

Ethical Dilemmas in Early Career: Reflections on a GIS Internship Experience and its Echo in Geospatial Teaching

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During an internship in an Irish local authority council, I was asked to complete an ethically questionable task. I completed the task without conscious consideration of its impacts. Although I gained valuable skills from the process, I failed to critically engage with the task and reflect on whether or not it should have been done, as well as my role in its completion. Based on my internship, other personal experiences, and conversations with colleagues, I now create space in my geospatial courses for practical conversation about ethics and argue the importance of critically considering and then reflecting on tasks. These conversations sit beside discussion of broader ethical issues, such as data availability and sovereignty.

I advocate here for the importance of practical ethics in geospatial education—a focus on the small and the individual, as well as the wider ethical issues facing cartography and the broader geospatial industry. For professionals in the industry, I also believe it's essential to create space for open discussion and reflecting on our specific experiences can be beneficial in thinking about the broader role we play in the spatial profession.

KEYWORDS: geospatial education; ethics; internship; practical ethics; geospatial teaching

IN MY EARLY 20S, I INTERNEED AT A CITY COUNCIL IN Ireland for two summers just before and during my post-graduate studies. This short-term GIS role was a valuable, first-hand insight into how the council functioned and the important place of spatial data and communication in the council's day-to-day business and its longer-term strategic goals. I gained HTML skills and designed an internal website to catalogue street furniture licenses (clearly before the availability of more plug-and-play GIS dashboards!). I created maps and cleaned data. I learned the importance of involving the user in designing tools so they would actually get used after being finished. I built my confidence in applying my academic knowledge to the real world, and learned about the expectations of a professional environment. I improved my communication and other soft skills and upgraded my CV. I ignited my passion for GIS—to the extent that I switched PhD topics to more deeply explore public data sharing processes. I had fun.

One of my first tasks was to remove elements from aerial imagery available internally in the council to staff and councillors. Nothing fancy, just removing the internal layout of prisons in the city. My manager explained that with

the election of new councillors to the city council (in this case associated with a political party with ties to prisoners in those locations), accessing the layout of the prison via the council intranet might lead to misuse of these images. I spent a day or so manually editing the images to remove the prisons. I enjoyed the mechanical process and learned about image editing and data storage in the council, as well as where the backups were stored, in case I made a mistake.

While my involvement seemed routine and mundane, I later reflected on how I enabled and facilitated someone's bias (justified or not), and how easily I performed a task that should have required a pause for at least some ethical consideration. I merrily edited the images and enjoyed the learning process; it didn't occur to me to question my manager's request, and I'm convinced, looking back, that I didn't have the soft skills to know how to question it. Parts of this lack of critical thinking were due to our power imbalance and my desire to "do a good job." My manager simply expected that the image editing would be done and was passing on very procedural instructions. Another key part of my lack of introspection is that I didn't realise I



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was an active agent in a wider process, rather than just “doing the job,” and could influence how and whether certain tasks were performed. I didn’t stop to think whether this was something I should have done or what my role in the process meant.

The real concern here is my lack of situational awareness, and how the professional environment may not allow time or space for ethical reflection in the moment. It seems easy then to argue for the importance of ethics as a topic in spatial courses at a university or in continued professional development. It is easy to point to examples of the misuse or poor design of spatial data and technology, from privacy breaches, individual surveillance (Hough 2009), to issues of data sovereignty. For example, Mark Monmonier’s (2018) *How to Lie with Maps* remains an important insight into miscommunicating with spatial data. But often, such problems are seen as resulting from things that *other* people do, or from an active decision to be “bad,” rather than the outcome of something seemingly mundane done by people like us.

It’s a little too easy to focus on the technology and wider processes, rather than whether or not the map should be made or the task completed; or, indeed, how to raise ethical issues about the work. A code of ethics is embedded in a number of geospatial organisations, e.g., the American Association for Photogrammetry and Remote Sensing (ASPRS 2018) and the GIS Certification Institute (2023). These remain quite US-centric. In Aotearoa New Zealand, for example, the professional certification provided by the national spatial body (Survey and Spatial New Zealand) is limited to “Professional Engineering Surveyor” and “Professional Land Development Engineer” with few geospatial professionals seeking accreditation internationally. These codes can be slightly removed from day-to-day work life or often not detailed enough to provide guidance (Obermeyer 2021).

I argue here for a need to prepare professionals for practical ethical dilemmas at multiple scales, from the individual to the sector, as well as to make space for people to feel safe in raising ethical concerns. I also advocate for the need to self-reflect and learn from times where you got it wrong or not right enough.

After finishing my PhD, I moved to Aotearoa New Zealand in 2006 to take up a GIS academic role and then started teaching students about how to create, manipulate,



Image generated using Adobe Firefly AI and adapted manually to “remove” prison buildings

store, and communicate spatial data as part of an introductory GIS course, as well as how to work on applied projects in a follow-up course. The design of these courses gave me the space to consider the role of ethics in the learning of GIS, along with how and where to place the emphasis so that students can relate real ethical dilemmas to their own situations. I drew upon my experiences and those of generous professional colleagues who discussed these issues with me or shared their views in the literature. I am not the only academic (by far!) to grapple with the impacts of geospatial technology on society (e.g., Elwood and Wilson 2017; Scull et al. 2016; Davis 2014). The GIS&T Body of Knowledge (DiBiase et al. 2006; UCGIS 2016) argues for the inclusion of ethics in the teaching syllabus. Elwood and Wilson (2017) argue for the role of GIS pedagogy in developing appropriate curricula that identify and highlight ethical issues, as well as activities or assessments that help students gain awareness of the socio-technological impacts of GIS.

I’ve spoken to geospatial professionals who have faced similar ethical challenges in their roles, such as being asked to perform analysis to justify a decision after it had been made, when it received press coverage and associated public queries. They make for pertinent examples and have sparked provocative discussions in class. Some of these professionals have been kind enough to share those

examples with students through guest lectures or sharable resources.

Addressing personal ethical awareness in academic programmes for GIS is clearly important. It can be easy for an academic to recognise the importance of critiquing geospatial data, software, processes, and their wider societal impacts and it is important to do so. However, the softer skills of personal reflection and how to navigate stepping down from a project or raising concerns about it can be harder to teach, assimilate, and apply.

There's also a balance to be struck between highlighting the benefits and importance of spatial information and cartography, and critically engaging with that data or those maps. Some students new to the discipline can be quick to see things in black and white without realising the nuances in between. A lack of care in pointing out issues with the maps can mean the dissolution of all trust.

Education provides unique opportunities for future professionals to think through possible ethical scenarios before encountering them in the workplace, and provides a safer space with lower stakes to practice raising issues. Students can also learn from diverse perspectives as issues are discussed in class, broadening their viewpoint of where ethical issues may lie. By actively exploring practical examples, we are hopefully equipping students to recognise their ability to be active agents in the tasks they do,

to broach ethical concerns effectively and respectfully, and to think about the wider potential impact of their work. Later, when these new professionals encounter ethical issues, they still may not act on their concerns or critically assess the request, but they will at least be better equipped to recognise, respond to, and ameliorate encountered issues. They should have a framework that supports their reflection, as well as their possible action in the moment.

I advocate here for the importance of practical ethics in geospatial education, with a focus on the small and individual, as well as the larger ethical issues facing the wider geospatial industry. Geospatial professionals need both an ethical framework to recognise and assess their own and their organisation's impact, as well as the soft skills to navigate these ethical situations as they arise.

Reflecting on my experience and through conversations with colleagues, I also ask you to think about creating and leaving space for conversation about ethics both in industry and education. Prepare yourself to analyse and then reflect on your tasks, provide a sounding board for peers and junior staff as well as create safe spaces for colleagues to raise issues, even when you'd just like them to complete the assigned task. Acknowledge that you won't always get it right, but that thinking and talking about ethics and specific examples can be beneficial in understanding our role in the broader context of the spatial profession.

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