants constructed the purpose of camera and location-aware technologies in our design study. Foucault understood 'governmentality' as:

> the ensemble formed by institutions, procedures, analyses and reflections, calculations, and tactics that allow the exercise of this very specific, albeit very complex, power that has the population as its target, political economy as its major form of knowledge, and apparatus of security as its essential technical instrument. (108)

According to this logic, technical instruments like cameras not only play into the hands of broader sources of power, they become incorporated into 'technologies of the self' (Foucault 1988), imperceptibly regulating people's conduct through the threat (real or imagined) of constant surveillance. Governmentality works effectively from a perspective of state sovereignty because it can even convince people *to police themselves and each other*, further securing the state's interest in population control (Foucault 2010; Stalcup and Hahn 2016). However, the governed can resist governmentality by leveraging these same powerful 'tools of truth,' (in this case cameras); people define new 'counter-conducts' (Foucault 2009, 201) potentially organizing a new rationale for governing and a new relation between individuals and ideological structures.

As mobile, wearable, and location-aware technologies become more commonplace, the tensions between personal camera-witnessing and government surveillance require examination. For example, the presence of police dashboard-cams may have been borne from a desire to track unlawful behavior, but in recent years mobile cameras have developed into a tool of accountability for the public to record police/state violence (Harris 2010; Andén-Papadopoulos 2014; Stalcup and Hahn 2016). Another example relates to GPS technology: once used exclusively by the military for strategic operations, now available to consumers for fitness tracking (Lee, Drake, and Williamson 2015). The mobile app, Strava, which provides its users the route and activity of their exercise, has recently posed a threat to US soldiers in the Kandahar Airbase in Afghanistan (Sly 2018). After soldiers (and 27 million other users all over the world) recorded their jogging paths, Strava produced a global heat map with their data that mapped the roads in and around the military base for public consumption.

Amidst these tensions, young people's capacity for making real and timely impacts in neighborhood-to-citywide change has increased with the accessibility of mobile, locative, and social technologies (Tate IV and Hoegrebe 2011; Tate 2012; Taylor and Hall 2013). The past decade has seen rapid growth in development and distribution of location-aware technologies (e.g., GPS in mobile devices), digital mapping tools (e.g., Google Maps, Open Maps), and tools for spatial analysis and modeling (e.g., QGIS, MapBox, mobile augmented reality). These technologies create new opportunities for linking data on personal mobility with a growing variety of spatially organized, open, and large-scale data sets (Kahn and Hall 2016).

However, consumers, including school-aged youth, do not intuitively know how to use these tools or diverse sources of geospatial information to influence community well-being. With instructional support, users develop *locative literacies* – place-based, digital modes of understanding – to author new arguments about one's city (Taylor 2017). In developing locative literacies, youth use geospatial tools to bring visibility to perspectives and place-based experiences unique to adolescence – life as a student, non-driver, usually unemployed and/or on tight budgetary constraints, yet craving independence and mobility (Taylor and Hall 2013).

Tate's (2008) landmark study used geospatial and place-based technologies to reveal, through GIS, the geography of opportunity accessible for young, Black males living in urban settings. Since publication of this study, educational designs in math, science, and social studies (e.g., Rubel, Hall-Wieckert, and Lim 2017) have leveraged geospatial tools to support youth to collect and analyze data within and about home and school communities. How best to use these efforts

as a way of authentically connecting public high school curricula to ongoing city development remains a question, especially in towns situated in rural regions (Gieryn 2000; Gruenewald 2003).

Study background

A place-making curriculum: mobile city science

The MCS curriculum has been one effort to connect youth learning in the classroom to ongoing city development conversations in two major US metropolitan cities. Within the first city, youth participants were all African-American and in their freshman year of high school. Within the second city, participating youth were all Immigrant students, having not lived in the country for more than three years, and in various years of high school.

MCS teaches and engages young people in new forms of data science (e.g., Makar and Rubin 2009; Loukides 2010; Berman et al. 2016; Philip, Olivares-Pasillas, and Rocha 2016), especially around collecting and interpreting spatial, real-time, and dynamic data. These data included geo-located photos, video-recorded interviews with local stakeholders, waypoints, pathways (using GPS devices), and written reflections. Youth used GIS to visualize and analyze their data and create themes and arguments around 'smart,' youth relevant community development (Taylor and Pinkard 2017).

Our ultimate aim was to disrupt an absence of youth input in neighborhood and community development processes, using the power of spatial data and visualizations that young people create about their communities (Enyedy and Mukhopadhyay 2007; Radinsky 2008; Polman and Hope 2014; Rubel, Hall-Wieckert, and Lim 2016) as a ticket for entry into ongoing policy and planning conversations. We strongly believe that, as long as youth ideas go unheard, leaders and adult community stakeholders have an incomplete picture – and are missing potentially transformative solutions – regarding current issues (e.g., mobility deserts, youth employment opportunities, inequitable resource allocation within a city).

Much of the research on youth civic participation builds upon work problematizing the false separation between *inside schools* and *outside schools.* Scholars have argued that such a discourse privileges teaching in the classroom (Leander, Phillips, and Taylor 2010) and diminishes homes, part-time jobs, community centers, and churches as sites of extraordinary youth development (Gonzalez, Moll, and Amanti 2006; Heath 2012). The dominant discourse would have us believe that classroom learning is fixed and culturally neutral. Yet, MCS offers a sociocultural comparative lens which shows that learning out-of-school is dynamic and a culturally competent supplement to in-school curricula through focused education design work related to civic participation (Banks 2008).

Two examples illustrate the insightfulness of youth when engaged 'as partners in public work rather than objects of policy' (Kirshner 2015, 5). In one city, students using GIS found a disproportionately low number of youth employment opportunities in the 15-block radius surrounding their school. They connected this finding to the lackluster vibrancy of the neighborhood and the overall aging population they observed in on-the-move data collection activities. In a conversation with educators and clergymen, students argued that promoting business development in the area, especially places that employ adolescent workers, would keep young people around the neighborhood during afterschool hours and involve the youth in contributing to the livelihood and activities of the community.

In an example from another city, a group of students ground-truthed existing bicycle maps of the community and found them inaccurate and dangerously misleading. They mapped alternative, safer bike routes and shared these with stakeholders. Their argument hinged on visualizing uneven distributions of alternative transit resources among boroughs (one receiving the most resources by far). And, their artifacts (re)centered youth perspectives as important voices in place-making.

With this sociocultural comparative lens, we perceive learning within MCS as occurring through altered relations between youth and the institutions and communities in which they interact (Cole 1998; Rogoff 2003; Jurow and Shea 2015). Learning at the scale of the individual necessarily

changes any learner's relationship to the community (Lave and Wenger 1991). Thus, all of the design and analysis decisions for this work were guided by making interactions visible and changeable among young people, educators, professionals, schools, and other public institutions. Individual students learned locative literacies alongside communities learning new ways of including youth perspectives and skills, in participatory processes.

Study design

We situate this study alongside work in the learning sciences and in cultural geography that designs for youth to meaningfully participate in processes of civic engagement, social inquiry, and political change (e.g., Gutiérrez and Vossoughi 2010; Mitchell and Elwood 2013; Jurow and Shea 2015; Bang et al. 2016; Taylor 2017). Our technologically oriented approach to youth civic engagement was multi-sited (Marcus 1986) and based on the idea that context-specific change processes ought to involve the spread of 'signature tools' *with local adaptations* rather than scaling-up interventions irrespective of place-specific practices and histories (Kirshner and Polman 2013). A critical aspect of the study design, then, involves understanding how local adaptations arise from moving MCS from city to city, and how these adaptations become consequential for youth understanding data science and developing locative literacies.

MCS is designed around *mobility as both the means and content of learning* (Taylor and Hall 2013; Taylor 2017). The first key design principle was that, in order to re-place learning at the scale of the neighborhood, youth needed to be out moving around the city. The critical importance of youth mobility – its limits as well as its potential for creating learning opportunities – sits at the heart of MCS. This means that youth not only had opportunities to use mobile and location-aware technologies *for* learning activities (i.e., using a GPS device to locate a nearby point of interest or neighborhood asset) but *as* the learning activity most consequential for making connections to place and for making these connections visible. As such, movement, mobility, and continually re-placing learning through walking or riding around the city, constituted a central design principle. As designers, we were aware that being out in the city makes you wonder why things are the way they are and to consider how they came to be that way (Wolfe 2017).

A second and related design principle involves questions that start to arise as a result of being confronted with the complexities and contradictions of built space. In order for youth to identify local issues of concern (to them) and to more deeply consider actionable alternatives, they need to *document what they experience as important*. This happens in MCS through a series of youth-enacted mobile methods designed for technology-supported collaborative learning (Taylor and Silvis 2017). Rather than determining for them what data are consequential, our design of mobile, geolocative, community-based activities left it largely up to the youth to find a heading – both in the neighborhood and in their analysis of location-specific issues. Through navigating to historically significant sites, talking to community members, following pathways, and looking for juxtapositions, patterns, or contradictions, MCS youth were in a position to draw on narratives of place from their perspectives in their crafting of claims, arguments for change, and design for innovative alternatives.

These principles were put into practice through designed activities and local adaptations. For the purposes of data collection, youth created free-recall maps (Hart 1977) depicting their neighborhoods (pre- and post-implementation), completed walking audits of the neighborhood with maps in hand, and conducted historic geocaches of the neighborhood using GPS devices to locate points of interest. These activities were all video recorded by facilitators and researchers, and many youth wore GoPros™. Local adaptations[2] were critical innovations in MCS, particularly insofar as the curriculum takes seriously the need to not only ground learning and inquiry in local concerns and endogenous theories (Stevens 2010), but also to remain flexible as it travels so that it may be sensitively attuned to local conditions of action (Barab and Luehmann 2003; Kirshner and Polman 2013). Other designed activities involved youth's analysis and culminating public presentations of their

investigations in community design charrettes (also video recorded[3]), all of which foregrounds the central role of co-design for this study's researchers *and* participants.

Analysis

The research question for this study was as follows: How do mobile and location-aware technologies in public-facing educational designs surface youth agency and resistance in processes of place-making? We analyzed several hours of video recordings that were collected during each implementation with high school students. Analyzed video records were from both researcher cameras and cameras that youth participants wore during on-the-move activities. We content logged these videos. As a multi-sited research team, we did collective readings of these logs, annotating them live in Google Docs and highlighted important moments we wanted to review in the film (Jordan and Henderson 1995). Research team members nominated moments of interest that we then watched together. We discussed these moments in detail, taking notes and creating high-level interpretive themes of what we were seeing. We created a set of analytic memos (e.g., Saldaña 2015) after each collective viewing session. We looked across the analytic memos and developed a more detailed set of themes that were site or implementation specific (i.e., certain themes were only important in one city), and themes that were prevalent throughout all implementations (Boyatzis 1998). Faciliators and researchers from each site and an evaluator from a fourth institution joined the analysis sessions.

To maintain the importance of place and understanding one's local context, our analysis focuses on 'pivot places' (Ellsworth 2005) that highlighted tensions in place-making explicitly linked to technologies in use (see Figure 1). Pivot places:

> strive to create the experiences of the learning self by putting inner thought, feelings, memories, fears, desires, and ideas in relation to outside others, events, history, culture, and socially constructed ideas. (37)

Moments in which young people were externalizing their affective stance *in relation* to the design-in-place guided our 'looking' into the data corpus. We chose several pivot places for micro-analyses of

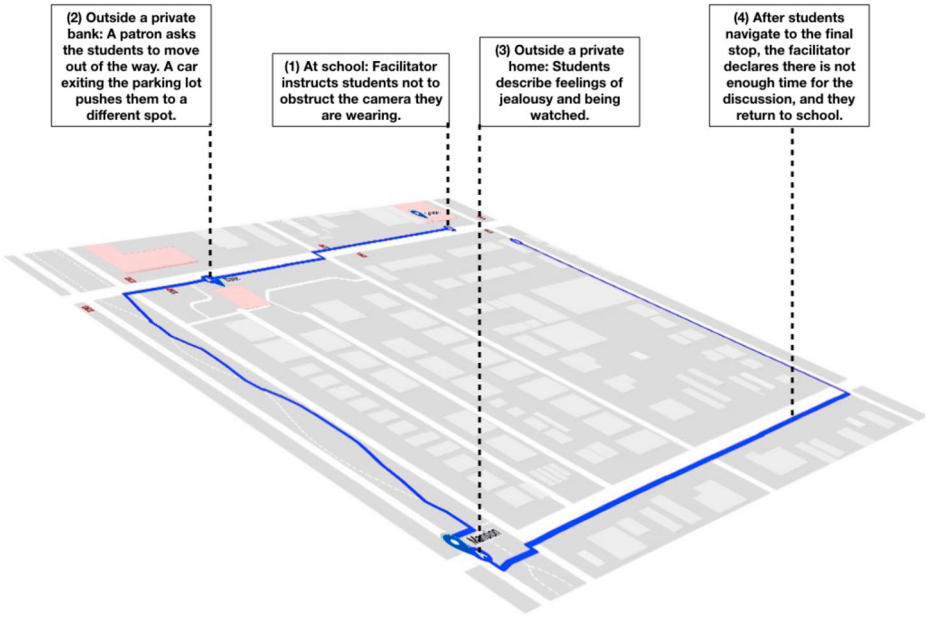

Figure 1. This image is an example of how we identified and examined talk and action in relation to the place and pathways we traveled (pivot places). The numbers in the top left corner of each text box mark the temporal ordering. For analysis, we used a base layer map with much more spatial information; this map is simplified and anonymized for publication.

talk and action and looked for structural similarities and differences in how young people reacted and co-constructed meaning within designed activities. Often, it was useful to map pivot places, linking transcript and video stills to a map of the neighborhood to visualize how the flow of the conversation followed a geographic pathway. This process also helped us see if the process of negotiating tensions between re-placements and dis-placements was at all influenced by the location.

We collected dozens of pivot places for closer analysis. One example of a pivot place in our corpus is youth noticing a large house with a fence and security cameras; some participants remarked they wish they 'had something like that' with others expressing feelings of surveillance. Another example of a pivot place is a young person noticing garbage on the street as a problem, taking photos of trash, and recommending that more trash cans should be strategically located around the city blocks. One final example is a student noticing a basketball court during a walk and commenting that he did not have a court like this to play on in his 'home country.'

For this article, we culled through pivot places, selecting a smaller set in which mobile, location-aware technologies figured prominently in how youth made sense of the design-in-place. In so doing, we found that the tools-in-use surfaced tensions in how we designed 're-placements' of learning, and subsequently youth's participation and sense-making. A more comprehensive list appearing in Appendix represents which kinds of re-placements in our designed activities begot dis-placements by youth. The first italicized verb is an activity we designed for and the second italicized verb is what youth did within the designed space. In the Findings section, we will focus on these two tensions between re-placing and dis-placing learning within a place-making project.

- *Documenting* community life led to youth *self-censoring* their participation.
- *Documenting* community life led to youth *witnessing* with the camera.

We construct a comparative analysis between the two implementations with high school students to highlight how various constructions of the same tool, the wearable camera, within the same designed activities, were similar in that they highlight youth agency and resistance. Our findings serve to fundamentally improve the Mobile City Science curriculum for future iterations and consider the possibilities of African-American and Immigrant youth place-making with mobile and location-aware tools more broadly.

Findings

Our findings focus on youth's different constructions of mobile technologies and how these constructions surfaced both a *govern-mentality* (Foucault 2009) of youth participants and an ethic of *witnessing* (e.g., Andén-Papadopoulos 2014) toward a more equitable spatial future. Regarding governmentality, we borrow from Foucault's (2009, 2010) work to describe how youth participants self-censored their participation because of the camera's presence. Youths' self-censorship was a response to their awareness of being observed or managed by powerful (often invisible) forces, what we are calling their govern-mentality. Whereas Foucault's governmentality referred to the dispersal of power throughout institutions and larger social structures, our use of govern *(hyphen)* mentality foregrounds how this same power becomes located *within individuals' thoughts and actions*. This 'mentality' of 'being governed' sometimes leads to a critical awareness of one's subjugation to (or complicity with) dominant ideologies, opening up possibilities for establishing new relations of power.

We use witnessing to talk about the ways in which youth purposefully directed their actions for the camera to record images that might eventually influence an audience. In asking youth to use wearable cameras to document their communities (re-placing learning), participants became aware of the problems and possibilities of the technological gaze of the cameras. Again, this awareness of the technological gaze was a dis-placement because youth considerations of the technological gaze were temporally removed from the designed activity structure of noticing and documenting community life (more on this below).

Framed both cautiously and anxiously, youth in both implementations asked the following questions of the video records they were collecting: Who will see this video? Who will listen to this? How could this form of data change my life and in what ways? How does the wearable camera make me see my daily life differently?

Importantly, these questions were *youth-initiated* and not a planned component of our designed activities (but will become an integral part of future iterations after this analysis). However, what *was* planned was for facilitators to inform students that whatever data they collected would also be viewable to the entire research team, including the Principal Investigator (lead author) at a large research institution with whom the youth did not meet until at least halfway through the implementation. These statements positioned youth (and adult facilitators) within a complex nexus of educational and research institutions (e.g., high schools, partnering youth-serving organizations, a public university) that comprises a multi-sited, community-based design project. While our own social positionality was not the focus of our theoretical framing, it became highly visible and important in our findings (Vakil et al. 2016). We argue then that these emergent, youth-initiated questions about wearable cameras surfaced youth agency and resistance within the context of our design study, but also in relation to the broader possibilities of place-making in their specific communities, in the current sociopolitical climate.

The spatial production of self-Censorship on-the-Move

Though youth participants in both implementations asked similar questions of the wearable cameras, the *stance* of these questions differed dramatically. In one implementation, facilitators and youth quickly identified recording devices as tools of surveillance (rather than research tools), co-agents in maintaining a govern-mentality of (white adult) authority. On the first day of youth wearing cameras to notice and document community life, a white male adult facilitator, reminded the exclusively African-American students that everything they said 'will be recorded' as they moved through the neighborhood. Another facilitator, this time a white woman, prodded students to make sure the camera was always on and 'counting.'

From the onset of the activity designed to notice and record community life, facilitators, Black and White, established the video data, not as objective or 'raw' footage, but as having agency and a *powered* gaze on the activities and the participants themselves (Vossoughi and Escude 2016). One student's description of how another student looked like a 'Unabomber' with the camera strapped to him, highlights a particularly sinister construction of this tool; wearing the camera was not a role of 'being with' but as sacrificing one's self for some greater, malevolent force. This student's framing of camera technology-as-terrorist agent also conjures contemporary narratives about the fraught relationship between citizenship, surveillance, and national security.

Within this context, students censored their own participation in the curriculum, thinking not of the specific place and time but who and what *could* be listening and seeing. Youth were frequently heard reminding one another not to talk about particular topics while the camera was recording, not to curse, and not to break norms of comportment when moving around the city. Immediately before an on-the-move activity to document neighborhood assets, a student asked her classmate, 'Why are they having us do this shit?' and then immediately called for a deletion of the video record. The same group of students later whispered to one another in the hopes that their words would not be captured by the camera's audio input. When a facilitator asked casually whether or not the students were enjoying their high school, a young woman warned her peers to 'not say anything about that on video.'

While the students attended a school whose mission aligned with Black Power, and was located in a predominantly Black community, students felt the white gaze upon them, maintained through wearable cameras perhaps especially *outside* the classroom. Facilitators even found themselves in the unusual position of anticipating what university researchers would and would not want to see and hear from youth-collected data that would eventually make its way into our lab for analysis.

The spatial production of govern-mentality that is so often discussed and analyzed *within* classrooms migrated beyond the classroom walls in this instance. Such an awareness may have prompted one student to ask a white facilitator on the second day of the study, 'Why do we need cameras?'

This is not to say that youth participants were always censoring their engagement because of a constant camera wariness; at times they forgot about the recording camera, differently immersing themselves in on-the-move activities in the neighborhood. This forgetting often took the form of a youth privately texting on his smartphone directly in view of the camera strapped to his chest. Or, in relation to the objectives of the curriculum, youth spoke candidly about the ways in which neighborhood spaces made them feel: the urban animals (e.g., squirrels, pigeons) made them feel threatened; the imposing, fancy home made them jealous; the use of fences made them feel excluded. However, these moments of candidness were often interrupted by reminders of being surveilled. Residential cameras pointing onto the street, adults in the neighborhood asking youth to move out of the way, and guard dogs barking at them to keep moving were all specific ways in which govern-mentality was maintained as youth walked through and documented the city.

Wearing a camera on – the-move represents a distinct gaze or perspective on an activity from that captured when filming with a smartphone (Umphress and Sherin 2015; Pink 2015). The camera is following a person's body, not the extended arm and hand, and the filmer cannot see what the camera is filming on a screen (see Figure 2). Action cameras, in other words, support hands-free, eyes-free filming so the filmer can be fully immersed in the activity being recorded. In essence, the camera's gaze and that of the filmer/wearer are fundamentally separate, one gaze possibly approximating what the other sees, but not necessarily. (Think of the filmer/wearer turning her head to look behind her body or looking up to view something in the sky while the camera does not move.) Such separateness complicates the 'point of view' label given to these tools. While the filmer never actually knows what is within the frame of the video, she can feel certain that her own image is not included.

Figure 2. These three images show the differences between filming with a wearable camera worn on the chest (A), a wearable camera worn on the head (B), and a smartphone camera held by hand and outstretched arm (C). These embodied differences have vast implications for the filmer's command on the recording. We grabbed images of White men, here, to support some Black students' refusal of the white gaze upon them in research endeavors.

This sense of anonymity is lost, however, with the understanding that the wearer's voice is the most audible recorded sound. In this regard, escaping the frame or the data record is difficult as the device is literally strapped to one's body. The technological gaze is both unknowable and inescapable, opening-up a counter question to Star's (1995) provocation on invisible work: in an era of intensifying surveillance and white gaze on Black and Brown bodies, how might one go about making visible work *invisible*?

The role of body-cameras in self-censorship underscores the complicated relationship between visibility and power acting throughout MCS activities. As youth wondered aloud about the possibilities of escaping or deleting the video recordings, they were also resisting complicity in a panoptic logic of surveillance. An open question for youth was: *what rights do I have to control what can be seen or known here?* The ways in which wearing a camera gets constructed by facilitators influences how youth participants can feel like documentarians or feel like walking tripods. If the facilitator is the one turning on the camera – or at least reminding the wearer to turn it on and let it run, or to keep the frame clear of unwanted obstructions – the operation of filming resides with the researcher and the wearer's role resembles that of a walking tripod. If, however, the camera's operation is up to the wearer, in that facilitators give youth license to turn the camera off and on and move closer to important locations and conversations, the wearer's role approximates that of a documentarian. The 'ownership' status of the resulting video record in these two instances differs accordingly. When youth are the ones with the discretion to decide (or to delete) what gets seen and recorded, their govern-mentality opens up possibilities for new forms of agency and relations to power.

Witnessing as a research endeavor

Youth also constructed mobile cameras as a tool for witnessing, or making an (audio)visual record of their locations to affect change in their communities. Witnessing on-the-move, in community spaces, is usually aligned with smartphone filming rather than with wearable cameras, for some of the reasons stated above. However, even with the fundamental differences between filming with a smartphone and doing so with a wearable camera, some youth participants promoted camera wearing as a way to see and change community issues. We use the term witnessing to connote some of the ways youth took up the mobile camera in MCS; witnessing 'places lived bodies in tension with the prevailing social order' (Koukal 2010, 109). Witnessing connotes how youth took-up a moral imperative to use their video records for some social good. As one youth participant stated, 'We're doing the research, we're going to be growing-up and living in this area, so we want our city to see the way … we want our city to grow up the way we want.'

As an alternate way of setting-up camera wearing from the previous section, a facilitator told a youth participant to 'document whatever you want' and provided guidance on how to know if the camera was on (i.e., the time advances on the top). This orientation to the mobile cameras positioned wearers as agentive operators of the technology (Vossoughi and Escude 2016). In our analysis, youth were found positioning their bodies so the camera could record something interesting, or reminding a peer to check to see if the camera was running. In an outdoor conversation immediately following a neighborhood walk, a youth participant reflected on the wearable camera (as he was still wearing it):

> You gotta pay attention to everything because you're – you have to make sure the camera looks at something, that you don't obstruct the view. So, I think it was a little interesting, uh, I noticed a lot of things I didn't before, just because I was paying attention to everything. So, when you're with a camera you're basically looking at everything you see, EVERYTHING … So this makes me think different.

Here, the camera gaze and that of the participant substantively intersected. The camera focused his own perspective *on* the world rather than surveilling his actions *in* the world.

At the same time, he still harbored panoptic desires: looking at everything, seeing everything. Focusing on 'everything' is only possible if you have delegated some of the surveillance to others, one tactic of seeing like the state (Scott 1998). Yet, far from a pawn of predetermined state interests,

this student 'thinks different[ly]' about things when using a camera. One thing he considers is making sure 'the camera looks at something,' but the nature of that something is up to him. Paying attention to *everything*, then, is not in the service of total state surveillance. Instead, his objective is for *something* significant to fall within the frame; here, the particular significance of what is recorded is left open to the person witnessing.

A second distinction between self-censorsing one's actions as indicative of govern-mentality and agentive witnessing inheres in his statement as well. He notes that, while recording, he is making an effort not to 'obstruct the view.' On the one hand, this speaks to a concern with production values or integrity of the data record, top-down pressures exerted by adult facilitators and researchers. However, he connects quality control efforts with his ultimate goal of noticing and looking at something. This orients his witnessing not around what he *should* see or how he *should* record, but around something that may emerge as important for him to witness. This orientation stands in stark contrast to instances in MCS when students were told by adults not to obstruct the view of the camera (usually when holding their cell phones in front of the lens). Whereas, when self-censoring, students perceived themselves as not only in the frame, but somehow in the way, witnessing opens up agentive possibilities of technology to show a non-present other something important.

In their culminating counter-mapping presentations to local stakeholders (Taylor and Hall 2013), one participant chose to produce and show a film about a public health issue that concerned him: littering. Most students opted to create digital maps as recommendations for future community life, annotating their representations based on observations made using one of the wearable cameras from the MCS toolkit. Instead, this student filmed a walk through his neighborhood with his smartphone, highlighting all the litter on the street. In his presentation, he spoke over the film as it played. He introduced himself by saying that in his three years being in the United States, a problem has persistently bothered him: 'I was walking from home to school and I saw on the sidewalks a lot of garbages and the dirty places that you can see in the video. How it looks so disgusting, right? It's like, a problem of [our community].'

Though the movie was shaky from the walk, the video clearly highlighted the trash littering his pathway, providing evidence for his recommendation for more trash cans along the sidewalks. Notably, his own image was never in the frame though he narrated what he saw as he walked. (Due to technical difficulties during the presentation, we were unable to hear this narration from the camera phone.) This form of camera witnessing is representative of a 'framework of relationality' (Guerin and Hallas 2007, 10) that invited an audience into an issue and potential problem-solving process using a digital (mobile) film. As viewers of the film implicated in this community problem (having seen it), they suddenly shared the burden of addressing the 'disgusting' trash with the youth participant. Harnessing mobile technology supported his form of agency: taking an activist stance that (maybe) fomented community concern and (possibly) spear-headed collective response to an environmental/public health problem.

This stance as community advocate, aided by the mobile phone footage, was a far different version of a recommendation than in his earlier design intervention. The student's original suggestion for mitigating the littering problem was to impose fines and to strengthen penalties for tossing garbage in the street. Later in his MCS design project, he modified this proposal, incorporating the installation of more trashcans on the streets. In a subsequent on-the-move activity (while wearing a video camera), he discussed with a researcher how he saw a future for himself in city leadership, where he could directly oversee public health issues related to waste management. Then, at the final design charrette meeting, he shared his documentary video with the audience, and his role shifted to community advocate and educator. For him, living well in the city was no longer only possible through punishing people who do not comply with the law, as in forms of disciplinary power (Foucault 2009). His new tactic, facilitated by camera witnessing, was to adopt the stance of a vocal public advocate for collective community change.

Discussion

These constructions of wearable cameras highlight different instantiations of youth resistance and agency in public-facing educational designs that leveraged mobile and location-aware technologies. Our cases are situated in different contexts, influencing how youth, as political agents in their own communities, understood and used the tools. In one context, these tools were highly contentious and intrusive for young people, particularly for those who had lived a lifetime negotiating the white gaze and were coming into their own as Black young adults in neighborhoods being gentrified by whites; the technological gaze instrumentalized govern-mentality in a society that oppressively displaces its non-white citizens. In the other context, mobile tools were accomplices in noticing and allowing others to see relevant issues in the community; often these noticings were in contrast to how life was in their previous countries. For Immigrant youth who had not lived in the United States for more than three years, mobile technologies for community documentation connoted possibilities rather than actualities. They harnessed their cameras as powerful tools for enacting change, rather than wearing devices of surveillance on a harness.

In both cases, young people recognizing the *powered* position of mobile cameras led them to respond with an equal measure of agency. Whether it be resistance to the project of place-making (at least to how we designed and implemented it) or reveling in its potential, youth enacted versions of civic participation in public spaces. Obviously, these enactments varied from models of settler-colonialist civic participation upon which current notions of place-making are based (e.g., Seawright 2014). The precarity of being Black, Brown, Immigrant, female, and young in a white, adult male-dominated society meant that the *visibility* of participating in public-facing education designs felt uncomfortable and uncertain.

In our attempts to *re-place* learning during the school day, youth participants sometimes responded by dis-placing their participation to times and spaces far beyond when and where we expected. Drawing parallels to the Unabomber or to basketball courts in Uzbekistan, for example, dis-placements were essential for youth sense-making about the role of the technologies and the purpose of place-making more broadly. In this way, dis-placements were not 'bad' or negative unintended outcomes to our designs, but productive tensions in how we set up learning and how young people were agentive and producers of new meanings in that arrangement. These emergent dis-placements signal a need for more thorough engagement between politics, place, and technology in our designs for learning. Positioning youth at the nexus of these interrelated sources of power is a way of disrupting entrenched forms of governmentality, *and/or* doing social science research.

The findings shared in this paper (and others not described here) are making us reconsider how best to make time for and facilitate conversations with youth about the promise and precarity of using mobile technologies for place-making. How can the adults in Mobile City Science be more responsive to youth concerns and what are the alternatives for community documentation that may not involve recording images, locations, etc.? How might forgotten mobile technologies (e.g., paper, pen, clipboards) make that work which youth want to make visible viewable and that which youth want to keep hidden invisible? How can white researchers and facilitators, representing and working for powerful institutions, support youth to fundamentally disrupt notions of place-making that are based in adult, settler-colonialist histories of dis-placing Black, Brown, and Immigrant communities and ignoring young people? We take Vakil et al.'s (2016) statement to heart:

> In order to provide accurate accounts of learning, identity, agency, and development in designed contexts, it is critical to collect and analyze data about the nature and history of human relationships involved in the genesis of design projects, as well as on the negotiation and contestation that occurs between researchers and participants throughout the course of a design process. These processes are always racialized and political and significantly bear on how and why the design project came into existence, how it was sustained, and ultimately what was studied and learned. (196)

Implications and conclusions

The findings of our work have significant implications for social scientists, for educators, and for policymakers. For researchers, it is important to understand the relationship between sources of power at work when young people conduct place-making activities using wearable, mobile technologies. Understanding how students enact and respond to dis-placements is an approach that, we believe, situates students at the center of this conversation, both with education designers and researchers, and among community stakeholders. As such, pivot places, as an analytic construct, provide one lens on place-specific sites of contradiction to disrupt entrenched forms of governmentality that our research may be reinscribing.

Another more literal lens these findings bring into focus is the camera lens. While researchers are critically examining the ethical dilemmas and dangers of using camera technologies to capture youth experience, we see a continuing need to reconsider the utility of our methods. Notwithstanding the obvious point that video methods are not necessarily the appropriate or best way to address all questions, it is incumbent on us to decide whether it is right to contribute more of this type of data to our collective (public) scholarship. At this particular political moment, in light of pervasive concerns about immigrant children's and families' rights to live in global cities, we do not take this issue lightly. Capturing youth learning on video is not an ethically neutral act, and our camera technologies are not impartial arbiters of learning, unbeholden to political agendas. Perhaps in some situations, education researchers should consider a re-placement of 'older' research tools in our designs, rather than using digital ones.

We hope that we have shown practitioners that students took up place-making as an educational project (Comber 2003) which certainly exposes the promise and precarity of using mobile, locative technologies in learning designs. The youth in MCS have shown that these tensions are not easily remedied, worthy of still more attention in future work. Nevertheless, by engaging in place-making activities, the crisis of place in learning and teaching arrangements – , especially in public schools, attended predominantly by Black and Brown youth – provides a version of education that capitalizes on the place-based affordances of some technologies. We invite practitioners and designers of learning to consider how they might open up more spaces for students to recognize and reflect on how places are made and the pivotal role youth play in this constantly changing social/political project. Concomitant with our caveat regarding camera technologies in research with students, not all place-making projects need be digitally mediated. Seeing racialized histories of place is essential for (especially white) analysts, and cameras do many things, but they are not time machines. Centering designs and educational practice around places' (and people's) pasts and visions for places' futures – rather than fixating on the present as it is captured on film – is a key design consideration for continuing this educational project of place-making.

We readily admit that Mobile City Science is not the perfect antidote to education's crisis of place. We do think, however, that this STEAM curriculum offers a strong starting point for public-facing educational designs during a time when 'civic' spaces can be hostile to Black and Brown young people and/or young people *choose* to remain invisible from the white gaze. In this regard, working toward racial solidarity (between students, facilitators, researchers, educators, policymakers, and other stakeholders) as a key component of any place-based educational design should be explicit work throughout (Vakil et al. 2016). Otherwise, govern-mentality will defy designed efforts toward young people realizing their rights to the city.

Notes

1. Because of our findings about youth resistance, our own position of power and privilege (as white researchers), and the demographic characteristics of our participants as doubly or marginalized in threefold (Black or Brown, minors, *and/or* immigrant status), we are not showing images of them nor using specific location names.
2. In one city, the historic geocache was locally redesigned to incorporate interviews with local experts whose insights could help inform youth's understanding (and critique) of powerful sociopolitical forces shaping economic opportunities in their school neighborhood. In another city, the historic geocache was redesigned again,

this time supporting youth to plan their own "historic neighborhood tour" based on findings from research into local history dating back to Robert Moses's development of Flushing Meadows for the 1939 World's Fair.

3. A table of numbers of youth participants and hours of video data is in Appendix.

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Appendix

Video data collected in mcs activities

	Groups of Youth		Youth Participants		Youth Video (hrs)		Adult Video (hrs)	
	Chicago	Queens	Chicago	Queens	Chicago	Queens	Chicago	Queens
Walking Audit (WA)	4	1	15	9	2.5	1	3	2
Youth-led WA	N/A	3	N/A	6	N/A	5.5	N/A	5
Historic Geocache	4	1	15	5	2.5	2	–	2
Community Meeting	1	1	3	6	N/A	N/A	1	1.5
Video Total	–	–	–	–	13.5		14.5	

Designed Re-placements and Emergent Dis-placements

The following list represents which kinds of re-placements in our designed activities begot dis-placements by youth. The first italicized verb is an activity we designed for and the second italicized verb is what youth did within the designed space.

- *Noticing* community assets and issues led to youth *historicizing* observations from their experience of living elsewhere.
- *Following* human and non-human pathways led to youth *re-viewing* their mobility on maps.
- *Sensing* the different modalities of neighborhood life led to youth *imagining* future possibilities for the area.
- *Occupying space* led to youth *contesting* rights to public places.
- *Documenting* community life led to youth *self-censoring* their participation.
- *Documenting* community life led to youth *witnessing* with the camera.