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Using Social Network Analysis to Analyse and Model Online Communities and Virtual Worlds

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Social Network Analysis (SNA) is currently a highly discussed topic within the field of computer-mediated communication (CMC). Originally rooted in the fields of sociology and anthropology, the method is based on the concept of social network theory, the sociological application of mathematical graph theory. Social network theory views a network as a group of actors who are connected by a set of relationships. Social networks develop when actors meet and form some kind of relation between each other. These can be of an informal as well as of a formal nature and they can be based on the exchange of various resources, like objects, information, or support. Hereby, actors are often people, but can also be nations, organizations, etc. SNA focuses on patterns of relations between these actors. It seeks to describe the structure and dynamics of networks of relations as fully as possible. This includes teasing out the prominent patterns in such networks, tracing the flow of information through them, and discovering what effects these relations and networks have on people and organizations. It can therefore be used to study network patterns of organizations, ideas, and people that are connected via various means in an online environment. SNA can help researchers and practitioners in the area of Virtual Worlds to analyze relational data, for example, studying human-human relationships that are developed via online communication, analyzing and modeling interactions in a virtual multiplayer game. This information that can be gathered through SNA is very valuable for the design and development of such networked spaces. Figure 1 and 2 show some examples of the form of analysis one can do with SNA.

The shift of the internet from being an information pool to becoming more of a social setting requires scholars and practitioners to take on board new methods and techniques in order to study social interaction, connection and links between people, ideas and organizations in computer-mediated environments. This topic becomes even more important these days with the increasing popularity of social networking websites (e.g. YouTube, Facebook, MySpace, MMORPGs etc.) and the research interest in studying them. But social media that is not explicitly a “social network” also generates social network data structures, when emails are replied to or when the same documents are edited by different people.

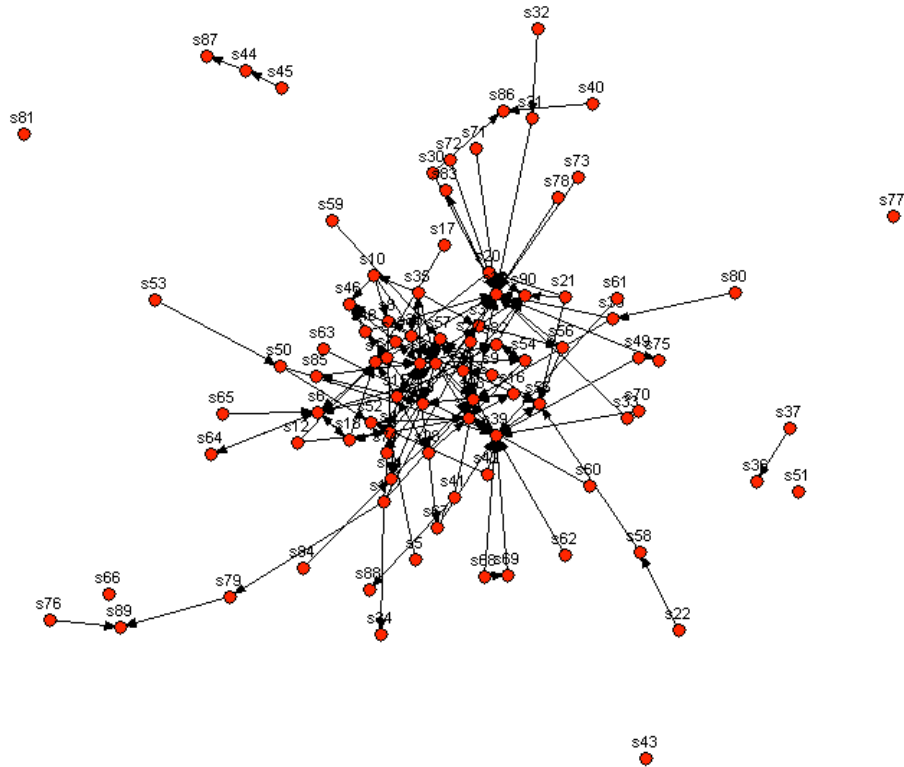


Figure 1: An example of an SNA sociogram

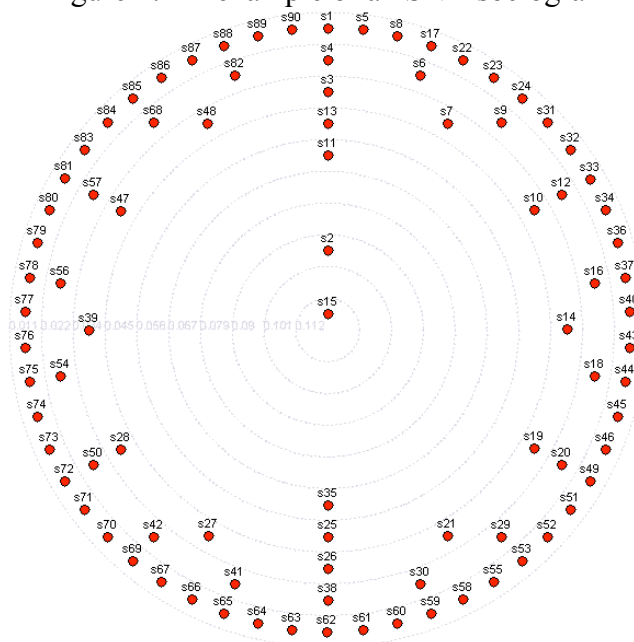


Figure 2: A characteristic SNA centrality diagram

The understanding and evaluation of such network structures can help practitioners to identify current weaknesses in the network and take action to design for a more inclusive network.

This presentation will provide an overview of this analytic technique and demonstrate how it can be used in studying Virtual Worlds. It will first introduce the concepts and measure for SNA and will then demonstrate its usefulness by presenting a series of small case studies in various domains.