

CT 1.5.1

Communities in Legislative Networks

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Introduction

Network theory provides powerful tools for the representation and analysis of complex systems of interacting agents [1, 3]. In this talk, I focus on political and social connections in networks of legislators and how these change over time.

Results

My collaborators and I have examined the modular and hierarchical community structure in several legislative networks [5, 4, 8, 7, 6].

We have shown that network methods are particularly effective at uncovering structure among committee and subcommittee assignments in Congress. Using the 101st–108th Congresses (1989–2004) as examples, we found evidence of several levels of hierarchy within the network of committees in the House of Representatives and identified some close connections between committees, such as that between the House Rules Committee and the Select Committee on Homeland Security in the 107th and 108th Congresses.

My collaborators and I have also studied legislation cosponsorship and roll call voting networks of U.S. Congressmen. Using the concept of modularity (considering the network’s best partition versus a partition strictly along party lines), we obtain an explicit and conceptually clear measure of political polarization. We use this to demonstrate a sharp increase in partisan polarization which preceded and then culminated in the 104th Congress, suggesting that the results of this election were an effect of gradual polarization among the U.S. populace rather than something that helped cause it.

More recently, my collaborators and I have used roll call voting data from 1789–2004 to investigate the relationship between changes in maximum versus party modularities and historical realignments of U.S. political parties. We have also begun to investigate the

community structure of the U.K. parliament, comparing it to network structures in U. S. and European Union legislative bodies.

Discussion

Collaboration networks, an important class of social networks, can be constructed from paper coauthorship among scientists, common board memberships in the corporate world, etc. Collaborations in the legislative world are somewhat analogous to those in the business world, yet much more network theory has been applied to corporate networks than to political ones. Studies of the structure of corporate networks have shed light on the mechanisms and pathways of information diffusion [2], and my work suggests that the examination of structures in legislative networks are similarly revealing.

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