Deconstructing CSSS 2009 Social Network

Margreth Keiler
Department of Geography and Regional Research
University Vienna
Vienna, Austria
margreth.keiler@univie.ac.at

Roozbeh Daneshvar
Department of Electrical Engineering
Texas A&M University
College Station, TX, USA
roozbeh@tamu.edu

Murad Mithani
Rensselaer Polytechnic Institute
Troy, NY, USA
mithani.murad@gmail.com

Wendy Ham
Wharton School
University of Pennsylvania
Philadelphia, PA, USA
wham@wharton.upenn.edu

Abstract—CSSS09 is a group of people interested in complex systems who are randomly chosen to attend the one month summer school. The international and interdisciplinary group spends four weeks together learning, discussing and working on projects related to complex systems.

Index Terms—Social Networks, Network Dynamics, Santa Fe Institute, Summer School

I. INTRODUCTION

The Santa Fe Institute organizes and sponsors each year a summer school on complex systems, the Complex System Summer School (CSSS). The participants are a group of people interested in complex systems from diverse disciplines and who are selected competitively after applying for the CSSS. The international and interdisciplinary group spends four weeks together learning, discussing and working on projects related to complex systems. Due to the internationality and interdisciplinary nearly none of the participants had known each other at the beginning of the CSSS 2009 and during the four weeks and after this initiated by the related project works a social network evolved; a very unique situation regarding social network studies. The participants were encouraged to spontaneously form collaborative teams and execute a project for presentation on the final day and summarize the results in a working paper afterwards. More specifically, participants were directed to select a project and teModelam (if applicable) by the end of week two. [2] describe a social network as "a set of people or groups of people with some pattern of contacts or interactions between them". Therefore a social network displays a social structure made of individuals called nodes, which are connected by one or more specific types of interdependency, such as friendship, kinship, financial exchange, dislike, sexual relationships, or relationships of beliefs or knowledge. The patterns of friendships and business relationships or collaboration are examples for social networks which were studied in the past. Thus, the main focus of this study on the unique situation of the CSSS 2009 social network was on following questions: i) what is the social interaction network and the structure of the network; ii) how does the network change over time; iii) what other factors influence the evolution of the network; iv) how frequently was there discussion between disciplines and did that lead to productive final projects; v) is there a link between the social and final product networks? Network theory can provide not only a statistical characterization of these phenomenons, but also a better knowledge on the process forming such interactions [1].

II. METHODS

To answer the main questions of the studies several questionnaires and different analysis of the gathered data were conducted.

A. Sample

All participants in the Complex Systems Summer School 2009 were encouraged to take part in this social network analysis. The group consists of PhD students, postdoctoral fellows, recent PhD graduates, and employees of Santa Fe Institute corporate partners as well as three members of Santa Fe Institute who were very closely related to the CSSS 2009. All participants come from various nations and disciplines. Information describing the identity of the participants and project group composition is publicly available on the CSSS 2009 wiki.

B. Questionnaires and Data Collection

The surveys to analyse the social network of CSSS 2009 consisted of different parts and the participant were asked to fill in the first analogue form in week two, followed by two electronic surveys be end of week three and four. In the first survey a general part was including asking for nationality, gender, age, language (mother tongue, English fluency) scientific area and degrees (Universities) as well as social activity involvement and the accommodation regarding spatial distribution during the CSSS 2009. The investigation of friendship and potential research collaboration networks based on these surveys used the roster choice method [3]. This method where the respondents are given the list of all respondents (the roster) of which they select the people that

they are friends with and would be interested in working together. The adjacency matrix are based on undirected valued data, where the cell values indicate the strength of a relation in addition to its presence. For both questions (friendship and research collaboration) the participants had to choose one of the three given levels of relation. The part of friendships and research collaborations was repeated in all three surveys.

C. Network-Model

D. Questionnaires and Data Collection

III. ANALYSIS

IV. RESULTS

V. DISCUSSION AND FUTURE DIRECTIONS

VI. ACKNOWLEDGMENTS

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