

Practical ethics for Participatory GIS (PGIS)

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In 1998, geographers in Durham convened a workshop to consider the implications of GIS in terms of power and participation.

The ensuing and widely cited paper 'Participatory GIS: opportunity or oxymoron?' (Abbot et al., 1999) called for caution and exposed the risks inherent in visualising place specific local knowledge and making it available for public consumption, without ensuring sufficient control of the process and outputs by legitimate custodians of such knowledge.

Since then, spatial information technologies and data have become increasingly accessible to the wider public. Practitioners, researchers and activists in different parts of the world have tested and developed a range of integrated approaches and methodologies, which led to many innovations within what is now termed as Participatory GIS (PGIS) practice.

PGIS has its roots in Participatory Learning and Action (PLA) and in Participatory Rural Appraisal (PRA). It combines participatory mapping visualisations, spatial information technologies (SIT), spatial learning, communication and advocacy. The practice takes many different forms and raises and faces all the tensions, trade-offs and dilemmas of quality with speed – standardisation versus creativity, speed versus quality, lenders' and donors' enthusiasm and drives to disburse, versus participation and the empowerment of those who ought to be empowered.

Fox et al (2005) concluded after a two year study of participatory mapping projects in Asia, that: *SIT transforms the discourse about land and resources, the meaning of geographical knowledge, the work practices of mapping and legal professionals, and ultimately the very meaning of space itself.* The paper further argues that 'Communities that do not have maps become disadvantaged as rights and power are increasingly framed in spatial terms' (Fox, 2005:7) and concludes on a critical note that mapping has become necessary – as failing to be on a map corresponds to a lack of proof of existence, and to own land and resources. Overall, this must be framed in the need for developing 'critical clarity with respect to mapping based on a comprehensive understanding of both intended and likely unintended consequences of our actions' (Fox et al. 2005). As Alwin Warren (2004) put it 'Maps [...] are inseparable from the political and cultural contexts in which they are used'.

In the 90s, Participatory Rural Appraisal (PRA) spread with alacrity and consequently suffered from massive abuse –

particularly when lenders and donors began to require large scale PRA projects. Of all the visual methods that have taken off and been widely adopted, participatory mapping – with its many variants and applications – has been the most widespread, not only in natural resource management, but also in many other domains (McCall, 2006). With mapping as one element, there are now signs of a new pluralism and creative mixing of different elements in participatory methodologies. The medium and means of mapping, whether ephemeral, paper or GIS, or on-line mapping, and the style and mode of facilitation, influences who takes part, what is included, the nature of outcomes, and power relationships. Much depends on the behaviour and attitudes of facilitators – and on who controls the process.

Stepping stones towards good practice

It appears that there is a seemingly unstoppable excitement about geo-referencing our human physical, biological and socio-cultural worlds and making the information accessible

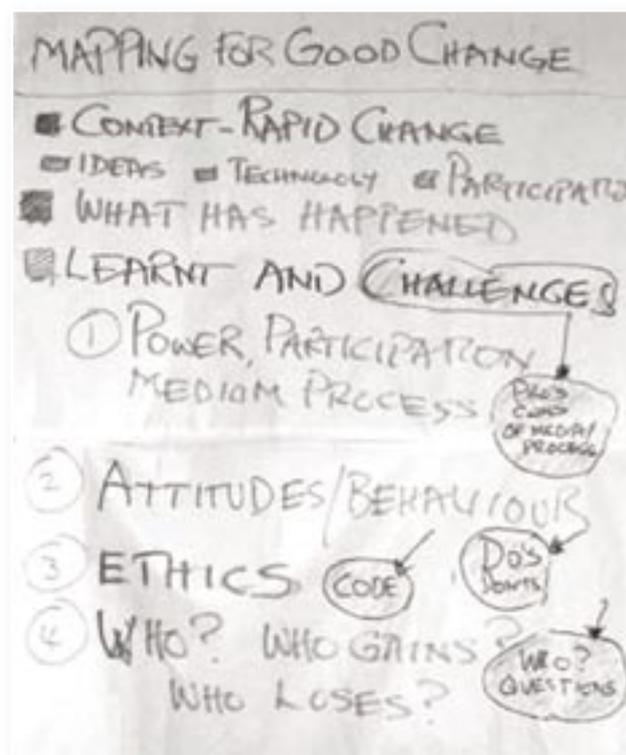


Table 1: Compilation of 'Who?' and 'Whose?' Questions (different sources).

- **Stage I: planning**
 - Who participates?*
 - Who decides on who should participate?
 - Who participates in whose mapping?
 - ... and who is left out?
 - Who identifies the problem?*
 - Whose problems?
 - Whose questions?
 - Whose perspective?
 - ... and whose problems, questions and perspectives are left out?
- **Stage II: the mapping process**
 - Whose voice counts? Who controls the process?*
 - Who decides on what is important?
 - Who decides, and who should decide, on what to visualise and make public?
 - Who has visual and tactile access?
 - Who controls the use of information?
 - And who is marginalised?
 - Whose reality? And who understands?*
 - Whose reality is expressed?
 - Whose knowledge, categories, perceptions?
 - Whose truth and logic?
 - Whose sense of space and boundary conception (if any)?
 - Whose (visual) spatial language?
 - Whose map legend?
 - Who is informed what is on the map? (Transparency)
 - Who understands the physical output? And who does not?
 - And whose reality is left out?
- **Stage III: resulting information control, disclosure and disposal**
 - Who owns the output?*
 - Who owns the map(s)?
 - Who owns the resulting data?
 - What is left with those who generated the information and shared their knowledge?
 - Who keeps the physical output and organises its regular updating?
 - Whose analysis and use?*
 - Who analyses the spatial information collated?
 - Who has access to the information and why?
 - Who will use it and for what?
 - And who cannot access and use them?
- **Ultimately ...**
 - What has changed? Who benefits from the changes?*
 - At whose costs?*
 - Who gains and who loses?

Who is empowered and who is disempowered?

in the public domain. Stunning innovations (e.g. Google Earth) are now available to all those with adequate access to the Internet or modern spatial information technologies. At the same time the recent International Convention for the Safeguarding of Intangible Cultural Heritage¹ which supports the inventorying of intangible heritage, raises sharp ethical

issues for those involved in geo-referencing peoples' knowledge and values. In this context, the pathway leading towards PGIS good practice, is scattered with critical stepping stones all calling attention to troubling dilemmas and overarching issues about empowerment, ownership and potential exploitation, and leading to the 'Who?' and 'Whose?' questions (see Table 1). If carefully considered by technology intermediaries, the 'Who?'/ 'Whose?' questions may induce appropriate attitudes and behaviours in the broader context of good practice.

A guide towards good practice and PGIS ethics

In a participatory context, spatial information technologies (SIT) may be used at community level by members of the community itself, technology intermediaries (facilitators, practitioners and activists) and researchers. It can be used at a community level by community workers, activists, social scientists, anthropologists, conservationists and the like who have acquired SIT skills or who may team up with people having an IT professional background. Alternatively SIT can be introduced at a community level by IT people with an interest in mapping social, cultural and bio-physical territorial features and who may team up with professionals from social and environmental disciplines.

Each profession and culture carries moral parameters and codes of ethics. As PGIS is understood as a multidisciplinary practice it is meant to respond to a blend of different moral rules. This guide to good practice is intended to provide non-exhaustive guidelines for making appropriate ethical choices for those practicing or wanting to practice PGIS. These guidelines are not meant to be exhaustive, as each culture and situation may have its own moral imperatives. It is the obligation of the individuals to make their best judgement to ensure good practice. In this context the following guiding principles should be taken into consideration.

Be open and honest

This applies right from the beginning, and throughout the process. Practitioners must explain clearly and in the local language(s) the strengths and limits of their ability to influence outcomes. While the potential benefits of PGIS are explained, no claims must be made for results that are not within the power of the facilitators or their organisation to achieve.

Purpose: which purpose? and whose purpose?

Be certain and clear about the purpose – why do people get involved in this particular exercise? Before embarking on the process, discuss openly the objectives of the PGIS exercise and what the different parties may expect from it.

Obtain informed consent

As in any research with people, participation must be voluntary. In order for participation to be voluntary, the participant needs to know what kind of map is going to be made (showing them an example would be ideal), the type of information that will be on the map, and the

1. The UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage was signed in Paris on 17 October 2003 and has entered into force on April 20, 2006 after ratification by thirty states. Visit: <http://unesdoc.unesco.org/images/0013/001325/132540e.pdf>

possible implications of the maps being made public. People must agree to participate and be able to withdraw at any time without prejudice. Obtaining informed consent should be set in advance.

Do your best to recognise that you are working with socially differentiated communities and that your presence will not be politically neutral

PGIS is always a political process and will, therefore, most likely have unintended consequences for the communities you work with regarding the complex issues of who is empowered and who might actually be disempowered. Be aware that the internal workings of socially differentiated communities are very context dependant and unpredictable.

Avoid raising false expectations

Any process of analysis facilitated by an outsider is liable to raise expectations of some benefit, even when the outsider explains that he has no provisions for follow-up and few concrete changes may follow from his visit. Disappointment and reinforced disillusion with visitors and organisations outside the community then follow. Opening up the space to map local expectations and negotiate the objectives may reduce the risk of raising unrealistic expectations.

Be considerate in taking people's time

The time of poor people is, contrary to some professional belief, often very precious, especially at difficult times of the year (often during the planting or weeding seasons). Rural people are often polite, hospitable and deferential to outsiders, who do not realise the sacrifices they are making. A day of weeding lost at a critical time can have high hidden costs in a smaller harvest.

Don't rush

Accept the fact that participatory approaches need time and are generally slow, and factor the time variable in your intervention schedule. Take advantage of the non-negotiable clause proposed near the end of this paper.

Invest time and resources in building trust

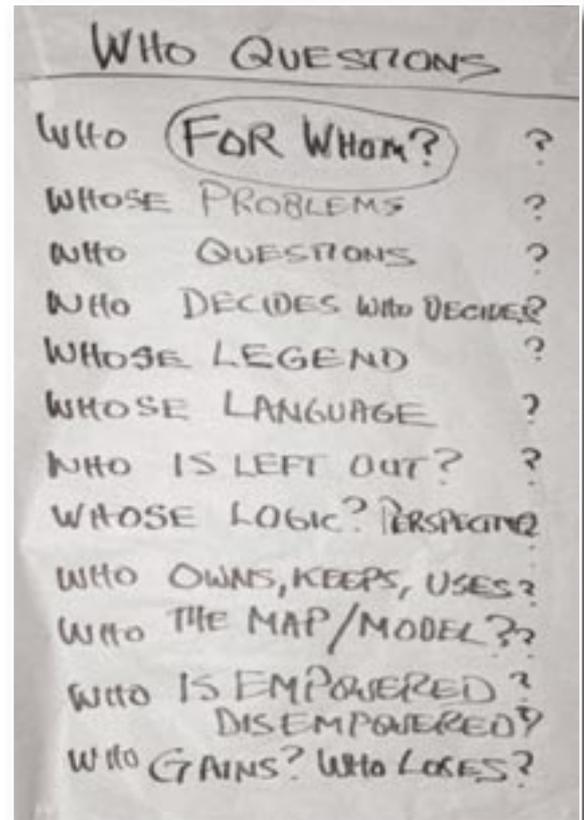
Trust between insiders and outsiders (technology intermediaries) is the building block upon which good PGIS practice is founded.

Avoid exposing people to danger

Villagers in a country in Southeast Asia working on a 3D model pointed to the hideouts of rebel groups, incurring immediate danger. Using audio-visuals, villagers in Indonesia documented their traditional logging practices. The regulatory environment changed putting them in a position of illegality.

Be flexible

Despite the necessity for a long-range vision, the approach should remain flexible, adaptive, and recursive, without sticking rigidly to pre-determined tools and techniques, or blindly to the initial objectives of the



mapping exercise (participation is two-way learning between several sets of 'experts', scientific or NGO outsiders, and community insiders).

Consider using spatial information technologies that can be mastered by local people (or local technology intermediaries) after being provided sufficient training

The use of GIS is not a must: it is an option. 'As technology complexity increases, community access to the technology decreases' (Fox, 2005). Ask yourself: is a GIS really necessary? Would GIS add anything that cannot better be achieved through other participatory mapping methods?

Select spatial information technologies that are adapted to local environmental conditions and human capacities

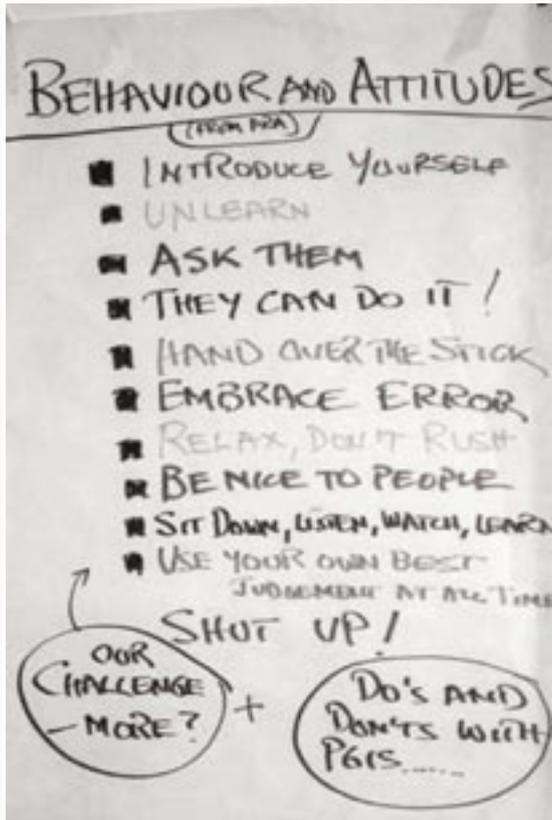
Choose the appropriate spatial information technology with the objective to grant equal access to and control over it by at least some of the participants or by community-nominated intermediaries.

Avoid outlining boundaries except if this is the specific purpose of the exercise

Boundaries may be fluid, seasonal, fuzzy, overlapping, or moving. Visualising boundaries – if not specifically requested by informants to address specific boundary-related issues – may change the sense of space and ignite latent or previously non-existing conflicts.

Do not sacrifice local perception of space in the name of precision

Spatial precision is relative and only has value when very detailed data on boundaries or areas is needed. Too often



the emphasis is on precise measurements rather than on seeking and checking what are the spatial phenomena the people are really talking about, e.g. better to expend effort in understanding different types of overlapping customary land tenure, than on measuring arbitrary boundaries down to metres or centimetres.

Avoid repeating activities

Some (doubtless accessible) villages in Malawi are said to have been 'carpet-bombed' with PRA, and reportedly intercept visitors before they enter and negotiate with them – while more 'remote' villages are never visited. Maps may be drawn, and taken away by outsiders, again and again.

Be careful to avoid causing tensions or violence in a community

This occurs, for example with women who take part in participatory activities, and when the outsiders have left are abused or beaten by their husbands. This can apply to any 'lower'/subordinate/disadvantaged group in a community.

Put local values, needs and concerns first

Instances may arise where a course of action is beneficial to the needs of the associated research effort, but is significantly counter-productive in meeting the community's needs. This is a universal dilemma for all 'participatory' programmes – whether the highest priority is on the outputs, such as the needed maps, or on promoting empowerment and capacity of the community.

The ethical approach is to find alternative courses of action that are suitable to the community's needs. Local people and their communities are the principals or partners, not the clients. So PGIS initiatives should emanate from them, not from the outside. Therefore, participation is essential in the process of determining the purpose.

Stimulate spatial learning and information generation rather than mere data extraction for outsider's analysis and interpretation

Refrain from extracting or eliciting information only for the outsiders' benefit. If research is the only purpose, be open and honest, seek permission and do your best to share benefits. This is a major issue with local knowledge of commercial value.

Focus on local and indigenous technical management and spatial knowledge...

...and local expertise, seeking to understand local culture, society, spatial cognition, and livelihoods, local resources, hazards and options, etc.

Prioritise the use of local toponymy...

...(the meaning of geographic names) to ensure understanding, ownership, and to facilitate communication between insiders and outsiders.

Mapmaking and maps are a means and not an end

Spatial data and maps generated at community level are intermediate products of a long-lasting and articulated process wherein spatial information management is integrated with networking and communication (e.g. advocacy).

Ensure genuine custodianship

Ensure that the original physical output of a participatory mapping exercise stays with those who generated it and specifically with a trusted entity nominated by the informants. Taking outputs away – even if for a short time – is an act of disempowerment. Making copies of community-generated outputs involves more time spent in the village, additional efforts, more inputs and financial resources. Meeting this condition of good practice increases the cost and the time, but ensures that those who generated the spatial information are not deprived of their intellectual property (IP) and effort.

Ensure that the intellectual ownership is recognised

Ensure that multiple, full-quality copies of the maps, annotated aerial/satellite images and/or digital data sets remain with those who expressed and shared their spatial knowledge. Provided you obtain the informed consent of the knowledge holders, you – as a technology intermediary – may store selected maps and/or data sets.

Be ready to deal with new realities which will emerge from the process

Visualising and geo-referencing local knowledge is likely to

change the way space is perceived and understood by both the informants and the wider public affected by the mapping exercise. Such changes may influence power relations and hierarchies, and induce new conflicts or inflame latent ones. Provisions have to be made to eventually deal with new conflicting realities.

Observe the processes

This increases understanding on both sides. Ask questions, probe, ask for explanations, e.g. why are there regularities and why anomalies in the results?

Ensure that the outputs of the mapping process are understood by all those concerned

The legend is the vocabulary by which a map is interpreted. Ensure that a map legend is developed in close consultation with informants and technology intermediaries.

Ensure defensive protection of traditional knowledge (TK) or measures that ensure that IP rights over traditional knowledge are not given to parties other than the customary TK holders

Consider beforehand what are the likely needs for confidentiality of spatial information. Consult informants on how to use, protect, dispose or disclose spatial data generated in the mapping process. Prepare in advance for any desired protection of data layers.

If applicable, do your best to ensure positive protection of TK, or the creation of positive rights in TK that empower TK holders to protect and promote their TK

In some countries, *sui generis* legislation has been developed specifically to address the positive protection of TK. Providers and users may also enter into contractual agreements and/or use existing IP systems of protection (WIPO, 2006).

Do not use the practice to support the forced displacement of people

Do not ask residents of an area to map out their spatial knowledge if you know that such information may lead to their displacement or eviction. Frequently areas found to have conservation value are proclaimed as exclusion areas for any human settlement and activity, *de facto* supporting the eviction of people.

Acknowledge the informants

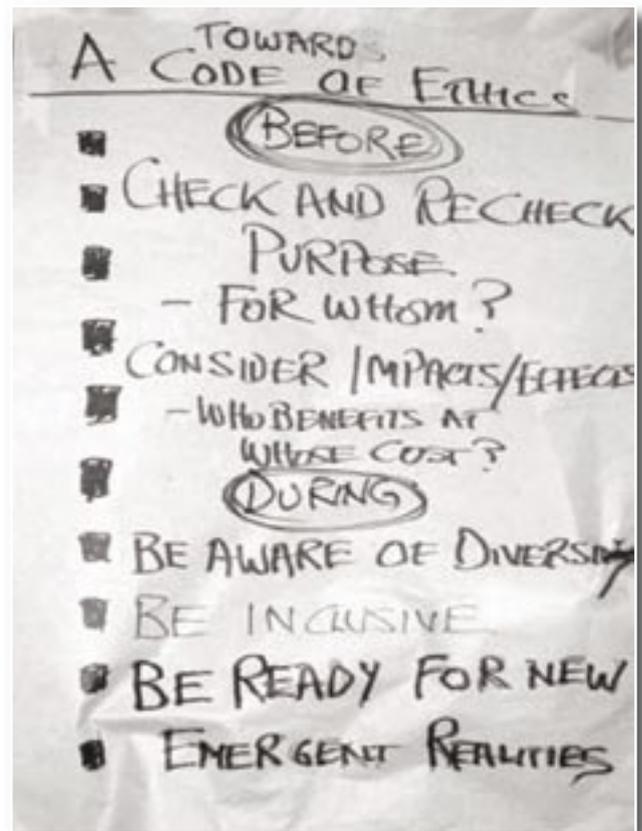
If not prejudicial to the security of the informants, and with their prior consent, include the names of the contributors to the generated maps and/or data sets.

Review and revise the maps

The maps are never final or static. They are not 'cast in stone' – they have to be crosschecked, improved, and updated.

Examine international survey guidelines such as the AAA Code of Ethics...

...which reminds anthropologists that they are responsible



not only for factual content of information, but also the socio-cultural and political implications. See www.aaanet.org/committees/ethics/ethcode.htm

Consider the GIS Code of Ethics

These provide guidelines for the GIS professionals themselves.

See www.gisci.org/code_of_ethics.htm

Proposed non-negotiable conditions for contract negotiation

In terms of their adoption, some of the guidelines above rest with the implementers and are essentially about attitude and behaviour. Others may have implications in terms of financial and human resources and time needed. Some preconditions for good practice should be incorporated into the project design as early as the conceptualisation stage and carried forward into the terms of an eventual contract of services.

Views differ on non-negotiables. One position is that there should be no non-negotiables, but that principles for action should be evolved to fit each context. Another, more widely held, is that some conditions are so common that non-negotiables are needed to strengthen the hands and will of those who are negotiating – especially when powerful interests are affected. Bearing these qualifications in mind, the following are proposed non-negotiable conditions, which technology intermediaries could put forward to lender and donor agencies when negotiating contracts for implementing projects having a PGIS component. These conditions should then be incorporated into the contract governing the initiative.

- Facilitators' training will include modules on personal behaviour and attitudes, the ethics of PGIS, and trust building.
- PGIS projects should not have time-bound targets for disbursements or coverage unless these are vital to protect endangered rights of vulnerable people. Proper participation takes time and provision should be made for unspent funds to be rolled over from year to year.
- PGIS practice should be limited to a feasible scale and not extended at a pace or over a range that undermines or prevents genuinely participatory processes.
- Research and related activities will be based on informed consent from participants.

Concluding remarks

This document is the result of a debate which started in the early and mid 1990s (Turnbull 1989; Bondi & Domosh, 1992 (a feminist critique); Wood, 1992; Rundstrom, 1995; NCGIA Varenius², 1996; Dunn, 1997; Abbot, 1998). This debate has become more critical with the wider adoption of spatial information technologies in participatory learning and action contexts. The need for practical ethics and a code of good PGIS practice emerged also as a priority at the Mapping for Change Conference (IIRR, 2006). From the halls of Nairobi where the conference took place in September 2005, issues related to PGIS ethics were uploaded to cyberspace and subjected to a wider debate among practitioners via the Open Forum on Participatory Geographic Information Systems and Technologies (www.PPgis.net). Reactions and comments received were reviewed and carefully considered and the resulting guidelines reflected in this paper.

The power of maps, SIT and modern communication technologies calls for greater responsibility of all those involved in practicing PGIS. As the famous explorer, ecologist, filmmaker and researcher Jacques-Yves Cousteau put it:

Without ethics, everything happens as if we were all passengers on a big truck without driver; and the truck is driving faster and faster, without us knowing where.

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- [2] NCGIA (National Center for Geographic Information & Analysis) Program supported research initiative 1-19: The Social Implications of How People, Space, and Environment are Represented in GIS. See www.ncgia.ucsb.edu/varenius/ppgis/papers/index.html www.ncgia.ucsb.edu/varenius/ppgis/ncgia.html