‘Modelling with Intent’ : Searching for truth in a digital world

Science stands at the Rubicon. Before us lies a landscape in which the effort and skill required to create information, by prompting an AI, will be ‘orders of magnitude’ lower than that needed to distinguish the result from real data. Indeed, the distinction between real and virtual is already starting to blur as AI is used to fill knowledge gaps and internet memes impact behaviour ‘In Real Life’. What does this mean for Geographic Information Science (GI Science) where not only are the objects of study digital but so too the twin-world in which we observe them? Maps have always been a blend of science and art, fact and narrative. The validity of a map depends not only on its technical accuracy but also whether it is *truthful* i.e. does the impression it conveys inform or mislead?

Truth is an oft debated notion and GI Science operates within various epistemic norms depending on the domain in which it is being applied. However, these share common components in the methodological framework needed to work with spatial data scientifically. This lecture will outline two fundamental stages in the practice of GI Science (Abstraction and Framing) with examples from my own teaching and research. It will further consider the different roles or “interfaces” which GI Science may have e.g. supporting domain sciences; supporting citizen science; upscaling and research impact multiplication.

GI Science is often applied to decision support in planning, where there are many considerations and contentious trade offs to be addressed. Furthermore, past trends may provide some guide to the future but human decisions often confound these. Geodesign is a method for collaborative urban planning, supported by evidence from geo-spatial models, that can help build consensus for a sustainable development pathway. We can also use the supporting software to analyse the decision-making process itself, helping to understand which options curried support and who’s voices carried weight.

Consensus is essential for the successful introduction of Nature Based Solutions (NBS). NBS are often cited as important for urban resilience because they can provide multifunctional Ecosystem Services. That multi-functionality, however, also presents a challenge for their inclusion in decision support. Firstly, each function is often a scientific specialism with its own modelling paradigms. Secondly, nature tends to attain resilience through network functionality but scaling such models can be hard. Modelling NBS, therefore, demands a new approach which is the current focus of my own research.

I will close by returning to the underpinning ideas of abstraction and framing. My research is concerned with not only how to build more accurate models or model new processes, but how to do so in a way which is neither too complex to use nor or too time consuming to run in a planning context. As planning enters a new era of data driven design, as complex pressures on urban resilience accelerate, I argue that we need a new kind of applied modelling support infrastructure and explain what research I believe is needed to achieve this. I will also argue that we have a critical window in which to teach current and future planning professionals the technical knowledge and creative skills needed to harness the powerful Geo-Information technologies now available.