

Visualisation: the value proposition for trans-disciplinary studies

Trans-disciplinary studies are those which address contemporary issues for which there are a myriad of worldviews and expertise necessary to inform the problem at hand. Wicked problems such as how does society respond to climate change? is an example of a contemporary issue that could benefit from a trans-disciplinary approach. A problem that require a trans-disciplinary approach necessarily requires expertise from multiple disciplines including earth sciences, social sciences, regional sciences, geography, economics, mathematics, engineering..... Each of these disciplines have their own ontologies, semantics and cultures for sharing and disseminating ideas and research outputs both internally and externally.

However, there remains a significant challenge in mobilising collaboration and moving beyond multi-disciplinary research to inter-disciplinary and ultimately to trans-disciplinary in dealing with wicked problems such as: climate change, natural hazards or pandemic outbreaks.

So what are the enabling technologies and tools that are required to support trans-disciplinary studies? Some of these may be around the adoption and use of social media, spatial information systems and eResearch platforms. A specific interest is what is the role of geographical visualisation and virtual reality to support trans-disciplinary?

There exists a plethora of visualisation tools and techniques available to communicate, data mine (visual analytics) and share spatial and a-spatial data. However, there is a limited body of research being undertaken to evaluate the inherent value that visualisations provide as a set of tools and techniques to assist in undertaking social research, bringing together multi-disciplinary teams and communicating complex scientific outputs both across science disciplines and to naïve users (decision-makers and communities).

So there remains the persistent problem of defining the measured value of visualisation as a set of techniques and tools to support trans-disciplinary studies in dealing with wicked societal problems such as climate change. Some of the key questions surrounding this persistent problem are around:

- What is the inherent value of visualisation?
- Where does visualisation add value to trans-disciplinary research and where does it detract from a study?
- How should visualisation research and development be designed into a trans-disciplinary study from day 1?
- What visualisation tool or technique should be selected for a particular problem?
- Can visualisation be used to bring more expedient action and decisions?

Some related references:

Pettit, C.J., Raymond, C., Bryan, B. and Lewis, H. (2011) Identifying strengths and weaknesses of landscape visualisation for effective communication of future alternatives, *Landscape and Urban Planning*, 100, p231-241.

Pettit, C., Cartwright, W., Bishop, I., Lowell, K., Pullar, D. and Duncan, D. (2008) *Landscape Analysis and Visualisation: Spatial Models for Natural Resource Management and Planning*, in *Lecturer Notes in Geoinformation and Cartography Series*, Springer, Berlin.

