

Posted: July 2008

**Taking the Leap from Dyads to Triads:
Buyer-Supplier Relationships in Supply Network**

Thomas Y. Choi (Arizona State University and Yonsei University)

Zhaohui Wu (Oregon State University)

A network is made up of nodes and links. The smallest unit that consists of both of these network elements is a dyad made up of two nodes (a buyer and a supplier) and the link that connects them (a buyer-supplier relationship).

Naturally, the focus of the supply chain management literature has been on this dyad. For instance, a buyer affects a supplier through its supplier evaluation and certificate programs, as well as long-term agreement practices. The relationship between a buyer and its supplier has been characterized as cooperative or adversarial. We have learned a great deal about supply chains through such studies in dyadic context.

However, we submit that in a network, a dyad is *not* the smallest unit of a network. In fact, the smallest unit is a triad, made up of three nodes and three links. If so, how would this recognition guide us as we move forward to investigate supply chains as a network? What would be its implications to the genre of literature on buyer-supplier relationships?

Triads and Network

In order to capture the essence of a network, two things must be examined, at a minimum: how a *node* affects another node and how a *link* affects another link. The smallest unit of network arrangement where this occurs is a triad. As shown in Figure 1, in a triad, we have a network arrangement where we can study a node affecting a node (e.g. A affecting B or C) and a link affecting a link (e.g. AB affecting AC or BC). A dyad shows how a node affects another node, but it is not able to address how a link may affect another link. In this regard, it is the triad that captures the basic essence of a network and allows us to study the behavior of a network.

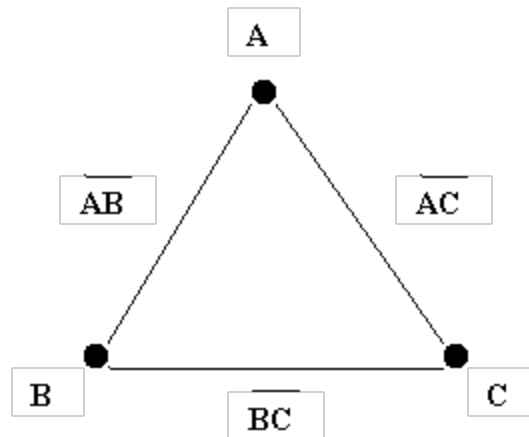


FIGURE 1 Triad

To the best of our knowledge, George Simmel (1950), a philosopher and sociologist, was the first to contemplate the difference between a dyad and a triad. One of the notable scholars that has extended Simmel's work is Caplow (1959, 1968). In his book, *Two against One: Coalitions in Triads*, Caplow studies the triadic dynamics exhibited in *Hamlet* by Shakespeare. The predominant dyad in that story occurs between Claudius, (the king) and Gertrude (his wife and Hamlet's mother). Hamlet appears as an isolate until he connects with his mother, who is now informed of the truth about the murder of his father. She utters the following words:

“O Hamlet, speak no more:

Thou turn'st mine eyes into my very soul;

And there I see such black and grained spots

As will not leave their tinct.”

With these words, a new coalition is formed and enters a triad. Per our Figure 1, A and B represent Hamlet and his mother, respectively, while C represents the king. The relationship exists between A and B (son and his mother in a new coalition) and B and C (the queen and king bound by new marriage). As Claudius plots the murder of Hamlet, B now covertly comes to Hamlet's aid. When Hamlet remained as an isolate, the relationship dynamics were much simpler — a dyad and an isolate. Once the triad is formed, complexities multiply and take on the network characteristics.

Such triadic dynamics extend beyond the individual level toward larger organizations and even nations. Simmel (1950) and other scholars that wrote about Simmel (e.g., Caplow, 1959, 1968; Mills, 1954, 1958) have explicitly pointed out how such triadic dynamics scale to large social

entities. Political scientists have explored U.S.-China relations during the cold war, for instance, in the context of third parties such as Taiwan, Japan, or the Soviet Union. As supply chain researchers, the level of analysis that matters to us would be firm-level relationships.

Simmel and other scholars have explicated the importance of studying the triads while pointing out the inadequacies of the dyads. In a dyadic framework, the focus is on the relations specific to a pair of firms. Such relational context turns a blind eye to the fact nodes are embedded in a larger supply network — the dependency of one firm on the other is contingent on the availability of the alternative third firm (Cook, 1997; Cook, Emerson and Gillmore, 1983; Davis, 1963). Therefore, while a dyadic framework allows us to describe the interaction between two firms, it cannot fully account for the relational behaviors of the two firms embedded in a network (Wasserman and Faust, 1994).

Therefore, to fully interpret the relational behavior of a firm, we need invariably to look beyond the dyad for answers. As the next logical step after having studied dyadic buyer-supplier relationships for several decades, a *triadic* relationship consideration becomes imperative to further understand the buyer-supplier dynamics in supply networks.

Examples of Emerging OSM Studies in Triadic Context

Wu and Choi (2005) studied supplier-supplier relationships in the triadic context of the buyer-supplier relationship. Referring back to Figure 1, A would be the buyer while B and C would be the competing suppliers. Their study focused on creating the archetypes of supplier-supplier relationships or BC in Figure 1.

The underlying assumption was that the buyer, A, can influence BC with varying levels of success. The focus is on how a node can affect a link it is not directly connected to. Such study is possible in a triad, while it is not in a dyad. Wu and Choi (2005) offered an example of a buying company called Coach encouraged its two suppliers to forge a relationship. Coach wanted its two suppliers to work together to share capacity and capability to meet its performance requirements. Both suppliers collaborated because they would earn “bonus points from the buyer.” Wu and Choi offered a second example of a buying company called Mediator. In this case, much to the dismay of this buying company, the two suppliers refused to work together. The illustrations of these two buying companies began to capture the relational dynamics of the supplier-supplier relationship as a link indirectly connected to the buyer.

Rossetti and Choi (2005, 2007) investigated a phenomenon called “supply chain disintermediation” that occurs across three tiers of supply chain. It takes place in a triadic context where the buyer sits between its customer and its supplier.

Based on Figure 1, A can be the buyer, while B may represent the buyer’s customer and C the buyer’s supplier. In a traditional relationship arrangement, there would be no link between B and C, and A would be in control of the materials and information flow between B and C. In network language, A becomes the *tertius gauden* that sits on a “structural hole” (Burt, 1992), referring to the lack of a direct relationship between B and C. However, because of a deteriorating relationship between A and C, C makes a strategic decision to sell directly to B, its buyer’s customer. Now, the intermediating authority of B has been undermined, and supply chain disintermediation occurs. The structural hole has now been filled, and the mediating network position of A is no more.

Choi and Kim (2007) introduced the importance of “structural embeddedness” (Granovetter, 1995) when considering a buyer-supplier relationship. The smallest network unit where the structural embeddedness can be studied is a triad — the buyer-supplier dyad is embedded in a triad where the third node can be another supplier, buyer or the buyer’s customer.

When evaluating a supplier, the buying company often considers its performance in isolation. The buyer studies one supplier at a time often visiting each facility to measure performance. However, a supplier rarely exists in isolation, and if so its performance can be considered only by understanding how it is embedded in its own network. One example Choi and Kim offer is a successful auto company lamenting the worsening financial condition of one of its major suppliers. Ironically, the poor financial situation at this supplier was caused by the failure of one of its other major customers, who is this successful company’s major competitor. Based on Figure 1, A could be the successful buyer, while B is the supplier and C is the unsuccessful auto company. One senior executive from A vowed that in the future when it selects a major supplier, it would carefully look at the supplier’s major customers. In other words, it would consider how B is embedded in its customers.

Implications and Future Research

For supply chain managers, although a relationship issue might start with a single supplier, this relationship can be fully addressed only in a broader relationship context that includes relationships with other firms — other suppliers or buying companies. Because of this, a triad naturally becomes the practical frame of reference as managers consider issues such as coalition and power dependence relationships. A triadic framework is the first step to understanding the underlying relationship

intricacies and making thoughtful relationship decisions. For the same reason, a triadic framework offers supply chain researchers an expanded vocabulary to describe a complex relationship that is absent if they are confined within the one-to-one dyadic discussion. In a sense, this triadic framework takes us from a two-dimensional space to a three-dimensional world, where every action can potentially take on unintended consequences and new relationship arrangements.

The dyadic research tradition in supply chain management has informed us of the fundamental buyer-supplier relationship characteristics such as cooperation, trust, and commitment. The firm-to-firm transactions and outsourcing decisions have been investigated through the lens of Transaction Cost Economics (TCE). However, such dyadic studies in our field have gradually taken us away from the underlying supply chain management reality. At this juncture, considering triads will take us toward the *network* view of the supply chain relationships and help us better understand the real and complex relationship that supply chain managers encounter every day.

Triadic supply chain relationship analysis promises to open new ground to move supply chain management research forward. Existing research in social sciences has offered us some fundamental understanding of triadic relational dynamics. For instance, Balance Theory in social psychology (Heider, 1958) suggests that the perceived relationship sentiment among three parties will trigger mutual adjustment of their relationships with one another as each party tries to attain cognitive and emotional harmony, or what is known as the balanced state. This theoretical perspective may help us understand supply networks beyond TCE. Also, social network research (Burt, 1992; Obstfeld, 2005) has informed us about the role of the third party as a middleman (i.e. *tertius gaudens*) or broker (i.e. *tertius iungens*) between two otherwise disconnected parties in a triad. Companies in supply chains would inevitably assume both roles and play them under different circumstances. Clearly, it is valuable for us to understand how companies play such roles as they navigate across various triadic arrangements.

Closing thoughts

We accomplish three things in this paper. We first present an argument that triads, not the dyads, are the fundamental building blocks of a network. After that, we offer emerging studies that have begun to address triads in supply chains. Lastly, we discuss the implications of injecting this new perspective to our field and demonstrate how triads may open new areas of research.

The triadic relationship is a practical matter and not just an intellectual exercise. We need to study how in a network, a dyad is affected by another dyad. Therefore, to study a network, studying triads becomes imperative. We need to capture the complex dynamics of a triad across different tiers of supply chains. We also need to investigate the embedded nature of a buyer-supplier relationship.

Simply, dyads are inadequate in capturing the interactive nature inherent in a network. In closing, let us offer a comment by Simmel (1950): “In the dyad, affection may culminate in intimacy but in the three-person group it tends to be either checked or restricted to a subpart” and “scapegoating disintegrates the *dyad*, while it may serve temporarily as a rebuilding expedient in the *triad*” (italics added by the authors). We need to take our perspective beyond dyads and to the next level of triads, the fundamental building block of networks.

REFERENCES

Burt, R. S. 1992. *Structural Holes: The Social Structure of Competition*. Harvard University Press, Cambridge, MA.

Caplow, T. 1959. Further Development of a Theory of Coalitions in the Triad. *American Journal of Sociology*. 64 (5): 488-493.

[Caplow, T.](#) 1968. *Two against One: Coalitions in Triads*. Prentice-Hall, Englewood Cliffs, NJ.

Choi, T. Y. and Kim, Y. Structural Embeddedness and Supplier Management: A Network Perspective. *Journal of Supply Chain Management*. Forthcoming.

Cook, K. S. 1997. Exchange and Power in Networks of Inter Organizational Relations. *Sociological Quarterly*. 18: 62-82.

Cook, K. S., Emerson, R. M., Gillmore, M. R. and Yamagishi, T. 1983. The Distribution of Power in Exchange Networks: Theory and Experimental Results. *American Journal of Sociology*. 89 (2): 275-305.

Davis, J. A. 1963. Structural Balance, Mechanical Solidarity, and Interpersonal Relations. *American Journal of Sociology*. 68 (4): 444-462.

Granovetter, M. 1995. Economic Action and Social Structure: A Theory of Embeddedness. *American Journal of Sociology*. 91: 481-510.

Heider, F. 1958. *The Psychology of Interpersonal Relations*. John Wiley and Sons, NY.

Mills, T. M. 1954. The Coalition Pattern in Three Person Groups. *American Sociological Review*. 19 (6): 657-667.

Mills, T. M. 1958. Some Hypotheses on Small Groups from Simmel. *American Journal of Sociology*. 63 (6): 642-650.

Obstfeld, O. 2005. Social Networks, the *Tertius Iungens* Orientation, and Involvement in Innovation. *Administrative Science Quarterly*. 50: 100-130.

Rossetti, C. and Choi, T. Y. 2005. On the Dark Side of Strategic Sourcing: Experiences from the Aerospace Industry. *Academy of Management Executive*. 19 (1): 46-60.

Rossetti, C. and Choi, T. Y. 2007. Supply Management under High Goal Incongruence: An Empirical Examination of Disintermediation in the Aerospace Supply Chain. *Decision Sciences*. Forthcoming.

Simmel, G. 1950. *The Triad*. K.H. Wolff, Translated, Eds. *The Sociology of George Simmel* Free Press, Glencoe, IL.

Wasserman, S. and Faust, K. 1994. *Social Network Analysis: Methods and Applications*. Cambridge University Press, Cambridge, UK.

Wu, Z. and Choi, T. Y. 2005. Supplier-Supplier Relationships in the Buyer-Supplier Triad: Building Theories from Eight Case Studies. *Journal of Operations Management*. 24 (1): 27-52.