CABDyN / INET Oxford SEMINAR SERIES

Keble College - Hilary 2014

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'Computational sociology: studies *in vivo* social networks'

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Tuesday 11th February, 12.30 -14.00

Roy Griffiths Room (ARCO), Keble College

ABSTRACT:

Over the past decade Network Theory combined with Computational Science approach has turned out to be a powerful methodology to investigate complex systems of various sorts. Through computational data analysis, modeling, and simulation quite an unparalleled insight into the structure, function, and response of these systems can be obtained. In human societies social interactions between individuals take increasingly place electronically by Information Communication Technology thus leaving "footprints" of human behaviour recorded digitally as ever-increasing datasets. To study these datasets the network theory and computational approach is a natural one as demonstrated by analysing the huge records of mobile phone communication-logs.

This proxy of a social network turned out to be modular in structure showing communities within which individuals are connected with stronger ties and between communities they are connected with weaker ties. In addition the network topology and the weighted links for pairs of individuals were found to be related. These empirical findings served as an inspiration for taking the next step in network theory, namely developing a simple model based on network sociology mechanisms for making friends, in order to catch some salient features of meso-scale community and macro-scale topology formation. This model turned out to produce many empirically observed features of large-scale social networks. The next challenging step is to look at the nature of social interaction in more detail, by including demographic data, i.e. gender and age information of the individual mobile phone service subscribers. In this way insight to the patterns of gender and age-related social behaviour can be gained.

In summary the network theory approach to social systems combined with computational data analysis, modeling, and simulation - Computational Sociology in short - can open up a new and quantitative perspective for studying and even predicting collective social phenomena such as information spreading, formation of societal structures, and evolutionary processes in them.