

Georeferenced mapping is linked to these research methods:

- GIS, geovisualisation, AR/VR
- Remote sensing
- (Public)Participatory GIS
- Volunteered Geographic Information (VGI)
- Quantitative/statistical analysis and modelling

Geo-  
referenced  
mapping

# Multi-method mapping

Words-  
focused  
mapping

Sensory  
mapping

Visceral  
mapping

Creative and  
interpretative mapping

These cards introduce the breadth of data and understandings generated by map-making and map use. The different practices are research methods that can be used separately, or you can use the cards to choose which different mapping types could be used *together* in your research.

These types of mapping are concerned with the process as well as 'a final map' per se. Some do not necessarily aim to produce a map at all. This enables *different data types and understandings*.

The cards can be used by transdisciplinary teams of researchers. Here, transdisciplinary is defined as research shaped by a critical engagement with the differences between disciplines and research/ knowledge styles.

*Maps provide a physical, familiar and experimentable focus for researchers who use contrasting research approaches.*

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## What is georeferenced mapping?

- Phenomena are located within a coordinate system.
- Often used are: GIS (Geographic Information System — software that stores, computes and maps data with coordinates), and/or images from remote sensors, e.g. satellites.
- Attribute data (i.e. characteristics) of each location can be continuous numeric, categorical or open text format. May be gained from/calculated using ground equipment, remote sensors, participant surveys or existing maps/information sources.

## Why is georeferenced mapping used?

These maps and their data aim to be relatable to each other — so that comparisons or direct linkages over time, or between places, location attributes or scenarios, can be made (even if the maps use manual/hand-done methods).

## What are different approaches to this mapping?

GIS practitioners may:

- carry out or lead GIS, remote sensing, or Participatory GIS
- combine different technologies, as illustrated at right
- deploy GIS in alternative ways (such as to explore contrasting conceptions of geography e.g. using Paper2GIS<sup>1</sup> as illustrated below; warping<sup>2</sup>; folded space<sup>3</sup>). Researchers, including non-geospatial specialists, can also use smartphones to capture coordinates using GPS (Global Positioning System) then display using (free) web mapping apps.



*Speculative methods: different scenarios can be modelled, or serious mapping games created, using GIS.*

*Participatory GIS (a type of community mapping) enables participants to add their own data, and sometimes to design and manage a GIS.*

## How does this mapping use digital technologies AND hand-done techniques?

Researchers can use existing (paper) maps/satellite images for edits and additions. Depending on accuracy requirements, features may be georeferenced using a range of ground measurement techniques, e.g. GPS, taping or pacing.



*Remote options: Web GIS/VGI (Volunteered Geographic Information) or web mapping; digital software file-sharing; sharing hard copies by post or video-call.*

## How can the different types of mapping be used together?

The types of mapping on the other cards can be used together with georeferenced mapping:

### Words-focused

- Interviews of research participants about place using map-as-elicitation
  - Interviews of other geospatial co-researchers on the map-making process (e.g. data formats, choices for representation), or of research partners/participants involved with self-designed mapping incl. PGIS
  - Ethnographic (participant) observation of the map-making process (either community members or researchers as above)
  - Geographical Text Analysis (e.g. literary GIS<sup>4</sup>), text displayed or hyperlinked in map, ESRI Story Map or deep maps
  - Combining with text-based technology such as CAQDAS<sup>5</sup>
- (These are all sometimes referred to as “qualitative GIS”.)

### Creative and interpretative

- Photos, creative pieces or performances displayed/hyperlinked in map (or ESRI Story Map)
- Creative use of georeferenced maps
- Play with cartographic conventions

### Sensory

- Sound, smell, tactile, photo maps
- An attention to movement and tactility, as well as to sound, smell, taste, sight during mapping or AR/VR

### Visceral

- Emotion mapping using sensing equipment, where appropriate
- Mapping as minor practice<sup>6</sup>