

Extracting Social Networks from Biographic Data

Weihua An, Indiana University

Abstract

Due to lack of social network data, it is difficult to study social connections among politicians. To address this problem, we construct social networks of top Chinese politicians based on their shared experiences as presented in their biographies. We show that the network centralities are predictive of political ranks. In particular, politicians with higher betweenness centrality (e.g., those who can represent different regions) possess higher political ranks than their counterparts. We also find that shared work relationships should be given (much) more weight than other relationships in measuring the politicians' social capital and the resulting social capital measure may be used to predict future leaders. Clustering analysis reveals possibly nine small groups and two major factions inside of the Politburo. To facilitate future similar research, we create R functions "bionet" and "netcapital". The first function will generate networks from biographic data according to users' queries. The second one can optimally combine several networks into a weighted one via simulated annealing and grid search.

Subject Citation Networks and Science Policy

Weihua An, Indiana University

Abstract

Most prior research on citation networks is limited to examine citations within a particular discipline. In this paper, we argue it is important to study citation networks across subjects in order to better understand the structure of sciences and inform policy on funding allocations. To that end, we constructed subject-level citation networks across time based on 13,373,704 citations from 33,634 journals spanning 15 years (1997-2011). First, we find there is a lot heterogeneity in citation patterns within broad subject areas. Thus cutting funding on a particular scientific area without distinguishing the internal differences is rather crude at best. Second, the citation impact of a subject varies dramatically depending on how citation impact is measured. For example, when looking at outdegree (i.e., the number of outgoing citations) and betweenness (i.e., the number of times cited by different subjects), social sciences are not less central than other areas. We also find that the citation impact of a subject is likely driven by its funding support than vice versa. Hence, crude funding cut for targeted subjects run the risk of blaming the victim and creating undesirable disparity and barriers across subjects.