Cognitively supportive visualisations for successful communication of climate change

Thora Tenbrink, t.tenbrink@bangor.ac.uk, Bangor University, Wales, UK

Climate change involves extremely complex processes of dynamic interplay between a large variety of spatial and temporal factors, all of which affect a community's or individual's health and wellbeing in a different way. Crucial to the development of strategies to deal with the considerable challenges associated with climate change is the successful communication of these processes to diverse recipients.

Maps, diagrams, static and dynamic displays, and other visualisation tools are excellent media for this purpose. Since such tools represent relevant aspects of a situation in a schematic way, they are designed to support the perceiver in drawing strategical conclusions and making decisions based on useful heuristics, without necessarily considering every single aspect feeding into the situation. However, there is considerable potential for miscommunication. Apart from failing to identify vital information, perceivers may also misinterpret the representation – for instance, they might confuse accidental features of a diagram as representing actual states or relationships in the real world. Clearly, the mere inclusion of relevant information is not sufficient if it is not cognitively accessible in the way needed by the perceiver.

This talk will outline how Cognitive Discourse Analysis (CODA; Tenbrink, 2015, Language and Cognition) of verbalised thoughts supports the understanding of conceptions and misconceptions that are triggered through schematic visualisations of climate change. When confronted with new information displayed in an abstract diagram, map, or dynamic visualisation, the perceiver inevitably draws on previous knowledge, activates attention processes, and comes to inferences and conclusions guided by cognitive processes on various levels – including mental shortcuts not intended by the designer of a visualisation. In part, such considerations will be directly reflected in language, in terms of the content verbalised in a task setting. In addition, the patterns of language use reveal conceptual patterns that speakers themselves may not be aware of, but become apparent through systematic linguistic data analysis. This concerns reflections and changes of conceptual perspective, level of granularity, focus of attention, as well as premature conclusions and unwarranted inferences based on subconscious cognitive biases.