Network Plasticity and Collaborative Innovation: 
Pruning and Pairing Processes in Network Reorganization

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Abstract

While some research suggests that social networks, organizational behavior, and innovative outcomes influence each other in a co-evolutionary process, very few studies have explored these processes in detail because of the difficulties of collecting longitudinal network data. Using a multi-case, inductive study of eight technology collaborations between ten firms in the computing and communications industries, this paper examines the organizational processes that enable managers to influence network dynamics and generate collaborative innovations. Comparisons of successful and unsuccessful collaborations show that rather than leverage existing ties that span organizational boundaries, managers of successful collaborations prune networks of existing broker ties that are information bottlenecks in the emerging collaboration network. Second, rather than relying on spontaneous social processes to remake these networks, managers of successful collaborations begin to remake these networks with competency pairing which forms ties between actors with complementary knowledge across organizational boundaries, forming a loose network that binds the two organizations together. Third, once this loose structure is in place, managers of successful collaborations encourage spontaneous formation processes such as homophily which increases the density of the boundary spanning network. By contrast, managers of less successful collaborations either do not prune prior ties, fail to make new ties, or make new ties based on inappropriate criteria such as functional equivalence. Taken together, the combination of formal (pruning and pairing) and informal (encouraging homophily) processes reorganize the collaboration network to promote accelerated knowledge transfer and recombination. A primary contribution of the paper is an outline of an emerging paradigm that explains how organizations shape network dynamics to achieve important strategic objectives such as innovation. In contrast to structuralist and naturalist perspectives that dominate the literature, this perspective suggests that social network theory has a unique character in organizational contexts where formal processes such as pruning and pairing play an important role to increase structural variety and supplement informal network processes in society at large. The key construct that distinguishes organizations in this emerging theory is network plasticity – that is, the capacity of managers to change social networks inside organizations to achieve organizational objectives.