# Report from the First Workshop on Cyber Ethics in Platial Research

– Workshop Report –

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## 1 Motivation and Overview

The examination of morality has a long-standing history in philosophy, but recent events, including the dramatic rise of computational technologies has expanded the field into a multidisciplinary study of ethics. With the global connectivity provided by the Internet, *cyber* ethics is unique due to rapid changes in technology and ever-changing ethical considerations pertaining to everything from human subjects to artificial intelligence (AI). Among the deluge of data generated by machines and humans, place-based information is special due to its vague boundaries, subjectivity, and heterogeneity of descriptive data. Compared to spatial data, *platial* information is a much broader concept as it is more than simply geographic coordinates and often involves human attachments. While we fully support the recent renewed interest in the field of *geoethics* (Goodchild, 2022), we also feel it is important to discuss ethic beyond the surface of the earth. Here, we propose to extend this discussion to include cyberspace and bring together the concepts of cyber and geo-ethical studies under the umbrella of place-based cyber ethics. We encourage the readers of this workshop report to reflect on these questions and the importance of place-based cyber ethics in their own work.

On December 15th, 2021, the *First Workshop on Cyber Ethics in Platial Research* was held in Enschede, the Netherlands (virtually), in conjunction with the *Third International Symposium on Platial Information Science (PLATIAL'21)*. The objective of this workshop was to explore the unique aspects of ethics related to place. During the workshop, invited speakers first provided a summary of their related work followed by organizers and attendees discussing the topic more broadly. With the goal of spurring an active discussion, the organizers prompted discussion through proposing the following three questions to the speakers and workshop attendees.

Q1 What ethical concerns are unique to platial research, but not to geospatial research more broadly?
Q2 What is volunteered platial information, and what influence does it have on contributors/users?
Q3 How should we better incorporate cyber ethics in platial research?

In the following sections, we paraphrase the perspectives on the topic as presented by speakers and attendees. A wide variety of opinions were provided on the various aspects of place-based cyber ethics. We aimed to organize these by key themes, often reflected by individual speakers.

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# 2 Key Themes

## 2.1 Who Can Talk about place?

When one talks about place, and the ethics surrounding place, it is important to understand the locale, the attachment to and belonging with the locale, as well as the social and cultural norms governing this attachment. This was the key theme of the presentation by Martin Tomko.

Dr. Tomko invited us to consider the following situation, familiar to many: Over the course of our lives, we move, and encounter many locales to which we form an attachment. For instance, most of us have a place that they currently call *home*. To many, this is not the same place where they grew up, again, another place we refer to as *home*. Perhaps our parents have moved from our childhood homes to a location we ourselves have never lived. Why is it then, that we feel an attachment to this place? Why is a place labelled as *home* if there is no continuous attachment over an extended period of time? There is an inherent entitlement to the concept of *home* which is clearly framed within the context of place.

Our speaker then invited us to consider the specific example of Melbourne, Australia. Melbourne has been, for millennia, the home of the Wurrunjeri people of the Kulin nation. These are the Indigenous, Traditional Owners of the lands where the city called Melbourne is now found. Can one truly feel at home in this place where its rightful owners have been dispossessed? This begs the broader question, what are the social and cultural norms attached to the places surrounding us, and are we respectful of them in our day-to-day lives? For instance, when hiking, could we be trespassing through a place that, unbeknownst to us, is a place traditionally reserved for Wurrunjeri women? Is it possible to feel comfortable and at home in a place to the same extent as people of the First Nations? Moreover, can we as visitors, researchers, or current inhabitants of a place publish and articulate opinions about this place? The answer is not trivial, as can be attested by numerous researchers (McClure and Corlett, 2021; McConnell et al., 2021).

According to Purves et al. (2019), 'The identity of a place must be shared.'[1] The questions then are: With whom is it shared? And which identities are shareable? Dr. Tomko argued that the identities of a place may not be shareable with everyone without distinctions, due to the fact that one's current location may afford different activities, emotions, religious significance, etc. to different people (e.g., a place to hike or rock climb, a place of cultural significance). These various aspects of a place are not easily shared or quantified. As data scientists, we might choose to mine large datasets with the goal of identifying patterns and relationships between places. The difficulty here is that any analyses of these data are most often devoid of context. One could reasonably argue that it removes what is fundamental to *platial* information – the nuances, context, and subjectivity – that make a locale a place. Our speaker argued that big data are only able to provide broad, aggregate, socially salient reflections on these locales, but often fail to reveal nuances.

During his presentation, Dr. Tomko posited that everyone may talk about any 'location', but not everyone has the right to talk about any 'place'. Places are thus not only conceptualized based on lived experiences, experiences may also be handed down, inherited, even to people that have never visited a traditional motherland. While tourists may observe and experience the positive aspects of a place, others may experience negative or complex emotions based on memories or historical experiences. We must be careful when reflecting on places that are significant to others. One suggestion is to let the original caretakers of a place guide the discussion in order to avoid perpetuating colonial concepts related to the place, including through volunteered geographic information and data contributions of uncertain provenance.

Finally, it was proposed that in the future, our research must consider the ethical use of platial information through at least the following lenses: (a) What ethical and moral rights do we have in collecting information about a place? Can the collected information about a place be shared, and with whom? (b) Biases in the data cannot be ignored: How was the data collected? Does the data capture representative voices (e.g., interviews with local residents) or only tourist perspectives (e.g., social media posts)? (c) Is the data actually volunteered? The question has already been discussed in the literature of volunteered geographic information and user-generated content (McKenzie and Janowicz, 2014), but it is even more important when it comes to platial information. Finally, (d) we must consider *how* we share platial information and visualizations, and ensure that we are doing so appropriately. A co-design with traditional caretakers is, for instance, a good approach to cartographic representations of places[2]. The framework of the AIATSIS Code of Ethics for Aboriginal and Torres Strait Islander Research[3] may be a good framework to investigate with respect to platial research.

### 2.2 Is Ethical Mapping Possible in Platial Research?

Our second speaker, Junghwan Kim made the argument that many maps may violate platial data ethics by disclosing people's private locations via spatial reverse engineering (e.g., see Curtis et al., 2006). Dr. Kim and his colleagues conducted an online survey that investigated individual levels of comfort with 30 maps that presented potential ethical concerns (Kim et al., 2021). The results of the survey identified a few areas for further discussion on the topic of platial ethics. First, a map that displays a large amount of information on one's private locations is considered to have serious ethical concerns. 74% of survey respondents expressed concerns regarding a map that only displayed home locations, while that percentage increased to 87% when the map depicted individual GPS trajectories. Further work was done to examine why people are uncomfortable with the disclosure of their home location. Reasons include the risk of identification an individual and the potential for negative consequences related to this identification process (e.g., criminal activity or hacking). Second, the results of the survey analysis indicated that proper geomasking or obfuscation techniques may resolve platial data ethic concerns to some extent. Provided advanced geomasking techniques, the percentage of concerned respondents decreased from 87% (unmasked GPS trajectories) to 39% when directional distorted private location data (obfuscated) were introduced. When it comes to different types of geomasking, aggregation-based methods may be more appropriate than relocation-based techniques as relocation simply moves a point elsewhere in the same vicinity and may inaccurately, and unjustly, identify innocent people. Third, stronger protection methods should be utilized when mapping socially vulnerable populations. Elementary school students topped the list of vulnerable groups ranked by survey respondents, and the list continued with substance abuse treatment patients, HIV patients, and many more 'at-risk' groups. Respondents worried about hate crimes, discrimination, and stigmatization that may come along with disclosure of private locations of vulnerable populations. Here, Dr. Kim emphasized the importance of recognizing that ethics in platial research is diverse and covers more than the topic of his presentation. The results of this survey was meant to highlight privacy issues in geovisualization and spur further discussion on the topic.

## 3 Discussion

After the two presentations of relevant works from Dr. Tomko and Dr. Kim, the panellists discussed the topic of platial ethics by addressing the three key questions stated in the first section.

Panelist Ekaterina Egorova highlighted two of her most prominent concerns regarding *Q1*. The first one relates to the growing digital divide and to the way in which digitality reproduces power, as demonstrated by feminist digital geography research (e.g., Elwood and Leszczynski, 2018). Multiple places and communities find themselves in *digital shadows*, which results in biases and inequalities that are further reinforced through artificial intelligence. Dr. Egorova's second concern relates to the lack of autonomy – not only do places have little control of their digital traces and digital representations, but their communities are often excluded from the process of defining research agendas that use those digital traces as data.

To define volunteered platial information, Dr. Egorova proposed to refer to the prototype theory by Rosch and Lloyd (1978). According to this theory, concepts are organized based on characteristic (rather than defining) features, and concept members range from prototypes to boundary cases. Applying this theory, the most prototypical case of volunteered geographic information is OpenStreetMap, which is mostly concerned with *geometry*, and corresponds to location and locale of place (Agnew, 2011). The most prototypical case of volunteered platial information is multimodal information about places found on the Web, such as textual descriptions, short reviews, and images. Global platforms such as *TripAdvisor*, or local platforms such as *Rankers* in New Zealand are rich in *semantics*, also known as soft information (Liu et al., 2020), which relates to the sense of place (Agnew, 2011). However, to gain a better understanding of the concept of volunteered platial information, we should also reflect upon boundary cases. For instance, does place-based environmental monitoring conducted by citizens qualify as volunteered platial information? Or, do local environmental challenges identified by citizens within community-based projects qualify as volunteered platial information? Dr. Egorova's response is 'yes', and in her view, it is a useful exercise for our research community to spend time disentangling the conceptual landscape of volunteered geographic and platial information. This landscape is in constant

flux, and new prototypes and category norms might be emerging, reflecting new realities in geographic knowledge production.

The influence of volunteered platial information on contributors and users, in the view of Dr. Egorova, depends on the type of volunteered information we consider. If we stay with the example of platforms mentioned above (Tripadvisor or Rankers), their contributors benefit from self-expression and memory-making, while users shape mental models and expectations of places and experiences (Egorova, 2021). If we look at place-based environmental citizen science projects, contributors may experience inspirational, educational, and social benefits, while the whole community benefits from the solutions made possible with the help of collected volunteered platial information. Importantly, this question invites us to explore this topic further, and reflect upon the influence that certain types of volunteered platial information have on placemaking, on communities, and on ecosystems.

So how can we better incorporate cyber ethics in platial research (*Q3*)? One way, according to Dr. Egorova, is to empower and educate communities on related aspects through *citizen science*. For example, engaging communities in the co-creation of research agendas will make research more transparent while allowing communities to preserve more autonomy. To give another example, involving citizens in projects around artificial intelligence will educate communities about 'what's in the black box', allowing them to join related societal discussions on geospatial and platial AI and ethics. Furthermore, our research community could draw ideas developed within the open science movement – for instance, facilitating open data policies, or adopting study pre-registration practices to inform communities about planned research. There is no single solution, but there are many advanced initiatives that are highly relevant and could serve as inspiration.

Panelist Grant McKenzie, approached *Q1* by first defining place from a multi-dimensional, data-centric perspective. While geographic space[4] is one (or arguably three) dimension(s), time of the day, e.g., is another dimension that signifies place as a concept of change. Applied examples of defining place involve exploring social media content (e.g., texts and images) outside of the Cartesian space that can potentially identify where people are located. In this context, geospatial information is often a secondary feature that individuals elect to share on the Internet (e.g., geotagged tweets). Dr. McKenzie highlighted his work in developing a set of criteria and scale to weigh whether a piece of geographic information is volunteered or coerced (McKenzie and Janowicz, 2014). He suggested that future research in this area must acknowledge that geographic space is only one dimension of the multidimensional concept 'place', and that we as ethical researchers must examine not only the ways in which geographic data are collected, but also content related to the other dimensions. In response to *Q3*, Dr. McKenzie highlighted the need for a better framework for *research ethics board* requirements. Place-based research related to user-generated content is a rapidly growing domain, and research ethics boards need to well versed in the complexities related to data collection in this area. Finally, it must be acknowledged that masking/obfuscating/anonymizing geospatial location does not necessarily mask platial information, and further research is required to understand how platial information can be identified without access to explicit geospatial information.

Panelist Hongyu Zhang argued that a location usually represents a single point while a place often incorporates multiple locations. Given this, one ethical concern unique to platial research is group privacy (Mittelstadt, 2017). Mr. Zhang reminded us that privacy concerns are not always individualistic. For example, insurance profiling may be inaccurate and unfair as a specified subset of the population (e.g., a 25 to 35-year-old dog owner who lives in Brampton, Ontario) may have a constantly changing membership. COVID-19 contact tracing may also lead to unintended consequences (e.g., discrimination and stigmatization) even though personal information remains confidential (e.g., releases of building locations). In response to *Q2*, and as discussed in earlier sections, volunteered platial information describes a much broader domain of data than traditional VGI. In light of this fact, the notice-and-choice paradigm (e.g., a website banner asking users to accept its privacy policy), as seen in the European Union General Data Protection Regulation, may not be the best solution for online privacy protection (Rothchild, 2018) as it does not include regulations on a wide range of contextual data.

Platial information, often heterogeneous and vaguely defined, extends the risk of unwanted spatio-temporal information disclosure as users are too often not aware of what data is being collected and how it can be combined with other data to identify the platial locations of an individual. To better incorporate cyber ethics in platial research (*Q3*), Mr. Zhang argued for the need to develop a set of place-based cyber ethics principles as ethics themselves are not a universal doctrine. Taking personal

geoprivacy concerns as an example, recent studies (e.g. Kim and Kwan, 2021) have demonstrated the influence of culture on one's privacy and ethical perceptions. In addition, the amount of location data one is willing to share also varies by culture. All of this points to a need for further discussion on the variety and heterogeneity of data in place-based cyber ethics research.

During the workshop, a participant[5] highlighted the fact that the broader discussion was geared towards the collection of platial information, whereas another important issue specific to ethics of platial information could be its application, or the way it is processed and used, not only in research but also in urban planning or management. The participant argued that platial information in many ways reflects 'local knowledge', i.e., subjective, or inter-subjective data, memories, personal histories, etc. For instance, these types of data tend to be neglected in the field of applied urban management. Therefore, one of the facets of platial information ethics could be how we treat *local* data as opposed to preferring universal knowledge or *objective* data.

# 4 Conclusions

The ubiquity of mobile technology, the Internet of Things, and artificial intelligence is rapidly transforming our society. Ethical discussions and research related to geospatial computation and online services, often referred to as cyber ethics, has been slow to respond (Maner, 1999). We have recently witnessed a resurgence of interest in *geoethics* that parallels the increasing interest in computational models of *place* within geographic information science. To the best of our knowledge, no previous events have been organized to combine these two topics and, in general, very few public discussions have involved the ethical concerns of place-based search. The purpose of this workshop was therefore to provide a platform through which parties interested in such a topic could engage. The discussion clearly demonstrated that this topic has multiple facets and that there are many different avenues and lenses through which to approach platial research. By many accounts the workshop was a success and we look forward to continuing to discuss the future of cyber ethics in platial research, outside of this event.

## Notes

1. We recognize that views on place identities can be different among communities.
2. https://www.imwaustralia.com/resources
3. https://aiatsis.gov.au/sites/default/files/2020-10/aiatsis-code-ethics.pdf
4. Here, geographic space refers to the mathematical representation of the physical space.
5. We did not receive authorization to publish the workshop participant's name.

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## Author Contributions

H Zhang wrote the report based on the presentations from the co-authors. G McKenzie reviewed and revised the overall report. M Tomko, E Egorova, and J Kim reviewed and revised their corresponding sections.

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