

John Levi Martin (University of Chicago): "What can 50 years of Network Analysis tell us about where Big Structures Come From?"

Although social network researchers were not originally inspired by the theoretical work of Georg Simmel, they went back to him for insights as to how social network analysis could be an explanatory form with distinct principles. Simmel had proposed, first, an inherent duality between the form and the content of relationships and, second, that social relationships, when reified, confronted actors as aspects of the social environment with their own demands. Starting from similar principles, we might hope to use our understanding of these dualities to determine what structures are likely to be formed out of certain types of relationships.

Despite the infinite variety of potential relationships, we may find that a great deal of the difference in their content in so far as it is structurally relevant comes from what we may call the directionality of relationships. Some relationships are mutual or symmetric, in that both parties must have the same relationship with the other: you cannot be my brother if I am not your brother. Friendship and alliance have been the most studied symmetric relationships in the social networks literature. Other relationships are inherently antisymmetric, in that if the first has the relationship with the second, the second *cannot* have the same relationship with the first. If I am your father, you cannot be my father. Domination is the most commonly studied form of antisymmetric relationships, although a weakened form of this relationship, generally called influence, is also often seen as antisymmetric. Finally, some relationships are directed but may be reciprocated—if I give a gift to you, you may give one to me...or you may not. Donation is the most commonly studied example of such a relationship (unless we count the “nomination” of friendship), although it is usually one lineage’s donation of a spouse via marriage to another lineage.

Sociologists, social psychologists, political scientists, anthropologists and ethologists have investigated the structures that spontaneously form when actors create such relationships from near-scratch (as opposed to them being determined by a pre-existing institution). Some general tendencies are found, which is itself interesting, as this gives us an explanatory approach—an analytic-genetic one, in the sense of being an ideal-typical reconstruction of an inherent developmental tendency—that differs from the dominant explanatory approaches in sociology at this time (and though having a certain kinship with systems theory differs from it as well). But there are also strong implications for how large structures can spontaneously arise from relationships.

As relationships concatenate into larger structures, we see a number of recurrent structural problems emerge. Many have to do with *equality*—some structures presuppose equality, yet generate inequality. Other problems have to do with *saturation*—the requirement that all participants have relationships with one another. Related to this, there are problems of *transitivity*—requiring that if Albert has a relationship with Bertha, and Bertha has a relationship with Charles, that Albert have the same relationship with Charles. As a result, the structures that are most successful in growing large are those that thrive in conditions of inequality, that are minimally connected, and that suppress transitively implied relationships.

The most important example of such relationships are known as patronage relationships, and they have been a recurrent form of political organization across the globe. The structures formed

by such relationships can be very large (spanning a dozen levels and thousands of miles), but they tend to be weak, in that those at the top have little control over those at the bottom. The transformation of such patronage structures into command structures requires the replacement of anti-transitivity as a principle of structural formation with the principle of transitivity. Such introduction of transitivity turns out to be a crucial part of the story of the development of the modern state, as patronage structures were transformed into the modern army and the modern political party.

Some of those who have recently approached this question from related starting points are

Frederik Barth  
Peter Bearman  
Scott Boorman  
Ronald Breiger  
Carter Butts  
James Davis  
Jan Fuhse  
David Gibson  
Roger Gould  
Frank Harary  
Henning Hillman  
Ann Mische  
Philippa Pattison  
Dorothy Smith  
Charles Tilly  
Harrison White

I draw on the accumulated work of these and other social scientists.