

# POWER REGIMES: A NEW PERSPECTIVE ON MANAGING IN SUPPLY CHAINS AND NETWORKS

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## Abstract

This paper addresses two main research questions. The first is whether or not firms should attempt to manage the multiplicity of relationships in which they are directly and indirectly involved in their supply chains and networks. The second question, which assumes a positive answer to the first, is how and to what end should firms manage these multiple buyer-supplier relationships? Answers to these questions are proposed on the basis of a novel analytical framework for mapping and explaining the power dynamics of buyer-supplier relationships. The key original contribution made by this framework is that it looks beyond individual exchange dyads to consider interactions within an extended network of business relationships, which is referred to as a *power regime*. The utility of the power regimes framework is tested with case material from the aerospace industry. This case provides substantial evidence to support the proposition that power regimes are often composed of a number of interlocking, but discrete, management *sub-regimes*. The paper concludes that firms seeking to manage relationships with their customers and suppliers need to understand where the boundaries between these sub-regimes lie, because the possibility of managing a relationship that crosses a boundary is limited, at least in the short-term. This does not preclude the possibility, of course, that a sub-regime boundary might be moved over time by a firm's efforts to reconfigure the power structure of particular exchange dyads.

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**Keywords:** Power regime, management sub-regime, supply chain, network, aerospace industry.

## Introduction

The principle aim of this paper is to cast new light on what have historically been and almost certainly still remain the two central research questions in the discipline of supply management. The first question is whether or not firms should attempt to manage the multiplicity of relationships in which they are directly and indirectly involved in their supply

chains and networks. The second question, which assumes a positive answer to the first, is how and to what end should firms manage these multiple buyer-supplier relationships? The paper considers these questions in four main sections.

The first section of the paper provides a brief critical analysis of the existing literature dealing with the management of inter-organisational relationships in supply chains and networks. This literature is organised into two distinctive perspectives on our central research questions. The first perspective is that put forward by writers falling under the auspices of the Industrial Marketing and Purchasing (IMP) group. The second perspective is that put forward by writers operating under the broad banner of supply chain management. The key difference between these perspectives centres on the question of whether firms can, and therefore should, attempt to manage their supply network relationships. Authors within the IMP group argue that such deliberate managerial action is not normally feasible, while the supply chain management perspective is that such deliberate relationship management is both possible and highly desirable. The approach taken by this paper is more in support of the latter rather than the former view.

That said, however, we do argue that the supply chain management perspective suffers from one important philosophical weakness. The problem is that most of these writers do not consider the real commercial interests of buyers and suppliers as defined by their relative power positions in the context of specific transactions. Consequently, this literature is unable to explain effectively why integrated supply chain management (ISCM) is not always successful. This paper contends that the nature of exchange power and its impact on relationship management choices must always be at the core of any explanation.

To this end, the second section of the paper presents a novel analytical framework for mapping and explaining the power dynamics of buyer-supplier relationships in the context of supply chains and networks. The key original contribution made by this framework is that it looks beyond individual exchange dyads to consider interactions within an extended network of business relationships, which we refer to as a *power regime*. We use the framework to predict those circumstances in which a firm would be able, if it chose, to manage its direct and indirect relationships with customers and suppliers. We also predict those circumstances in which a firm would not be able (and therefore should not attempt) to manage its relationships. These predictions are based on the proposition that power regimes are often composed of a number of interlocking, but discrete, management *sub-regimes*. We argue that firms seeking to manage relationships with their customers and suppliers need to understand where the boundaries between these sub-regimes lie, because the possibility of managing a relationship that crosses a boundary is limited.

In the third section of the paper we test the robustness of the theoretical propositions generated by our power regimes framework. This section maps and analyses the power regime dynamics in a case study supply network drawn from the aerospace industry. This case provides substantial evidence to support the proposition that firms are often able to manage only a discrete part of their supply network. The paper concludes in the fourth section with a brief discussion of the managerial implications of our explanatory framework.

## Research Methodology

This paper combines the deductive process of building a new theoretical framework, focusing on the concept of the power regime, with the inductive process of empirical testing. The power regime framework was developed both by the identification of important gaps in the existing supply chain/network management literature and by drawing on the insights offered by other relevant literatures. These are discussed below. The empirical testing of the framework outlined here is primarily based on qualitative case-study evidence. This data was gathered by means of semi-structured interviews with sixteen companies in the selected aerospace supply network. The primary data was supplemented with further qualitative evidence drawn from secondary sources such as specialist industry reports and company literature.

## Gaps in the Existing Literature

As Lamming et al (2000) suggest, the existing literature that conceptualises relationship management in supply chains and networks can usefully be divided into two distinctive perspectives. The first is the literature generated by the Industrial Marketing and Purchasing (IMP) group, which deals with buyer-supplier relationships in the context of industrial networks. The second perspective, to which Lamming and his colleagues belong, is that put forward by writers operating under the broad banner of supply chain management. We will now briefly consider the main characteristics of each of these perspectives and highlight some of their most important descriptive and explanatory gaps.

### *The IMP Perspective*

The central contention of writers operating from this perspective is that, under most circumstances, the firm cannot deliberately and rationally manage all or even a small part of a supply network of which it is a part. Instead, all that the firm is able to do is to cope or to incrementally adapt to changes that come about within the network (see, for example, Hakansson and Snehota, 1995; Brennan and Turnbull, 1998). In short, writers within this school argue that firms cannot and therefore should not attempt to manage their own operations or their supply network relationships in a planned and deliberate manner.

This conception of management as coping flows primarily from the particular way in which writers within the IMP group define a supply network. From the IMP perspective, a supply network is always defined as being an open system, which suggests that it has no meaningful boundary (Cova et al, 1998). An often cited definition in this vein is that a network is 'a model or metaphor which describes a number, usually a large number, of entities which are connected' (Easton, 1992). As this fairly vague definition suggests, the primary objective of researchers within the IMP group is to capture the richness and complexity of the market environment within which firms operate. Given this agenda, it is hardly surprising that the rational management and planning of supply network relationships is seen as something of an impossibility. As Ford (1997, p. 559) comments, 'the inherent complexity of inter-company

relationships and networks means that it is unrealistic to imagine that they can be wholly “designed” by any one party’.

Flowing from this conclusion, writers within the IMP group suggest that where firms do try to manage their supply network relationships they are forced to adopt an ‘emergent’ or incremental style of decision-making (Hakansson and Snehota, 1990; Ford, 1997). This means that decisions are based on an on-going analysis of the firm’s experiences in supply network relationships rather than on explicit planning. While the IMP perspective on supply networks undoubtedly has some descriptive utility, we contend that it places an overly conservative construction on the managerial capacity of many firms in relation to their customers and suppliers. At one level firms do indeed exist in highly complex open systems, but this does not completely exclude the possibility that within this complexity there are groups of relationships within which the firm can exert a significant measure of planned managerial control. Indeed, we only need to look to the multi-tiered network sourcing arrangements operating in many areas of Japanese industry during the post war period for evidence to support this possibility (Lamming, 1993). Our concern in this paper is to understand the circumstances in which such effective management of supply network relationships becomes possible.

### *The Supply Chain Management Perspective*

As we noted earlier, the supply chain management perspective takes a diametrically opposed view to the IMP group on the question of whether the firm can, and therefore should, manage its relationships with others in its supply network. Writers operating within this perspective have a principled belief in both the possibility and the desirability of such management control. As Johnsen et al (2000) note, ‘these researchers often tend to regard a network as some form of extended enterprise’, which refers to a group of firms, discrete from their wider environment, that operate in a more or less co-ordinated fashion. Implicit in such a concept is the idea that firms can plan and manage the development of their relationships with others in the extended enterprise.

The supply chain management perspective finds its roots the fields of operations management and logistics (see, for example, Houlihan, 1984; Christopher, 1992), and as such writers in this school are primarily concerned with how firms should manage their relationships with suppliers and customers in order to achieve gains in operational efficiency. More recently, some contributors to this literature have also started to make claims for improved supply chain management as a potential basis for sustainable competitive advantage (see, for example, Hall, 1999; Lincoln et al, 1998; Tan et al, 1999).

The main thrust of this perspective is that the firm should work together with those in its supply chain in a closer and more co-ordinated fashion to achieve efficiency gains and, potentially, a sustainable competitive advantage. This concept of integrated supply chain management (ISCM) has two main guises in the literature. The more traditional form of ISCM is one in which the firm acts unilaterally to manage its relationships with customers and suppliers through behaviours that have been called ‘cascade’ and ‘intervention’ (Lamming, 1996). Beyond this traditional view writers such as Lamming (1993, 1996) and Womack and Jones (1996) have proposed what they argue is a more advanced form of ISCM based on ‘lean

thinking'. This thinking implies bilateral or even multilateral relationship management, in which each of the parties to a supply network relationship shares responsibility for the maintenance and development of that relationship. More recently, Johnsen et al (2000) have developed these ideas further by introducing the concept of a 'supply network convenor'. This concept refers to a focal firm within a network that is able to co-ordinate network factors (resources, actors and activities) in order to ensure the success of bilateral/multilateral relationship management for mutual benefit.

While we do support the fundamental basis of the supply chain management perspective, namely that firms are often able to manage their supply network relationships, there is much here with which we take issue. The core problem with most of this literature is that it does not consider the real commercial interests of buyers and suppliers as defined by their relative power positions in the context of specific transactions. Consequently, these writers are unable to properly explain why ISCM initiatives often fail. It has been argued that ISCM failures are primarily a function of insufficient managerial effort or cultural barriers (see, for example Macbeth and Ferguson, 1994). These explanations are predicated on the idea that firms are simply failing to recognise that closer and more co-ordinated supply network relationships are self-evidently in their best interests. We would contend, however, that the lack of inter-organisational co-ordination required to support a programme of ISCM often has more to do with the fundamental conflicts of interest that exist between buyers and suppliers and the power of particular firms in a supply network to obstruct or subvert the process of relationship management. The point is that in certain circumstances a closer and more co-ordinated relationship with a customer or a supplier is not in a firm's best commercial interests. We need therefore to understand the nature of exchange power and its impact on relationship management choices. The analytical framework presented briefly in the next section is designed to meet these objectives (this framework is discussed in greater detail in Cox, Sanderson & Watson, 2000; and Cox et al, 2001).

## The Power Regime Framework

The analytical framework detailed here is informed by a recognition that although power advantages might often not be *explicitly* exploited in buyer-supplier interactions, the very existence of a power imbalance conditions buyer and supplier behaviour. We contend that power does not become any less important to an understanding of buyer-supplier relationships simply because it is not exercised. The basic unit of analysis used in our framework is the dyadic power relationship that exists between specific buyers and suppliers. The framework is constructed around four basic types of buyer-supplier power structure – buyer dominance, supplier dominance, buyer-supplier interdependence (high mutual dependence), and buyer-supplier independence (low mutual dependence). These categories are shown in Figure 1 in conjunction with the shorthand symbols that we have devised for each power structure.

Insert figure 1 here

The intellectual antecedents of our four-fold categorisation can be found in the pioneering work on power and resource dependence by Emerson (1962) and in the work by Pfeffer and Salancik (1978), which applies Emerson's thinking in the context of inter-organisational

power relations. The fundamental premise of both of these works is that the power of one actor or organisation over another is determined by the extent to which that actor or organisation is dependent on the other for particular resources. It is further argued that the level of such dependency is determined by the relative *utility* and the relative *scarcity* of the resources brought by each of the parties to an exchange relationship. While the meaning of these two concepts cannot be explored in great detail here, it is sufficient to know that the utility of a resource refers to its commercial and operational importance for the firm, and the scarcity of a resource refers to the extent to which an equivalent resource can be found elsewhere. Resource scarcity is in turn impacted by factors such as property rights, economies of scale, information impactedness, causal ambiguity, branding, search and switching costs for the buyer, and network good effects (Rumelt, 1987; Molho, 1997).

In the context of a buyer-supplier exchange relationship we assume that the key resources brought by a buyer are its expenditure, which can be assessed in terms of its volume, regularity and predictability, and its reputation in the market place. Conversely, the key resources brought by a supplier to an exchange relationship are in the form of its product/service offering and in the knowledge and organisational processes that underpin that product/service. Thus, as Figure 1 shows, a buyer would have power over a supplier if two conditions held true. Firstly, the buyer offers the supplier resources (expenditure and reputation) that are relatively scarce and that the supplier regards as relatively important. Secondly, the supplier's resources (product/service, knowledge and processes) are relatively commonplace and are of relatively low importance for the buyer. Of course, if the exact opposite is true in terms of resource utility and scarcity then the supplier must have power over the buyer. The two remaining quadrants in Figure 1 represent those exchange circumstances in which the power attributes of buyer and supplier are in balance. The buyer and supplier are said to be interdependent if the relative importance and uniqueness of the resources offered by each party are high. Conversely, a situation of buyer-supplier independence exists where the relative importance and uniqueness of the resources offered by each party are low. This final quadrant represents the classical market ideal, with many easily interchangeable buyers and suppliers.

It must be emphasised, however, that although an understanding of dyadic power structures is at the heart of our analytical framework, it is not here that we make our most original contribution. Indeed, a number of articles exploring the relative power balance in buyer-supplier interactions have appeared in recent years in the supply management and relationship marketing literatures (see, for example, Bensaou, 1999; Blenkhorn and Mackenzie, 1994; Gelderman and van Weele, 2000; Provan and Gassenheimer, 1994). The failing of these articles is that they do not place the individual buyer-supplier interaction in the context of the wider supply network. This means that they present, at best, a partial understanding of the external management challenges facing the firm. The key original contribution made by the power regime framework, therefore, is that it provides a more complete understanding of such challenges by linking together individual exchange dyads in an extended network. We contend that this enables us to understand, and therefore to predict, the extent to which a firm would be able, if it chose, to manage its direct and indirect relationships with customers and suppliers.

For example, a power regime based on synchronised buyer dominance ( $A > B > C > D > E$ ) would allow the end customer (A) to unilaterally co-ordinate the actions of all of those firms operating upstream in the supply chain. This would represent a supply chain management strategy based on what Lamming (1996) calls cascade or intervention. In this case, the dependence of each supplier on its customer would dictate that Cupertino with customer-inspired supply management initiatives is in the supplier's best interests, although these initiatives ultimately bring most benefit to the end customer. Conversely, a power regime consisting of a series of interdependent relationships ( $A = B = C = D = E$ ) would enable a programme of supply chain co-ordination based on bilateral management. In this case, however, the programme would be run for the mutual benefit of each participant, the lean thinking ideal.

We can also identify those circumstances in which a firm would not be able, and therefore should not attempt, to manage its relationships. For example, where a buyer has a dependent or an independent relationship with a supplier it is highly unlikely that it will be able to manage that relationship, either unilaterally or bilaterally. In each case, the supplier simply has insufficient incentives to enter into a co-ordinated relationship. Where the buyer is dependent the relationship is likely to be managed, if at all, by the supplier in its own interests. Where an independent relationship exists the buyer is unlikely to have sufficient commonality of interest with the supplier to ensure that a stable and co-operative interaction can be established. Each party to the exchange simply has too little dependence on the other to suggest that they would be likely to invest the considerable time and resources needed to achieve greater co-ordination. This leads us to propose that power regimes might sometimes be composed of a number of interlocking but discrete management sub-regimes, demarcated by independent or dependent relationships.

Insert figure 2 here

As Figure 2 shows, the existence of these dyadic circumstances disrupts the capacity of the end customer (A) to manage its upstream relationships beyond the first tier supplier (B). In the first example, the end customer (A) has power over the first tier supplier (B), B and C are independent of one another, and C is linked to D and E through a series of interdependent relationships. This gives rise to two distinct sub-regimes. In the first, A would be able to undertake unilateral management of its relationship with B, while in the second C, D, and E would be able to manage their relationships with one another on a bilateral basis. The existence of an independent power structure between B and C means, however, that the co-ordinated management of this relationship, and therefore of the chain as a whole, is highly unlikely to occur. Thus, although the end customer might use its dominance over its first tier supplier to launch a 'supply chain management initiative', we contend that such an initiative is likely to founder due to a lack of common interests between the first and second tier suppliers.

In the second example in Figure 2, A again has power over B, and C, D and E are linked by a series of interdependent relationships. This time, however, B is also dependent upon C. Although in this case the B-C power relation differs quite markedly, the nature of the management sub-regimes is fairly similar. Once again the end customer's capacity to co-ordinate the supply chain is limited to its relationship with its first tier supplier. B cannot undertake similar management co-ordination in its relationship with C, because it is

dependent upon this supplier. Unlike the previous example, however, it is possible for C to undertake co-ordinated management of its relationship with its customer (B). This implies that B might well be subjected to (potentially contradictory) supply chain management initiatives on both the upstream and downstream sides of its business. This is illustrated by a downstream movement of the border between the two sub-regimes so that it falls on B. We would expect the most likely outcome of this situation to be that the objectives of neither management sub-regime are properly fulfilled, as B tries to reconcile the competing pressures under which it is placed.

## **The Power Regime for In-flight Refuelling Equipment**

In this section we briefly present the findings of qualitative case-study research to test the robustness of the theoretical propositions outlined above. We provide a sketch of the power regime currently operating in an aerospace industry supply network and comment on how this regime has impacted on the relationship management choices of particular focal firms. For reasons of commercial confidentiality, none of the firms in this case are identified by name (for a more detailed discussion of this power regime see Cox et al, 2001).

Figure 3 shows the current power regime in the supply network that delivers in-flight refuelling equipment to military end customers. The figure reveals that, unlike the relative simplicity of the ideal type power regimes discussed above, even a limited supply network can have enormously complex power dynamics. For the purposes of this brief discussion we will focus our attention on the power structures that exist between the tanker converter (A), the equipment assembler (B) and the supplier of sub-assemblies (C).

Insert figure 3 here

It is immediately obvious that the interdependent power structure between A and B might be expected to provide these firms with a basis on which they can successfully co-ordinate their relationship. This interdependence is essentially a function of the fact that, for various cost and technological reasons, the markets on either side of this exchange relationship are highly restricted. It might also be expected, however, that any efforts by A and B to co-ordinate the supply network beyond their own relationship are likely to fail. The problem is that B has a combination of dependence and independence in its relationship with C, depending on which particular sub-assembly is being supplied. The equipment assembler is dependent upon its supplier for those sub-assemblies that exhibit a high degree of asset specificity (Williamson, 1985). An independent relationship exists between B and C for those sub-assemblies that are generic and that are bought by a wide range of customers from other industries. Moreover, even if C could be persuaded to participate in a relationship management initiative, its dependent and independent relationships with D and E make it unlikely that these firms could be brought into the initiative.

Significantly, these theoretical predictions are strongly supported by the qualitative case evidence that we have gathered. The operation of this supply network is intimately linked to the price sensitivity of the military end customer. The commercial problem for the tanker converter and, by extension, the equipment assembler is that their revenues from in-flight



refuelling equipment are at present restricted by the relatively high price of this product as compared with the ground-based alternative. An obvious solution to this problem, and one that has been championed by the Supply Chain Relationships in Aerospace initiative (SCRIA, 1996), is for the members of this supply network to work more closely together to reduce costs and improve lead times. Logically, if such an initiative was successful we might expect all, or at least most, members of the network to benefit from a greater demand for their products.

Despite this seemingly flawless logic, however, the supply chain management efforts of both the tanker converter and the equipment assembler have been focused solely on their own relationship. In recent years there have been a number of joint initiatives aimed at reducing both costs and lead times. These have focused both on the internal operations of the equipment assembler and on the assembler's relationship with the tanker converter. There is a limit, however, to the impact that these efforts can have on the total cost of the equipment, because approximately 70% of the unit cost lies in the sub-assemblies and their constituent parts. Repeated efforts have been made by both the assembler and the converter to involve the suppliers of various sub-assemblies in these initiatives, but these appeals have fallen largely on deaf ears.

From the perspective of most of these sub-assemblers the expenditure of the equipment assembler is of relatively little importance. Sales of these sub-assemblies to this particular supply network are just a small portion of the business activities of what are generally very large multinational engineering and electronics companies. Moreover, as we have noted, the equipment assembler's demand for these sub-assemblies is relatively low and very irregular. Consequently, the equipment assembler is considered by the sub-assemblers to be a 'nuisance' customer. According to the standard marketing literature a firm should give such customers a low priority, even at the risk of losing their business. Our evidence shows that several of the sub-assemblers in this supply network have taken this advice to heart. A senior manager from the equipment assembler reported that the sub-assemblers are very difficult to negotiate with, that they show little interests in becoming involved in supply chain management initiatives and that, in some cases, they insist on having lead times that are four or five times longer than those for which the assembler has been asking.

## Conclusion

The main conclusion that we can draw from the case evidence presented here is that a firm's success in co-ordinating its direct and indirect relationships in an extended supply network depends on more than just cultural alignment and managerial commitment. Rather, the case evidence provides substantial support for our theoretical proposition that the success or failure of a supply chain management initiative is primarily a function of the complex pattern of exchange power that underpins supply network relationships. It is the nature of exchange power that defines the real commercial interests of buyers and suppliers and determines whether they can and therefore should try to manage their direct and indirect relationships with others in their supply network. This conclusion does not imply, however, that many buyer-supplier interactions are fundamentally about the *explicit* use of power advantages. Rather, as we stated earlier, the very existence of a power imbalance conditions buyer and

supplier behaviour. Power does not become any less important to an understanding of buyer-supplier relationships simply because it is not openly exercised.

The case evidence also supports our proposition that power regimes might be expected to be composed of a number of interlocking but discrete management sub-regimes, demarcated by dependent or independent relationships. The tanker converter and the equipment assembler were isolated from the rest of the supply network within just such a sub-regime. The implications of this evidence for management practice are clear. Firms seeking to manage relationships with their customers and suppliers need to understand where the boundaries between these sub-regimes lie. This understanding is crucial to ensure that scarce management resources are not wasted in pursuit of relationship management initiatives for which there is, currently at least, no commercial logic. That is not to say, of course, that such an initiative might not be successful in the future. The structure of power between a buyer and a supplier is very rarely fixed in stone. This implies that the firm might be better to direct its managerial effort towards a reconfiguration of the structure of power in particular exchange dyads so that relationship management becomes a realistic possibility.

We are, of course, fully aware of the dangers of generalisation based on the single case discussed here. This potential problem is addressed, however, by the fact that these conclusions are also given substantial support by evidence from six other cases (for a discussion see Cox et al, 2001). These cases map and analyse power regimes from a range of supply networks, including industrial electricity, forecourt retailing and motor insurance. It was not possible, however, to include these other cases within the confines of this paper.

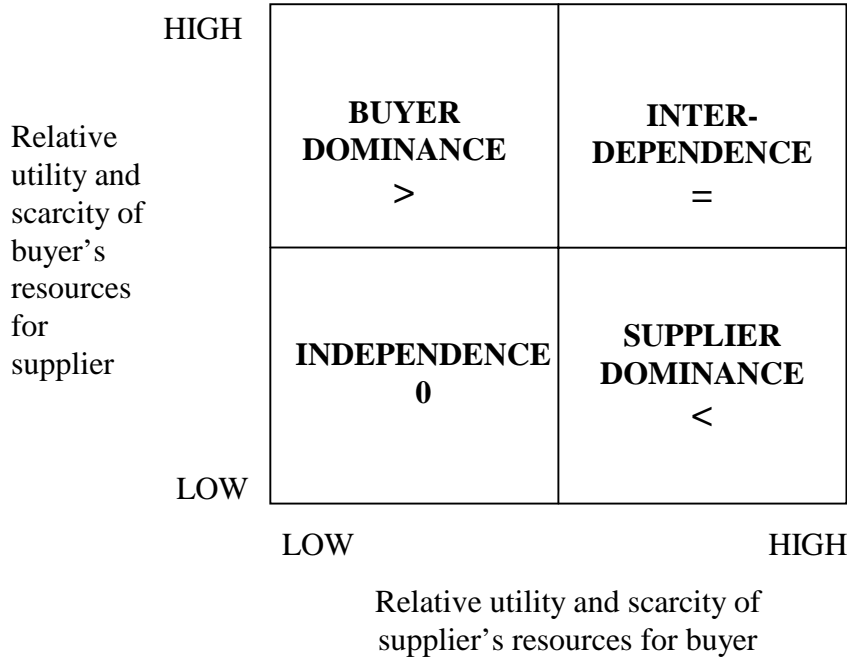
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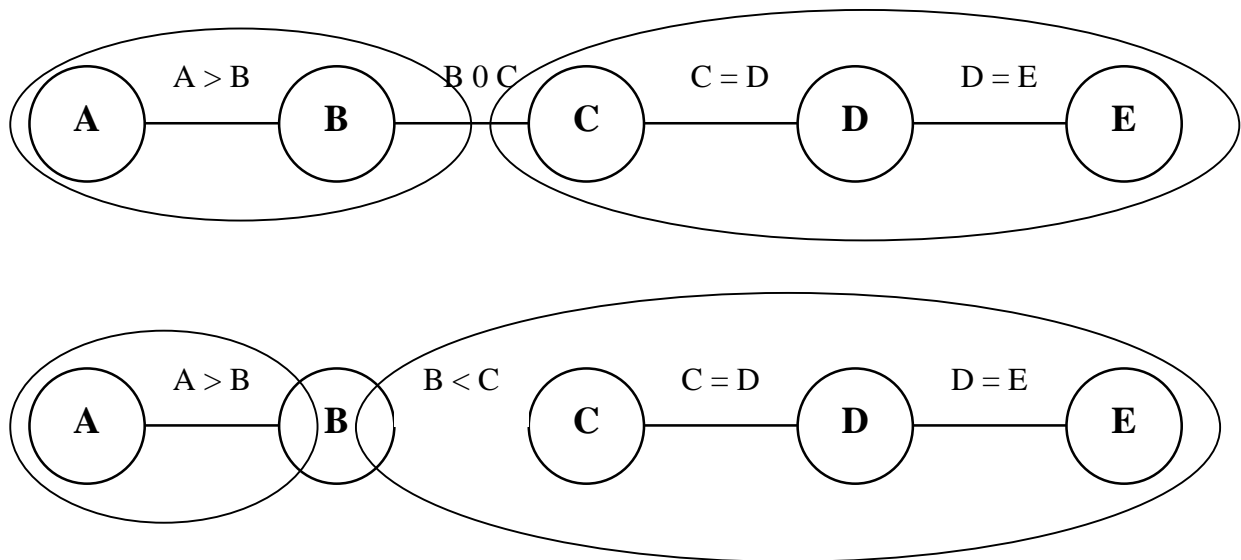
# Figures

Figure 1: The Exchange Power Matrix



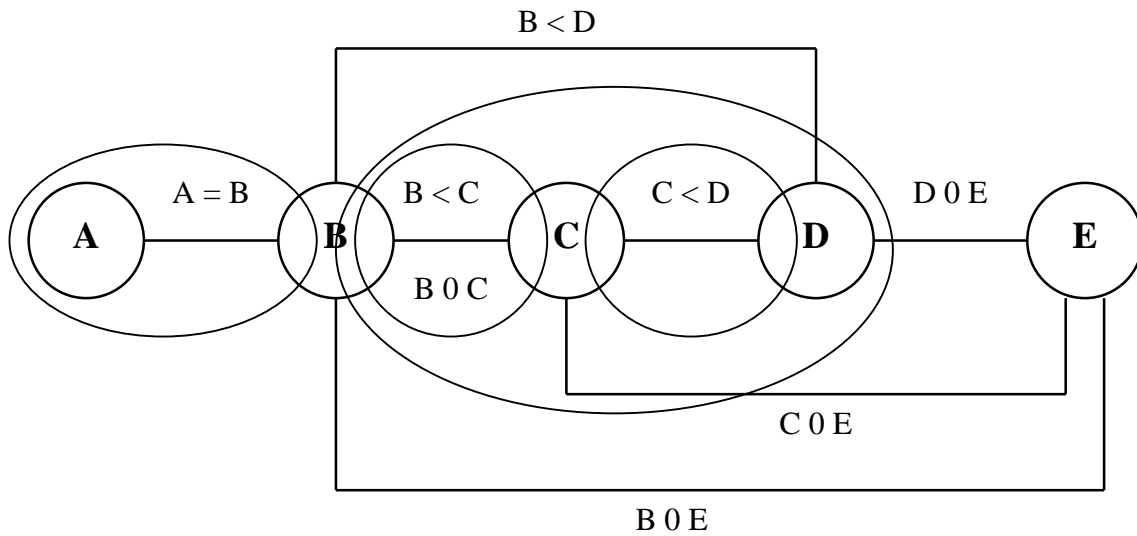
Source: Adapted from Cox, Sanderson and Watson (2000, p. 18)

Figure 2: Sub-regimes and the Limits to Supply Chain Management



Source: Adapted from Watson (2001)

Figure 3: The Power Regime for In-flight Refuelling Equipment



Key: A – Tanker converter                      D – Bespoke component manufacturer  
 B – Equipment assembler                  E – Generic component manufacturer  
 C – Sub-assembler

Source: Adapted from Cox et al (2001)

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