

Emotion mapping: Using participatory media to support young people's participation in urban design

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ABSTRACT

Young people's participation in urban design is usually either highly restricted or excluded altogether. This paper reflects on a pilot project that explored how communication technologies can be used to support young people to shape the development of their city. A research team at Western Sydney University developed an emotion-mapping platform (invisiblecity.org.au) and offered creative media workshops to young people in Western Sydney's City of Parramatta to support them to explore different ways of expressing emotion through text and image. The study found that emotion mapping provides opportunities to open up discussions about affective experiences of the city that can be integrated into urban planning. However, we argue that such initiatives must overcome the challenges associated with tapping into, making sense of, and amplifying complex, dispersed and always changing everyday media practices if they are to be embraced by young people in ways that ensure they are inclusive and representative. Further, it is critical that initiatives work out how to encourage urban developers to hear and value young people's perspectives on urban environments and how they use them.

1. Introduction

Everything imaginable can be dreamed, but even the most unexpected dream is a rebus that conceals a desire or, its reverse, a fear. Cities, like dreams, are made of desires and fears, even if the thread of their discourse is secret, their rules are absurd, their perspectives deceitful, and everything conceals something else.

Italo Calvino, *Invisible Cities*, 1972.

To imagine a generic city is to bring forth images of uniform high-rises, frenetic highways and crowds of workers in identical suits. To read a city's map is to follow roads and intersections and locate landmarks and places of interest. Yet cities are also spaces we experience and feel. Inhabitants hold cities in their imaginations, in their aspirations and in their memories. In this way, intangible aspects of a city can contribute to the creation of what Ben Anderson has called 'affective atmospheres': that is, 'dynamic qualities of feeling' that 'animate or dampen' a sense of ongoing life in a place (2014: 140).

In 2015, the Institute for Culture and Society at Western Sydney University was invited by the Parramatta City Council to play a role in generating conversations about Parramatta's future development. The City of Parramatta is located in Western Sydney, which has been home to the Darug people for over 60,000 years and has significance for other Aboriginal and Torres Strait Islander nations. It is a linguistically

diverse, historic urban centre, approximately 25 km west of Sydney's Central Business District (CBD). The local population has a median age of 35, a figure that sits below the national average (Parramatta City Council, 2017). Parramatta has a highly diverse population: more than half its residents speak English as well as another language, and one third were born overseas. The city occupies a vital role in Australia's history as the first seat of government and is home to historic sites of national and global significance. The Greater Sydney Commission calls Parramatta 'Australia's next great city', and a '14 billion-dollar tiger economy' whose population is growing at 2.5 per cent a year: twice the rate of the State of New South Wales (City of Parramatta, 2016). The NSW Government's (2014) Metropolitan Strategy, 'A Plan for Growing Sydney', highlights Parramatta's key role in providing the homes, jobs and businesses for Sydney's future and states that Parramatta will soon host Sydney's second major CBD. Indeed, at the time of the study, a large-scale, decade-long process of 'urban renewal' had just commenced, providing a timely opportunity for residents and those who work or play in Parramatta to contribute to envisaging the emergent cityscape.

The research team responded to Parramatta Council's invitation by developing a project that was funded by the Young and Well Cooperative Research Centre (2011–2016), an Australian-based, international research centre that united young people with researchers, practitioners and innovators from over 70 partner organisations to

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explore how young people's technology practices could be mobilised to support their mental health and wellbeing. The project asked what role media and technology could play to ensure the voices of young people aged 12–25 were heard in urban design and development.¹ The benefits of incorporating young people's voices into policy on urban development are recognised internationally among researchers and non-government organisations (NGOs) (for example, Bartlett, 2002; Bartlett et al., 1999; Collin and Swist, 2016; Vromen and Collin, 2010). In Australia, while some policy documents urge that planning processes take young people's perspectives into account, to date there has been little research that has focused on their affective responses and experiences. With this in mind, the *invisibility* project is a creative intervention designed to open up a conversation about the less visible qualities of a city: feelings, memories, experiences, emotional connections and aspirations.

To bring these invisible aspects of the city into focus, the research team developed a web-based digital platform in collaboration with a team of technologists from Ushahidi² in Kenya. The platform (invisibility.org.au) allows young people to report, map and explain – both visually and textually – their emotions in relation to different parts of a city. When users log on, they are geo-located and then asked to respond to a series of questions about how they feel in this place, why they come here, with whom they come here, and how often. In order to capture the complexity of feeling places can generate, users can choose up to three emotions from a list of twelve. To develop this list of twelve, the team worked with a group of 28 students from Western Sydney University to refine the extensive list provided by the Circles of Emotions project (<https://circlesofemotion.org>). The *invisibility* project retains the four key categories of the Circles of Emotions framework but renamed them, with input from the students, to render them more youth-friendly and relatable.

The platform allows young people to share images of the locations they are reporting on as well as to see how the spatial arrangement of their emotions aligns – or not – with those of other participants. Users have control over how they want to view or sort this information. For example, they can choose to see only posts from contributors according to age or gender, or to view the map according to the clustering of particular emotions. In these ways, the platform encourages user reflection and interpretation. The platform also asks users to identify ways that specific places might be improved, thereby crowdsourcing information that can be channelled directly into urban planning processes. The team is currently in the process of developing a mobile app that extends the capabilities of our initial web-based platform. This app will initially be made available in English and Spanish and a number of deployments in different locations are planned (see <http://www.invisibility.org.au>).

The project was guided by research and evidence pertaining to young people's use of mobile phones in Australia. While just one in five 10-year-olds have their own smartphone, ownership increases rapidly with age: one third of 11-year-olds, over half of 12-year-olds, three quarters of 13-year-olds and an impressive 91 per cent of 14–17-year-olds are smartphone owners/users (Roy Morgan Research, 2016). The design of the intervention acknowledged that young people will likely interact with the platform on their phones while moving throughout the city. As such, the team aimed for interactions with the platform to be quick and easy, and to dovetail neatly with the ways young people use mobile phones in ambulatory settings (Devitt and Roker, 2009). Larissa Hjorth (2015: 22) argues that the use of camera-phones and related

geo-tagging practices create performative cartographies of place that 'overlay the visual with the ambient, social with the geographic, and emotional with the electronic'. Mobile phones, she says, mediate and re-present as well as reframe the experience of the urban while embedded mobile-phone practices help make sense of everyday life (Hjorth, 2015: 26).

In developing an emotion-based framework for our project, we drew upon geographer Yi-Fu Tuan's (1977: 32) influential work on 'space and place', in which he argues that 'space' evolves into 'place' as people come to know it better and endow it with value, while places acquire greater and deeper meaning through 'the steady accretion of sentiment'. Tuan distinguishes people's experience of place into two broad categories: 'places as public symbols' and 'places as fields of care'. 'Public symbols' cater to the eye: they are instantly recognisable and command immediate attention (for example, formal gardens, monuments, public squares), while 'fields of care' often 'do not seek to project an image to outsiders' and instead come to be known after prolonged experience and therefore usually evoke affection (for example, a park, corner store or street corner) (Tuan, 1977: 412). A sense of place, Tuan argues, 'depends ultimately on the human emotions that vibrate in a field of care' (1977: 421). Thus, the team sought to assess whether emotion mapping might provide a way to highlight the fields of care recognised by young people so that they, in turn, can be acknowledged, nurtured and supported.

By supporting young people to report on their emotional responses to Parramatta, the *invisibility* platform was able to make visible their 'fields of care' and their experiences and representations of 'affective atmospheres'. Doing so raised questions about how fields of care and affective atmospheres manifest for young people. By considering affect as an outcome of encounters between bodies, places, objects and technologies, we were able to ask: What might be needed to support positive, meaningful and engaging atmospheres for young people in Parramatta?

We first examine how young people's participation in urban design and development is currently understood by policymakers and scholars. We then consider the role for participatory research and digital mapping projects, particularly emotion-based mapping, by exploring findings from other emotion-mapping research projects. Finally, we analyse findings from the *invisibility* pilot project to critique the potential of emotion mapping as an approach to support young people to contribute meaningfully to urban design and development.

2. Young people's participation in urban development

It is important to remember that young people are citizens too, and they are active and engaged participants in public space. Lúcio and I'Anson argue that the involvement of young people in decision-making as members of a community empowers and enlivens democratic processes (Lúcio & I'Anson, 2015). Yet conversations and planning about the design and development of cities usually take place without young people's input, resulting in policies that fail to account for the 'varied and unique voices' of young people (Robinson, 1999: 33). One reason for this is that young people are sometimes viewed as a disruptive element that interferes with adult enjoyment of the space (Travlou, 2007). This can result in exclusionary practices such as removal from shopping centres for 'spurious reasons which would not be applied to older people' (Youth Justice Coalition, cited in HREOC n.d.).

But for the most part, young people are relegated to a position of *potentially* active citizenry, despite already having both the ideas and the energy to contribute (Chawla and Heft, 2002). Joana Lúcio and John I'Anson argue that such an approach treats children and young people as passive 'bystanders', rather than active agents of democracy (2015: 130). However, Sarah Elwood and Katharyne Mitchell (2012) have pointed out the important role that geographers have played in recognising children and young people as political actors through looking at how they inhabit, negotiate, interpret and build knowledge

¹ This collaboration involved Western Sydney University researchers at the Institute for Culture and Society (ICS) and the School of Humanities and Communication Arts.

² Ushahidi is a website created in the aftermath of Kenya's disputed 2007 presidential election. The site is a crisis-response entity which collects reports from people on the ground via SMS, email, web apps, and Twitter in order to organise rapid response across numerous agencies. The site documents ongoing changes in the field with real-time mapping and visualisation tools.

about everyday spaces. In their participatory mapping project, Elwood and Mitchell supported 10–13-year-olds at a low-income, ethnically diverse school to map their everyday geographies over an entire school year as part of an afterschool program. The project sought ‘to draw out shared or different perceptions and experiences of the school, its surrounding neighbourhood and the children’s home neighbourhoods’ (Elwood and Mitchell, 2012: 2). Drawing on Michel de Certeau’s concept of ‘spatial stories’, they argue that supporting children and young people to tell their own narratives about the places they inhabit allows them to imbue these places with meanings, attributes and norms that are both personal and political. The spatial stories created in the project ‘challenged, rewrote, and sought to erase a wide range of conditions, characterizations, and even emotions imposed upon the children, or which imposed boundaries or limits on them’ while also providing new openings for conversations with young people (Elwood and Mitchell, 2012: 6).

From a participatory design perspective, those who are destined to use spaces, places and material objects should ‘play a critical role in designing [them]’ (Schuler & Namioka, cited in Hagen et al., 2012: 5). Hence, if young people’s perspectives are to be sought, then the form that this dialogue takes would benefit from incorporating their styles of communication. As Magee et al., forthcoming 2019 note in relation to children³:

Children’s participation in the city is not merely a matter of bureaucratic consultation; it requires dedicated attention to developing tailored modes of engagement that resonate in specific contexts. Children need to be involved in designing these interfaces of dialogue and input; not to cede control but to mobilise them in ongoing conversations with other urban actors, in which they become co-authors of the child-friendly city.

In other words, speaking with young people requires a willingness to speak their language. Hence, the *invisiblecity* project recognised that ‘interfaces of dialogue and input’ would need to take account of the embeddedness of digital technologies in young people’s lives. An important aim of the *invisiblecity* project was not only to contribute to acknowledging young people’s use of public space but also to consider how young people’s use of technology could render visible and legitimise their experiences of the city, creating a platform for them to contribute actively to processes of reimagining the city.

Importantly, the project saw mobile technology as an inviting medium through which young people would be willing and able to express themselves freely. As Teresa Swist, Philippa Collin, Jane McCormack and Amanda Third (2015: 6) found, use of personal devices can ‘create new spaces for young people’s civic and political engagement’ by providing them with new and more accessible opportunities for participation and self-expression. Innovative communication strategies are needed because traditional policy forums or opportunities to comment on planning proposals are rarely appealing to most citizens, let alone to young people (Collin, 2015: 69). Further, young people are often disempowered by formal structures for civic participation, which may be inimical to or conflict with their interests (Percy-Smith, 2010). Barry Percy-Smith (2010: 113) argues that a major problem with young people’s participation in public policy is that it is largely confined to a ‘cognitive rather than affective level’ of involvement. An exploration of young people’s affective, or emotional, relationship with urban space can instead accommodate ‘a wider spectrum of activities which characterize how young people engage with and make sense of their worlds’ (Percy-Smith, 2010: 110).

For Aušra Burns, who has written about the urban dimensions of emotion, the benefits of incorporating ‘more reflective, culturally rich and dynamic articulations of our emotional relationship to the urban

environment’ into urban design are profuse, including unique insights into strategies to prevent experiences of negative emotions (2006: 69). Burns argues that ‘through discussion of how we or others feel about city living – in various situations and differing circumstances – we can increase our ability to relate our aesthetic responses to perceiving the environment to the practical actions we take within it’ (2006: 68). This proposition connects well with Anderson’s notion of affective atmospheres. As Anderson points out, affective life defines the city and is critical to its success since it alters our economy, society and culture. For example, the collective feeling of hope during a natural disaster allows people to suspend belief in the present in order to move through it; collective confidence in the economy drives people’s spending; a political speech can create a defiant joy that can mobilise a public to stand up and demand justice and greater equality. If governments and policymakers are to harness the opportunities provided by shared affect, they need to ‘understand the ways in which affective life comes to be temporarily organised in relation to social, political and other processes, forms and forces’ (Anderson, 2014: 4).

The *invisiblecity* project sought to achieve this through a participatory design approach based on the recommendation of Penny Hagen et al. to keep young people’s ‘needs, experiences and knowledge at the centre of our activities’ (2012: 1). Drawing inspiration from Hagen et al. (2012), we argue that researchers, policymakers and urban developers must reflect on the way they invite, receive, integrate and act on young people’s feedback and inputs into urban developments. In the following section, we detail our approach and explore how participatory digital emotion-mapping can creatively engage young people around their affective experiences.

3. Using emotion-based participatory mapping to engage publics

Documented research initiatives in the field of geography have shown that collaborative mapping can provide opportunities for young people’s needs and knowledge to be represented, while also deepening their understanding of the worlds around them (Gordon et al., 2016). Collaborative and participatory mapping can also be considered disruptive media since other forms of mapping almost always begin with a limited and restricted number of actors foregrounding phenomena of preconceived significance (Notley and Webb-Gannon, 2016; Warf, 2005). Participatory and collaborative mapping can challenge dominant perspectives about what subjects and objects matter and support discussions about how these subjects and objects are perceived and experienced by different actors. In this way participatory and collaborative mapping can be used to illuminate the causes, dynamics and consequences of the affective atmospheres (Anderson, 2009) that are produced by complex and mobile assemblages of people, locations, objects and technologies.

When participatory mapping involves visual representations, visual politics are introduced. According to Michel Foucault (2003), politics are always embedded in visual representations of ‘reality’ and these politics are generally controlled by the most powerful actors. However, these politics can be resisted and subverted by less powerful actors in a variety of ways. For example, Chris Perkins and Martin Dodge have argued that emerging non-state-led mapping initiatives (which are often online, open and participatory) can be used to chart out social alternatives that redress inequality and destabilise the practice of mapping as a form of social control by powerful elites (2009). Digital emotion mapping, then, can be considered one such genre of participatory mapping that seeks to emphasise, value and open up discussions about how people feel.

Geographically orientated emotion mapping, according to a pioneer in this area, Christian Nold, ‘is a participatory methodology for people to talk about their immediate environment, locality and communal space’ (cited in Keep, 2009: 205). Academic interest in emotion mapping owes much to urban planner Kevin Lynch (1918–1984), who asked residents to sketch on and annotate street maps in order to capture and

³ Here, in accordance with United Nations definitions, ‘children’ refers to all those under the age of 18.

compare the environmental perceptions of people residing on different streets (Weinreb and Rofé, 2013). Since the publication of Lynch's book *The Image of the City* in 1960, developments in technology and methodology have led to various new approaches that seek to elicit and record people's feelings about and relationships with place.

In reviewing existing emotion-mapping media projects, we identified four distinct media and data collection methods, each with its own implications. The first type (bio-mapping) uses technologies to measure and at times aggregate individuals' physiological responses to the environment. For example, Kanjo et al., 2015 explored affective responses in urban environments by using mobile technology and sensors to monitor participants' physiological changes to temperature, noise, light and smells in different environments. Similarly, Nold (2009) developed a wearable bio-mapping device to measure changes in the wearers' sweat levels along with locational information obtained from a Global Positioning System (GPS) and combined this with a visualisation tool 'that displays the participants' changing emotional responses as they walk through designated areas within the cities selected' (Keep, 2009: 205). For Nold, whose bio-mapping project was deployed in more than two dozen cities between 2004 and 2009, engaging users in the interpretive and analytical components of emotion mapping is critical. In his project, users were asked to reflect and interpret their own bio-data, rather than to defer to the explanatory authority of the technology itself or other agents:

People were using the Emotion Map as an embodied memory-trigger for recounting events that were personally significant for them. Sometimes these descriptions overlapped, while at other times they were unique. For them, the spikes were documenting not what we would commonly call 'emotion', but actually a variety of different sensations in relation to the external environment such as awareness, sensory perception and surprise. I suddenly saw the importance of people interpreting their own raw bio-data for themselves. (Nold, 2009: 5)

Nold's project created maps that integrated people's biological and emotional responses with their own interpretations and recorded images. Through this participatory, interpretative process, Nold argues, his tool became an inversion of the lie detector where people's auto-responses were not seen as 'truth', but as a talking point that could be explained, rejected, queried and ultimately interpreted by participants. In this way, Nold's tool became a participatory and performative technology.

The second type of data collection method (auto-populated databases) is automated. In this context, data collection and, thereby, participation is generally not consensual (though it may become consensual and participatory at later dialogic stages). Algorithms serve as the foundation for a web crawler which auto-populates and maintains a database, which is then presented or visualised in different ways. *We Feel Fine*, which began in 2005 but continues today (<http://wefeelfine.org>), is cited as an inspiration to a number of emotion-mapping initiatives. It uses a custom designed web crawler to trawl blog sites every few minutes in search of the phrases 'I feel' and 'I am feeling'. When it finds these terms, it then pulls the following sentence and associated metadata into a database. The result is 'a database of several million human feelings, increasing by 15,000–20,000 new feelings per day' (<http://www.doctoronto.ca/we-feel-fine?width=800&height=600&iframe=true>). The database is visualised in an interactive form and made accessible online. Once the data is visualised, the tool invites voluntary participation and may provide the user with benefits since interaction with the database allows people to ask questions about how events and key topics have been experienced or documented by people around the world (Kamvar and Harris, 2011).

More recently, scientists at the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Australia, inspired by the *I Feel Fine* project, worked with researchers at the mental health research organisation Black Dog Institute to develop *We Feel* (<http://wefeel.csiro.au>).

This online tool trawls Twitter posts for 600 specific words in order to map global emotion trends (CSIRO, 2014). Subsequent comparison of the data collected with World Health Organisation (WHO) datasets revealed a correlation between anxiety, suicide rates and the expression of particular emotions (Larsen et al., 2015). While web scrapers and algorithmic analysis can be useful for pulling together and making sense of very large data sets, we argue that this method is also prone to error, misinterpretation and reductivism. It first assumes all people are making the same claims about their emotions when they use particular words included in the algorithm. This assumption ignores the nuance and complexity associated with people's use of language (for example, when two people tweet they are happy about something they may mean very different things). So too, this method will also inevitably fail to document and work with the many specific cultural adaptations and uses of words. This approach also delimits the agency of participants: users are not able to choose to participate or not. In addition, meaningful auto-filtering based on age (so as to focus on young people, for example) is not likely to be possible.

Self-reporting, the third type of emotion-mapping method documented in the existing literature, invites users to submit emotion-focused reports, often in the form of responses to a questionnaire or survey. Thus, a report is submitted where the focus is on feeling: why do participants feel a particular way? The *invisiblecity* project, which used this approach also logged the time of entry and asked additional questions about who the participant was with and why they were at the location. These user-submitted reports were then aggregated and analysed. In another example, Weinreb and Rofé (2013) took a similar but more ethnographic approach working with a smaller sample size (50) of residents living in one of the most isolated urban settlements in the Negev Desert Highlands in Israel. A subsequent content analysis of the narratives produced revealed the most positive experience ratings in areas with vegetation, foliage, grass, plants and gardens. These findings are consistent with the UK Mappiness project findings (<http://blog.mappiness.org.uk/2013/06/10/happy-natural-environments>).

Christian Nold has also developed a number of place-based emotion-mapping projects that use this method for data collection. For example, in the English city of Bristol, Nold worked with students in four schools to articulate and represent their experiences on their journeys to school. The custom built *Sensory Journeys* web application functioned as a spatial archive to collate and present the collective experiences of the young people. After these workshops, Nold analysed the material and used it to design a series of printed maps that aggregate and represent the student's experiences based on the mode of transport they used – walking, bicycle, car, bus (Nold, n.d.). A key challenge with this workshop approach to data collection is encouraging enough participation to ensure the project is perceived to be representative and therefore meaningful to urban developers and decision-makers. We are not suggesting data collection needs to be representative to be rich and meaningful. However, tapping into existing city conversations that already happen through media may provide an alternative method to ensure an initiative has sufficient participation and diversity to justify claims and demands for changes to urban design and development.

Finally, creative encounters, the fourth type of emotion-mapping method we have identified from the literature, is used to explore emotion in relation to place in a more artistic, creative or playful way. This type of emotion mapping, which includes examples that are less explicit about their focus on emotions, includes the use of games, photography, poetry or other artistic forms to create and map media in ways that generate new discussions about a place. For example, UK artist collective Blast Theory conducted a project that invited participants to cycle through the streets of the city equipped with a mobile recording device. The aim was to search for a hiding place and to record a personal message to be left there, which is then geo-tagged and mapped. This message can then be found – in the game and physically – by others engaging in the project. At the same time, participants can explore the hidden messages left by others. In this way participants

were able to create their own map of the city: one that was both intimate and anonymous. The collective stated that the game allowed them to continue their ongoing exploration into ‘new hybrid social spaces in which the public and the private are intertwined’ (<http://www.blasttheory.co.uk/projects/rider-spoke/.projects/rider-spoke/>).

In a later Blast Theory project, entitled *Branch*, players received tips and a map to find five local people in designated places and they also received a set of questions to ask them. Only when they asked the right person the right question did they receive a symbol card that enabled them to advance in the game. However, finding the right person required players to start conversations with strangers. In this way, players created a unique ‘inner map’, or orientation of the city, based on their interactions with residents. The game was designed with the mission to ‘make a system that is for and by people who don’t usually have a voice’ that is ‘collaborative, mutable, personal and fun’ (<https://www.blasttheory.co.uk/projects/branch/>). These kinds of examples invite new questions regarding the role of play, fun and humour in engaging participants to learn about, reflect on and discuss the city. The challenge here is ensuring this is meaningful in terms of the way the information collected can be channelled into discussions about urban development.

Further to this, in parallel with new developments in the use of algorithms and in the field of Artificial Intelligence we expect that new socio-techno configurations will emerge in the future in order to analyse, alter – and exploit – emotions and affective experiences in relation to time and place. Already there have been a number of initiatives that use algorithms on social media as a strategy to manipulate user emotions. For example, Facebook was widely criticised after some of its researchers released a paper that claimed they had worked out a formula for mass ‘emotional contagion’ whereby they were able to manipulate users’ news feeds to make them behave in a ‘happier’ or ‘sadder’ way. In this study, close to 700,000 users were experimented on without their knowledge. The researchers found that ‘emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness’ (Kramer et al., 2014: 8788). In addition, numerous claims have been made about the role played by social media bots (automated profiles), analytics and algorithms in delivering powerful and emotive targeted messaging during both the EU referendum in the UK and the 2015 presidential elections in the United States (Cadwalladr, 2017; Howard and Kollanyi, 2016). These kinds of initiatives seek to manipulate emotions by exploiting the data traces of social media users and are therefore problematic. They run counter to the other methods we have discussed in this section since their aim is not to empower participants but, rather, to strategically alter their emotions for commercial or political gain. Other initiatives that use bots, artificial intelligence and algorithms have more socially progressive aspirations and are likely to proliferate over time. *The Emotion Journal* (<https://devpost.com/software/the-emotion-journal-g421pv>), developed by a commercial operator during a 2016 Hackathon in London, is a voice journaling app that performs real-time emotion analysis to detect users’ feelings and chart their emotional state over time. The stated aim of the project was to use AI to support mental health (Conger, 2016). However, the project is no longer live and it is not clear if it will be released commercially or sold on for other purposes.

Only a few of the mapping projects we have cited explicitly focused on young people. We therefore believe that there are significant opportunities to generate meaningful discussions with young people around their affective responses to places. Across all the methods discussed here, it is important for researchers to critique each method’s ethics, limitations, opportunities, consequences and constraints in terms of the affordance they offer to document, present and explore affective experiences and atmospheres. While all of the above methods can be used to invite people to reflect on how places make them feel, and can be usefully combined, we argue the auto-populated database method is the most constrained in terms of its ability to provide agency and to

focus specifically on geographical place or a specific demographic or age group.

In the following section, we share our research findings and consider what our own custom self-report method and participatory approach reveals about the opportunity for digital emotion mapping to contribute to young people’s participation in urban design and development.

4. Young people’s emotive responses in Parramatta: key findings

From August to October 2015 the *invisiblecity* project invited young people ‘who live, work, study, or play’ in Parramatta to report how they felt about places in the city on a digital map. These emotion-based reports were then automatically and dynamically visualised by the platform and became part of a searchable and analysable database, allowing the researchers, young people and the wider public to critique and imagine the city in new ways. In addition, the project offered 34 young people aged 18–25 (21 females; 13 males) access to creative media workshops to allow them to explore different ways of expressing emotion through text and image.

By using technology – iPads, computers, smartphones and software – to mediate an interaction between researchers, city planners and other inhabitants of the city, the *invisiblecity* project invited young people to record and share information that explained how they felt about the city and why. This information was then represented visually and shared online and at public events with local government officials and the broader public.

The research team began the project by conducting a process to develop an emotion mapping framework that would be both usable and relatable for our target audience of 12–25-year-olds. To do so, the team worked in partnership with a group of fourth-year Design students from Western Sydney University. Naming emotions and pairing them with colours is challenging given that both colours and emotions can be described and perceived in very different ways by individuals, age groups and cultures. While acknowledging such challenges, the research team worked with the students by drawing on the Circles of Emotion project (<https://circlesofemotion.org>) to choose emotion names and categories. The Circles of Emotion project matrix draws from St Thomas Aquinas’s taxonomy from the thirteenth century, W. Gerrod Parrott’s terms from the twenty-first century (2001) and the set of emotions featured by Storm and Storm (1987). The matrix has four domains – light/projective, light/quietist, dark/projective and dark/quietist – with seven sub-domains in each four.

The testing workshops asked young people to group emotions together and to identify terms they would most commonly use when discussing place and feelings. The students were also asked to align appropriate colours to each of these emotions in order to guide the colour scheme that would be used to group emotions inside the web-based app and, thereby, make reporting easy. The six colours that were ultimately decided on represent key areas of wellbeing as identified by the Global Youth Wellbeing Index (Goldin, 2014), with the addition of charcoal grey.

The final emotions and their respective categories and colours were as follows:

- Light/Projective: happy, excited, proud (yellow hues)
- Light/Quietist: content, thoughtful, surprised (teal hues)
- Dark/Projective: sad, angry, fearful (brick red hues)
- Dark/Quietist: depressed, ashamed, anxious (deep blue hues)

Across our pilot project, 281 emotional reports were mapped across Parramatta. Since the platform allowed pseudonyms, and as some participants chose to take advantage of this, it is not possible to verify exactly how many young people participated. However, individual inputs were aggregated and captured (see Fig. 1). After completing the

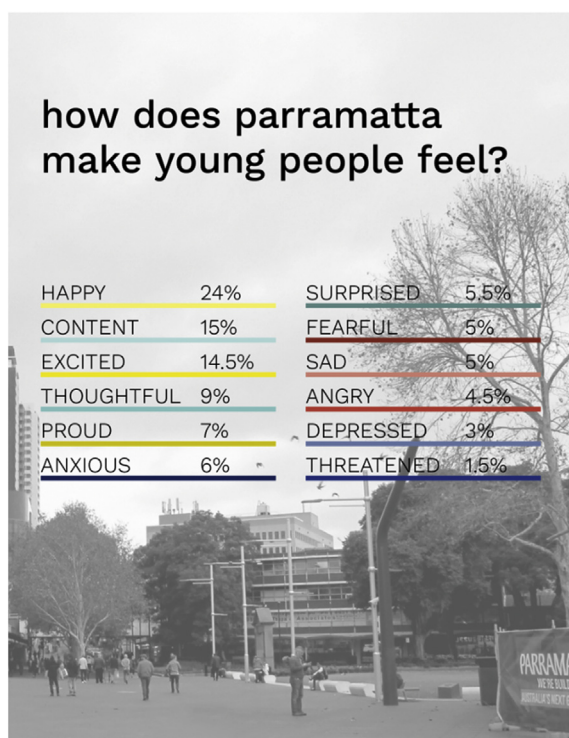


Fig. 1. Overall findings.

pilot Parramatta project, the research team conducted a discourse and content analysis of these reports.

Overall, young people reported light/projective emotions since they were optimistic about current developments and future change occurring in Parramatta. However, the findings also revealed a sense of nostalgia for the past and the changing night-time economy, including the closure of live music venues (see Fig. 2). Young people reported that they felt excluded from the city centre, as there were no venues that catered for them. Reports also described how places are experienced differently at different times: locations such as the city centre, the river and the train station were positive places during the day, while at night

they were identified as places young people felt unsafe, fearful and anxious.

In addition to reporting on how they felt about Parramatta, young people also explained why they experienced the feelings they identified, and furthermore, ways in which Parramatta could be improved. Past participatory mapping projects with young people have highlighted the scale of information that emotion mapping can provide, particularly in relation to the physical environment (Travlou, 2007: 73). By contrast, the information garnered by the *invisibility* project extended beyond the physical because people highlighted that they could see and feel the political and socio-political – it was embodied by them and embedded in place. In this way, they confirmed their experience of ‘affective atmospheres’ (Anderson, 2009: 2012) while their associated analysis provided ‘spatial stories’ (Elwood and Mitchell, 2012) in ways that gave agency and recognition to their accounts of place.

Fig. 2 depicts young people's suggested improvements to the city, including better access to public transport; improved roads; increased parking spaces; better lighting along the riverbank, and increased social spaces. As with Tuan's ‘fields of care’ (1977), where after prolonged experience, certain places evoke affection and a corresponding duty of care, we found that the *invisibility* reports showed high levels of emotions like happiness and joy. They also indicated a level of political engagement and cultural awareness vis-à-vis concerns expressed about the future socio-economic status of the city and job growth as well as the number of homeless people in the area (see Fig. 3).

The reports reflect the impact of affective atmospheres as young people consistently reported a connection to Parramatta as a place that was much more than simply a suburb they lived in or travelled to for work. Rather, as can be seen in Fig. 4, it was a place that aroused strong emotions in young people when they reflected on the past and present, and also when they imagined the city's future. As Tuan argues, ‘Place is a pause in movement. Animals, including human beings, pause at a locality because it satisfies certain biological needs. The pause makes it possible for a locality to become a centre of felt value’ (1977: 138). Table 1 demonstrates the overall emotions recorded by participants.

As seen in Table 1, findings indicate that the ‘Bright’ and ‘Quiet’ emotional categories register highly in Parramatta, with ‘Happy’ and ‘Content’ being the two emotions most reported by participants. Bright and Quiet emotions predominated and centred on particular parts of the city, particularly the main street and commercial precinct of

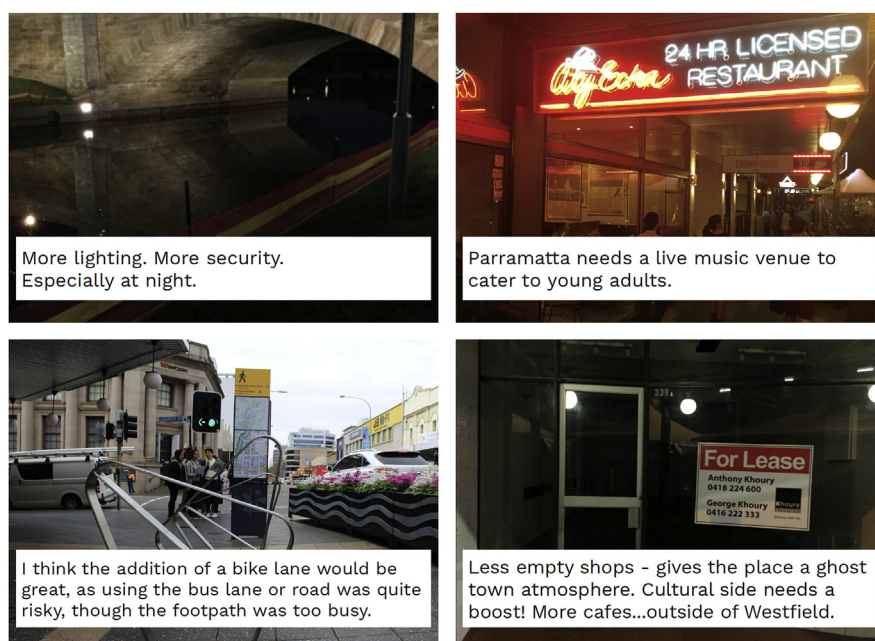


Fig. 2. Young people's suggested improvements to the city.

Homeless.

VERIFIED

09:13 Oct 1 2015 Commonwealth Bank, Cnr Church & George Sts

Thoughtful Sad Angry



Why do you feel this way?:

Would you like to change this place? If so, how and why?:

It saddens me how many homeless people are around Parramatta. I chose this photo due to its anonymity but we saw many homeless people on our journey. I would love here to be a place that homeless people felt comfortable going to, like an overnight refuge centre.

Fig. 3. The findings indicated a level of political engagement and cultural awareness.

Parramatta. However, it is worth noting that data-gathering took place during a festival period, when the mood of the city was likely to be more upbeat. This suggests the importance of considering carefully the collection period of participatory mapping projects, and of the value of having repeated engagements with the same participants over time (as noted by Weinreb and Rofé, 2013).

‘Sombre’ and ‘Deep’ emotion responses were more spread out and were predominantly found on the outskirts of the city centre, such as down by the river or near the train station. Twenty-five percent of respondents (one in four) reported experiencing some form anxiety, depression, sadness, anger, fear or threat to their safety within the space of the city centre. This data parallels and reinforces research that has identified that across Australia, one in four young people are experiencing mental health and wellbeing distress at any point in time (Beyondblue, n.d.).

As with the key finding in Travlou's (2007) study of young people in Scotland that public space provided spatial autonomy, our data revealed that the participants expressed a sense of freedom and felt lucky

Table 1

Demonstrates the overall emotions recorded by participants.

Bright (45.5%)	Quiet (29.5%)	Deep (10.5%)	Sombre (14.5%)
Happy (24%)	Contentedness (15%)	Anxiety (6%)	Fear (5%)
Excited (14.5%)	Thoughtful (9%)	Depression (3%)	Sad (5%)
Proud (7%)	Surprised (5.5%)	Threatened (1.5%)	Angry (4.5%)

to be part of the city: ‘I feel a sense of community, the space is inviting to all people ... It's fun!’ (posted at Centenary Square). One participant noted that the river was an important site of Aboriginal history and ongoing connection, revealing her sense of pride and desire to protect her heritage: ‘[The river] symbolises unity and peace also reflects indigenous Australia, which I like because it's our history’ (posted at Parramatta River Walk) (see Fig. 4).

Parramatta is currently going through a process of urban renewal and development. The young people in the research were hopeful about these developments and detailed specific improvements they would like to see made to the city's infrastructure. While they were optimistic about change, young people also commented on the transient nature of the city and the impact of rapid change: for example, ‘It made me sad to hear that places like Mars Hill [music venue] closed down due to being unable to pay rent’ (Posted in the city centre). Young people were generally excited about the transformation that the city is undergoing and were hopeful that this transformation would bring with it more opportunities for young people. However, this feeling, while prominent, coalesced with a strong sense of uncertainty about their futures: ‘Anxious about making money and building Parramatta's socio-economic status’ (Posted in the city centre).

Along with the sense of general optimism about living in Parramatta, some informants referred to a tension attached to the stigma associated with the region of Western Sydney (see Fig. 5). For invisibility informants, media images of Western Sydney affected their experience of the area. This points to a need for further research that explores how a city's external representations and reputation are internalised by young people, and how this informs and alters the affective atmospheres people experience when they encounter a place.

These findings suggest that this approach to generating new

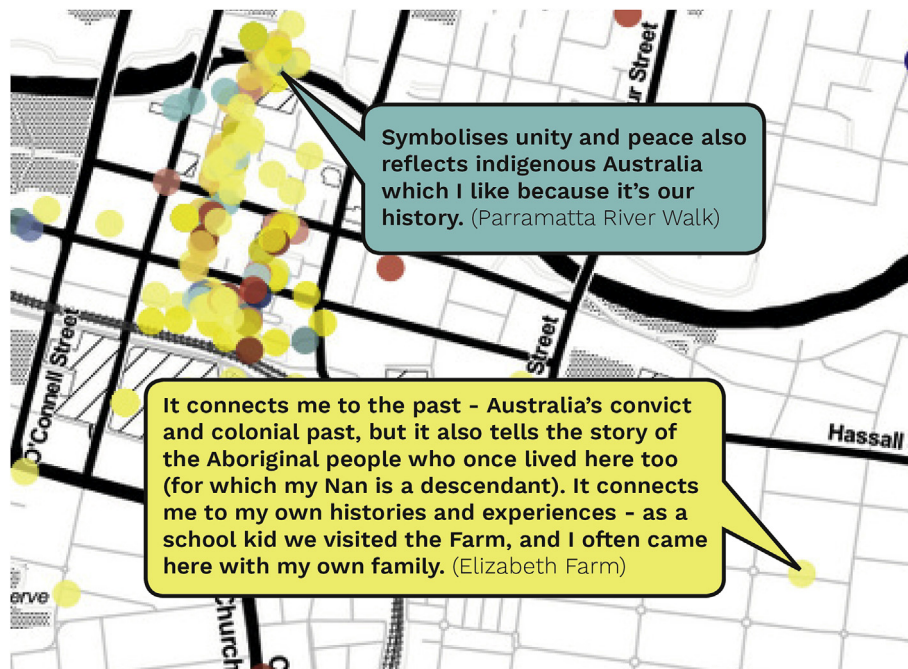


Fig. 4. Parramatta was revealed as a place that aroused strong emotions in young people.



Fig. 5. Some participants referred to a tension attached to the stigma associated with Western Sydney.

conversations about the city is useful since it recognises and accounts for the often overlooked 'mutual interaction between the mind and environment' (Burns, 2006: 71) and in this way instates agency in the young people involved, as they not only reflect on their current emotions but are prompted to engage with alternatives, solutions and possibilities. However, while the emotion map our platform creates yielded important findings in our pilot study, more analysis is required to consider the need for these findings to be more representative of the local youth population by integrating the everyday media practices and conversations that speak to young people's experience of city. Perhaps the most obvious way to do this would be to engage with social media platforms in relation to the city. However, this is a challenge given the limitations of popular social media platforms in terms of identifying the inputs of people based on their location or age. It is also problematic in terms of service agreements that lock children out and the exploitation of data traces by the companies who own them. Instead, we hope the app we are developing will offer possibilities for connecting with everyday mobile media practices while also supporting some optional integration with social media. In addition, while our project presented research findings on a website and at a public event hosted in the city's town hall, additional methods are required to ensure these perspectives are not only rendered visible to policymakers but are then meaningfully taken into account in decision-making. This may mean building in more 'pressure points' to get the attention and support of urban developers and city planners so they more urgently feel the need to respond and be accountable to the inputs and analysis. This of course will depend on the agenda of these actors. If it is their intention or desire to build 'fields of care' for young people where they feel stable, included and safe, and if they want to acknowledge the social, economic and cultural role of certain kinds of affective atmospheres, we believe the project's emotion-mapping method and platform has clear value to their work.

5. Conclusion

As Christian Nold (2009: 10) writes, the future of emotion-based mapping is still being written. 'Will it', he asks, 'become mind control ... revolution, public consultation or brain augmentation?' We argue that it will likely become all of these and more as emotion mapping is used

to respond to public, state and commercial desires to create 'a tangible vision of places as a dense multiplicity of personal sensations, which we are not normally aware of' (Nold, 2009: 10). Like Nold, we believe a participatory, bottom-up process of identifying communal matters of concern that begins with personal sensations and 'suggests the possibility of an alternative body politic of place' (2009: 10) is the key starting point. The concept of 'affective atmospheres' has been useful for this initiative since we found that young people reflected on far more than their own personal emotions when invited to create emotion reports; they considered the emotions and experiences of others as well as the feeling they and others derive from places, objects, events, memories, experiences and nature.

Our *invisibility* project demonstrates a broad need for more research into the way young people feel in urban space. Through the platform, we can see that the nuanced and insightful voices and visual representations of young people are able to convey affective atmospheres. In understanding participants as agents, emotion-mapping projects like *invisibility* are able to capture stories of the city that reflect participants' political engagement with urban spaces. As this article highlights, our project not only rendered visible and amplified voices and perspectives not always heard (especially in relation to policy and planning), but it also allowed for a renewed and critical connection between young people and place.

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