Graphical Representations of Science: Decoding Accuracy and Preference Ratings

Jordan Schoenherr
Carleton University, Department of Psychology

Davies Jim
Carleton University, Institute of Cognitive Science

Bell Jolie
Carleton University, Institute of Cognitive Science

Abstract: Science is always evolving, and new research areas are constantly emerging. Graphical representations of science derived from citation indices provide a glimpse of the relational structure. The present study examines the features of these graphs, or maps, that facilitate encoding of information. Participants were presented with a set of maps that varied in terms of the discipline represented, the number of research areas considered, and the interconnectivity between paradigms. Participants were first required to decode information from the map (e.g. which two paradigms are closer?) and then asked to rate the graphs in terms of aesthetic appeal, perceived accuracy, and interest level generated. Preliminary findings suggest that intermediate levels of paradigm connectivity produced maps that were rated as most preferred and considered most accurate. Map decoding accuracy also was shown to vary with degree of connectivity. These findings suggest optimal characteristics for representing the structure of science.