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# Power, value and supply chain management

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*Andrew Cox*

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## The author

**Andrew Cox** is Professor of Business Strategy and Procurement at Birmingham Business School, University of Birmingham, Birmingham, England.

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## Abstract

Explains some of the thinking that informs both the case study articles that appear in the same issue of *Supply Chain Management: An International Journal* and the EPSRC funded research project currently being undertaken at the Centre for Business Strategy and Procurement. A review is provided of the dominant ideas that currently inform "supply chain management thinking". This paradigm is characterised as operational effectiveness and efficiency. A case is made for understanding supply chains from a strategic as well as from an operational perspective. Current supply chain management thinking is criticised for being atheoretical and descriptive, and a case is made for an analytical approach to supply chain thinking based around the concepts of power and value appropriation. A more analytically robust way of understanding supply chains is laid out.

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## The current orthodoxy in supply chain thinking

What is the current orthodoxy in supply chain management thinking? In very general terms it can be described as (Cox, 1997a):

a way of thinking that is devoted to discovering tools and techniques that provide for increased operational effectiveness and efficiency throughout the delivery channels that must be created internally and externally to support and supply existing corporate product and service offerings to customers.

This way of thinking has its lineage in the work that was originally undertaken to understand the phenomenal success of Japanese industry in the 1970s and 1980s, primarily in the automotive sector (Womack *et al.*, 1990). Indeed, it can be argued that a great deal of supply chain management practice today appears to be nothing more than an attempt to replicate, in a variety of product and service supply chains, the approach to external resource management originally pioneered by Toyota. This approach (often referred to as "lean thinking") is based on attempts to replicate Toyota's waste minimisation techniques (Womack and Jones, 1996).

I will return to this way of thinking later because there are problems with it (Cox, 1997a), but it is worth stressing that the lean approach is very much the dominant paradigm in most writing about supply chains. Given this, it is perhaps worth outlining in summary form what the lean paradigm is. There appear to be eight defining characteristics of the lean approach:

- (1) Strive for perfection in delivering value to customers.
- (2) Only produce what is pulled from the customer just-in-time and concentrate only on those actions that create value flow.
- (3) Focus on the elimination of waste in all operational processes, internally and externally, that arise from overproduction, waiting, transportation, inappropriate processing, defects and unnecessary inventory and motion.
- (4) Recognise that all participants in the supply chain are stakeholders and that we must add value for everyone in the business.
- (5) Develop close, collaborative, reciprocal and trusting (win-win), rather than arms-

length and adversarial (win-lose), relationships with suppliers.

- (6) Work with suppliers to create a lean and demand-driven logistics process.
- (7) Reduce the number of suppliers and work more intensively with those given a preferred long-term relationship.
- (8) Create a network of suppliers to build common understanding and learning about waste reduction and operational efficiency in the delivery of existing products and services.

In outlining these characteristics it is obvious that a great deal of supply chain thinking is based either on copying from, or adapting, the basic insights that have been gleaned from the way in which Toyota has historically managed itself and its relationships with customers and suppliers. It is commonplace today, therefore, for strategic writers to argue that competition is dead (Moore, 1996), or that “co-opetition” rather than competition is the way forward (Brandenburger and Nalebuff, 1996). At the operational level there has also been a plethora of writing about more collaborative relationship management, and procurement and logistical effectiveness and efficiency that draws on this experience. The work by Bhote (1989), Carlisle and Parker (1989), Christopher (1992; 1997), Gattorna and Walters (1996), Harrison (1993), Hines (1994), Houlihan (1988), Kay (1993), Lamming (1993), Lewis, (1990), Sako (1992) and Saunders (1994) all falls into this category.

The basic argument of this writing is that business success will be derived from companies managing to enhance the total performance of the supply chain, so that it can deliver improved value to customers. Thus waste is normally seen as the major enemy, and closer and long-term working relationships – even partnerships – with suppliers at all levels in the chain are recommended, in order to deliver exceptional value to customers. Companies are, therefore, instructed to construct ever more efficient and responsive supply chains because it will no longer be company competing with company, but supply chain competing against supply chain.

There is little doubt that there may be something in these arguments. There are perhaps two reasons for this at the operational level. First, no one can doubt the success with which Toyota created a leaner, assembly-based, outsourced and JIT, demand-pull

paradigm for the automotive industry, which has overturned the historically vertically integrated and supply push practices of the Western automotive industry. This model has been successfully replicated by Western car manufacturers, and by others – such as supermarket retailing – with similar types of supply chain structures. Wherever it is possible to replicate the operational waste minimisation approaches devised by Toyota in supply chains, practitioners must do so. This is because, if they do not, others may do so first. Other things being equal, those who lag behind and fail to deliver value to customers will lose out in the competitive scramble for market share.

The second reason why practitioners have to pay particular attention to the operational aspects of supply chain management is because we are currently in the midst of a major technological revolution associated with information processing and the Internet. This information processing revolution, in the form of e-commerce and e-business, is offering opportunities to fundamentally transform existing supply chains through the erosion of dis-intermediation and the speeding up of the information linkage between ultimate customers and all stages of the supply chain. This will provide companies that embrace the new technology with opportunities to eliminate many aspects of waste, by delivering more value to customers through speeding up the process of supply chain communication.

It is hardly surprising, therefore, that many functional branches of business practice – from operations, through procurement and logistics management – have begun to address the issue of supply chain management. One has to say, however, that while a re-appraisal is taking place, this is rarely the development of a new way of thinking about business. It is merely a re-branding of existing common-sense operational approaches that have always been pursued. What is perhaps new is the tendency to believe that there is now a “one best way” to manage supply relationships, associated with lean thinking.

There is some considerable doubt about the general applicability of the lean approach to supply chain thinking for all companies. One cannot doubt, however, that the lean paradigm has assisted in the development of a more extended (and less internally focused) view of how operational effectiveness and efficiency can be generated in the delivery of

value to the customer. But it is still the case that most writing in the area is primarily focused on the supply chain at an operational level. This raises the question of whether the focus of thinking around the concept of the supply chain ought also to be understood in terms of business strategy.

### **The strategic approach to supply chain thinking**

The work being undertaken at the CBSP is devoted essentially to the view that the supply chain concept has both a strategic as well as an operational importance. To understand this point of view one has to recognise that the supply chain has two dimensions. The first can be referred to as the operational supply chain; the second can be referred to as the entrepreneurial supply chain.

The operational supply chain refers to the series of primary and support supply chains that have to be constructed to provide the inputs and outputs that deliver products and services to the customers of any company. All companies have operational supply chains, and these supply chains are normally unique to the company creating them, because they have choices about the input and output supply chains that they create operationally, when they position themselves strategically to provide a particular product and service within a specific primary supply chain.

This notion of companies positioning themselves strategically within a primary supply chain is an under-developed aspect of thinking in business strategy. It is true that Porter (1980) was well aware of the importance of buyer-seller relationships in the development of his famous five forces model. It can be argued, however, that strategic management thinking has systematically under-estimated the importance of these types of vertical business-to-business relationships as the basis for a proper understanding of entrepreneurial action and sustainable business success. Furthermore, it is clear that supply chain thinking can provide a significant insight into the conduct of business strategy, and that it is not merely an operational tool or technique. The reasons for this are set out in more detail elsewhere (Cox, 1997a). Suffice it to say here that the Toyota model must be understood not just in terms of operational efficiency through lean

production and supply, it must also be understood as a completely different way of thinking about business strategy.

In recent years the idea of companies focusing on their core competencies has been much-promulgated (Hamel and Prahalad, 1990). Indeed, one could say that it has been the dominant thinking in strategic management in the 1990s. Although there is no evidence that the Toyota model informed Hamel and Prahalad's (1990) thinking about the core competencies of the firm, it would appear that what Toyota actually achieved is based on a similar (if subtly different) way of thinking about strategy and operational alignment. The core competence paradigm is based on companies understanding what internal skills and resources they should own and control through internal contracts in order to sustain their business success. The Toyota approach to business strategy and operational alignment appears to have been based on a similar view, but one that was extended to the total primary supply chain in which they were positioning themselves. It is also based on the understanding that the key strategic decision within the company – the entrepreneurial make-buy decision – is always a supply chain management one.

When companies decide to become involved in any supply chain they have to make decisions about how they will control and manage the primary supply chain itself. They face decisions about where they should position themselves in the chain. At one extreme, they can decide to vertically integrate the whole chain from raw materials to end customer, as Ford and GM tended to do historically in the automotive supply chain. At the other, they can decide to own only one or two of the resources that exist in the chain, as most car assemblers now do. How should companies make these decisions, and which are the resources that a company needs to retain internally, and which are those that a company can safely outsource to others through external contracts? Clearly, these two questions are of immense strategic importance to all companies if they are interested in appropriating value for themselves and their shareholders from participation in a supply chain (Cox, 1997a).

It is clear that in an ideal world companies ought to position themselves strategically to own those supply chain resources that are difficult to imitate, and around which they

can build defensible barriers to market entry. Only by possessing supply chain resources that have a low propensity for contestation is it possible for superior performance to be achieved by companies over the long term. It follows, therefore, that ideally companies must only outsource those supply chain resources that are highly contested and which have low barriers to market entry. In this way it is likely – if the company also understands how to limit its dependency on suppliers and how to continuously monitor any threats to its own supply chain position from suppliers – that the company will be able to maximise its ability to appropriate value for itself.

This is what strategic or entrepreneurial supply chain thinking means. It is a way of thinking that recognises that, for whatever is produced for customers, it will always require the construction of an entrepreneurially defined, generic supply chain. Within this chain there will be resources around which there is a variable scope for contestation and market closure. Historically, strategy has tended to concentrate on horizontal competitive rivalries around particular supply chain resources, rather than on knowing entrepreneurially where to position the business to own and control particular resources within a specific supply chain in order to appropriate the maximum share of value for oneself.

As companies are always embedded in entrepreneurial primary supply chains for the generation of their revenue, it is somewhat surprising that the bulk of supply chain thinking has tended to focus on the operational aspects of the process, rather than those that are of strategic importance. This can only be because commentators have failed to understand that the Toyota approach to supply chain management was both operationally innovative (in terms of lean production and supply) as well as strategically innovative. Toyota – probably out of necessity rather than foresight – was forced to recognise that it could not replicate the Western vertically integrated approach to supply chain management. It, therefore, appears to have made a strategic decision to concentrate only on those resources that were of critical importance to its participation in the supply chain. Lacking the resources to be able to undertake total control of the supply chain, necessity was turned into a virtue. Already possessing dependent suppliers, working in close proximity to their factories as part of the

*keiretsu* structure, Toyota was able to outsource those aspects of the supply chain that were not critical to its ability to appropriate the maximum share of value for itself. This was because Toyota was able to control its suppliers effectively because they were relatively dependent upon them and normally operating in highly contested markets.

Toyota could create an assembly-based, demand-pull and JIT system because it had a dominant power relationship with its suppliers, which allowed it to force through the innovations it desired from supply chain supplicants. Toyota also seems to have recognised that, with effective control over external quality, cost and innovation, it was possible to compete strategically by passing more value to the customer than its direct competitors were doing. This is an important insight because Toyota recognised that it was operating in a primary supply chain in which market closure is difficult because of the number of horizontal competitors who can quickly replicate whatever supply innovation is undertaken. In this circumstance, Toyota had the good sense to recognise that the only way for it to compete was to turn necessity into a virtue. Toyota's lean production and assembly system is focused, therefore, on providing the highest level of quality to the customer, given whatever amount of money the customer is able to pay.

In other words, Toyota's lean approach is both its strategy and its operational practice. Because it operates within a contested supply chain and market place, the only way in which Toyota (or any other car assembler) can achieve sustained business success is by operating on low margins and delighting the customer in order to achieve high volume market share. The strategic goal then is to place all competitors on an operational innovation treadmill that passes value to the customer. This can be referred to as a strategic and operational treadmill to oblivion for those who cannot keep up the pace. In the short to medium term, the major beneficiaries of this approach are the customers, and those companies that survive the market consolidation that this approach makes inevitable. In the end, the result will ultimately be consolidation and oligopoly, at which point the survivors can focus on leveraging their relative market and supply chain power aggressively against customers, and those suppliers who survive the treadmill.

It is clear that the Toyota model is, therefore, a strategic approach to competition based on passing value to customers through supply chain to supply chain competition. But is this approach to strategy what all companies should seek to do? The answer must surely be no. The problem for Toyota is that it operates within what is still a relatively highly contested entrepreneurial supply chain, in which no company is able to win for itself undisputed control over supply chain resources to effectively close the market to others. There are, however, clearly supply chains in which companies are able to construct strategies that allow them to obtain dominant control over particular supply chain resources. Once this is achieved, this ownership allows them to satisfice rather than delight customers, and also to aggressively leverage their suppliers so as to allow for a maximum appropriation of value for themselves. Companies like Microsoft, Cisco and Intel in the IT industry; the major UK supermarket chains; and companies with unique brands like Diageo in the drinks business are in this position. For such companies, delighting customers is not required because their dominance allows them to satisfice and, thereby, maximise value appropriation for themselves.

Clearly this is a very different strategy than that pursued historically by Toyota. This leads us, therefore, to an interesting series of questions? How should companies define their strategies to appropriate value, and are there types of entrepreneurial supply chain in which certain approaches to strategy are more appropriate than others? The answer to these questions must be that there are definitely different types of supply chains, and that companies must do what is appropriate given the relative power structures that operate within them (Cox, 1997a). Space precludes a full treatment of these issues here, but they are to be addressed more fully in the work currently being undertaken at the CBSP (Cox *et al.*, 2000 forthcoming). Furthermore, ongoing research at the CBSP in the construction sector indicates that the types of strategies and operational approaches that can be used successfully in process-based construction supply chains cannot be easily replicated in those that are project-based (Cox and Townsend, 1998).

### **On the importance of power and theory in supply chain thinking**

In recognising that there is a strategic as well as an operational way of thinking about supply chains, it is essential that practitioners recognise that what is appropriate in one context may be inappropriate in another (Cox, 1997b; 1998; 1999). Earlier it was argued that there are serious intellectual flaws in some of the lean thinking literature. Most of these flaws relate to the failure by its proponents to understand that the appropriateness of the use of this, or any other, approach must be based on an understanding of what business is actually about in theory.

Essentially business is about appropriating value for oneself; it is not about passing value to customers unless circumstances decree that this is the only (and it is normally the least desirable) option available to a company in order for it to sustain itself in business. In fact the theoretical ideal in business (from an entrepreneurial perspective) is to be able to put oneself in a position where neither customers, employees, competitors or suppliers can leverage value from you, while putting yourself in a position to leverage all of them. It has to be recognised, of course, that achieving such an idyllic business situation is rare and exceptional. Despite this, it is important to recognise that if one was in this position then – assuming that customers value what we provide for them – we would be in a situation of power over all others in our supply chain relationships. This must be the ideal position to be in, yet the concept of power is rarely discussed in supply chain writing – except to deny it as important (Williamson, 1995), or to argue that power should not be used because lean approaches should be based on equity, trust and openness.

Both of these views are misguided. This is because most writers operate with an atheoretical understanding of the causes of sustainable business success, and focus their analysis on the description of what companies do, rather than have a theoretical understanding of what it is that allows companies to be successful in the first place. It can be argued that companies are only successful if they possess power over something or someone. This is because only by having the ability to appropriate value from relationships with others – whether these are with customers,

employees or suppliers – can business success be sustained (Cox, 1997a). There must, therefore, be objective conflicts of interest between vertical participants in supply chains, just as there are between those competing horizontally in the markets that form around specific supply chain resources. This is because everyone in the chain is seeking to appropriate value for themselves from participation and, assuming economically rational behaviour, must wish to appropriate more of the value for themselves if they are able so to do. Because certain players in the chain recognise that they have limited power to appropriate value from others, is not the same as saying that they would not seek to leverage more value for themselves if circumstances allowed them to do so.

Why is this discussion important? The reason is that in understanding how to manage supply chains strategically and operationally it is essential that practitioners properly understand the power structures that exist in their supply chains. If they do not, then both practitioners and academics may well be guilty of recommending strategies and operational practices that are inappropriate for the supply chains in which they operate. This is because they may fundamentally misperceive the factors that are causal in the successful appropriation of value. Most of the proponents of lean and integrated supply chain thinking would appear to be guilty of this failing. They appear to be able to describe what Toyota and other car manufacturers have done without demonstrating a proper understanding of why what was done has allowed Toyota, and those who have successfully emulated them, to augment their power in the supply chains and markets they are involved in.

It would appear that the proponents of the lean approach have tended to over-emphasise the benefits of integrated supply chain management based on a limited number of long-term collaborative relationships as the basis for business success. Such writers do not seem to properly understand that the Toyota model is ultimately based on a transformation in the structure of power in the automotive supply chain, through the creation of hierarchies of structural dominance. A hierarchy of structural dominance refers to a situation in which there is a dominant player within a supply chain, who is able to own and control the key resources that appropriate value.

From possession of these critically important resources, the dominant player is able to create a structured hierarchy of relatively dependent suppliers (supplicants), who provide no threat to the flow of value appropriation and must pass value to the dominant player (Shimizu, 1996). This type of structure – in which the dominant player is able to direct, or obtain access to, all of the innovation that takes place in the chain – is a supply chain structure of dominance and dependency. Clearly, such a structure is not based on the development of a structure of power equivalence, or even of interdependence, amongst the players in the chain, as lean writers seem to believe (Cox, 1997a; Watson and Sanderson, 1997).

Furthermore, there are other serious omissions in much of the lean thinking and integrated supply chain literature. It is regularly maintained that an integrated or lean approach is the way forward for all practitioners and that anyone can achieve what Toyota and others have achieved. The poverty of this thinking should be readily apparent. Just because other car companies have been able to replicate the power structures through which Toyota have been able to manage their supply chains, and have done so by outsourcing and retaining only the design, specification and assembly role, does not mean that everyone can do so. Clearly, the nature of the automotive supply chain – with its standardised, regular and frequent flow of demand volume for production parts and materials – must be one of the major factors that makes a hierarchy of structural dominance feasible for the dominant players in the chain to impose on relatively weaker participants.

This insight, about the structures of power within supply chains, can only lead one to the conclusion that practitioners need to, first, understand what the nature of their supply chains are, before they begin to attempt to implement particular strategies or operational practices within them. Clearly, the automotive supply chain has specific properties. It can be argued that, if these properties are replicated in other types of supply chains, then it may be possible to adopt the same approach to integrated supply chain management, based on the creation of hierarchies of structural dominance, as Toyota and other car assemblers. In service supply chains, where the same structural properties of power

do not exist, then it is clearly the case that copying the practices of car assemblers is likely to be either a waste of time or, potentially, a recipe for disaster. Furthermore, it is never clearly understood by lean writers that the development of integrated supply chain management is a highly problematic process to implement. The reason for this is because in Western (as opposed to Japanese) culture most suppliers are basically opportunistic rather than deferential, and have little real incentive to tie themselves to one customer unless they are forced to do so.

### Operationalising supply and value chain mapping

Given this, it seems clear that what practitioners require is a proper understanding of the types of supply chains that exist. Early attempts to create a typology of supply chains have been primarily descriptive. Saunders, for example, in taking issue with the analytical approach pioneered at the CBSP, has argued the case for a descriptive typology of supply chains based on differentiating between production items, consumables (MRO), capital equipment, goods for resale and services (Saunders, 1998). As useful as this approach is as a rudimentary segmentation of supply chains, it can be argued that it suffers from an over-reliance on description over analysis.

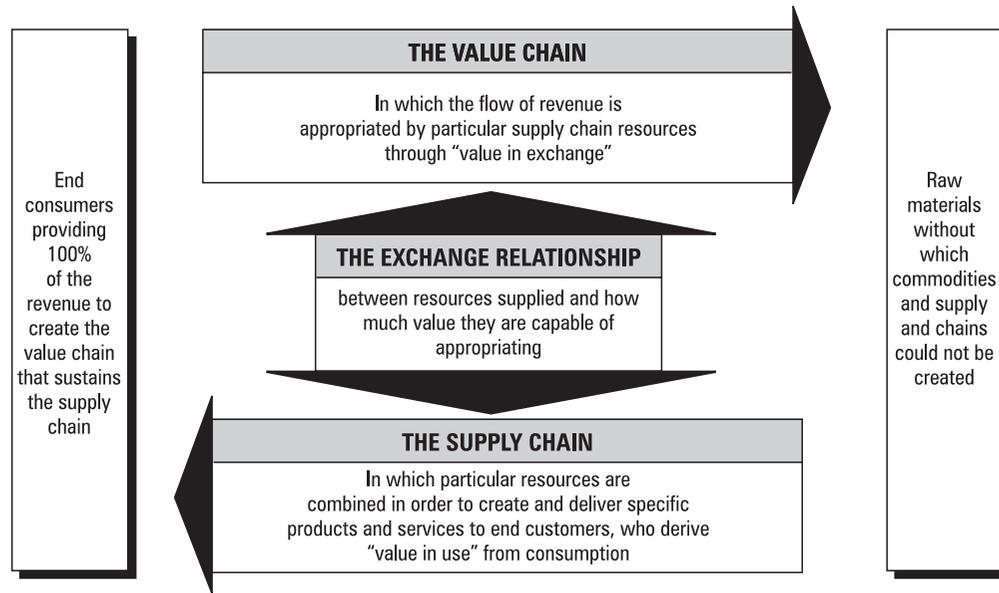
A more rigorous approach is perhaps to eschew description in favour of analytical categorisation. In general terms, it can be argued that supply chains must exist as structural properties of power. By this one means that the physical resources that are necessary to construct a supply chain will exist in varying states of contestation. This contestation will be based on the horizontal competition between those who compete to own and control a particular supply chain resource, but it will also be based on the vertical power struggle over the appropriation of value between buyers and suppliers at each point in the chain. Only by understanding the power struggle over value appropriation between buyers and suppliers around particular supply chain resources, as well as the horizontal contestation between direct competitors, is it possible to understand the real strategic and operational environment within which companies and entrepreneurs have to operate.

There is one major reason why this is important. For any company or entrepreneur to be successful there must be an understanding of how to achieve innovations in supply in such a way that the innovation achieves three desired outcomes. First, the innovation must close the contested horizontal market place to the innovator's current or potential direct competitors and, second, it must ensure that there is no threat of forward or backward integration from customers or suppliers. Finally, the innovation should not take place within a supply chain environment in which the appropriation of value flows, not to the original innovator, but to some other player in the chain who possesses superior supply chain resources. For these three outcomes to occur there must be an innovatively benign power structure operating within the supply chain.

History is replete with the failures of first mover innovators who have not been able to retain ownership or control of the value appropriation their innovation has created. Given this, it is safe to assume, analytically, that there must be a wide variety of supply chains, each of which will have very different structural configurations of power. In each of these supply chains there will also be differences in the ways in which the appropriation of value flows to certain players. This is due to the particular types of resources they own and control (power attributes), and the ways in which they own and control them *vis-à-vis* other supply chain members.

Furthermore, it can be argued that the possession of these power attributes will be demonstrated by the relative capacity of the owners of particular resources to appropriate value for themselves (in terms of quantity and sustainability) from participation in the chain. This is because the physical supply chain that delivers products and services to customers exists in an exchange relationship with a value chain. The value chain exists in parallel with the supply chain and refers to the flow of revenue from the end consumer of any product and service, which provides the revenue stream for each stage of the supply chain. The supply chain and the value chain therefore exist in a fundamental exchange relationship (Cox, 1997a). This relationship is demonstrated in Figure 1.

In order to begin the analytical categorisation of supply chains it is necessary to understand three things, as Figure 1 indicates.

**Figure 1.** Supply and value chain mapping

Source: Adapted from Andrew Cox, *Business Success*, (Earlsgate Press, 1997a), p. 207.

First, we need to understand the physical resources that are required within a supply chain to create and deliver a finished product or service to a customer. Second, we must understand the exchange relationship between particular supply chain resources and the flow of revenue in the value chain. Third, we must also understand what it is about the ownership and control of particular supply chain resources that allows certain resources to command more of the flow of value than others. In understanding this, the process of analytically mapping the properties of power within supply and value chains can commence.

The articles that follow this provide an early indication of how this method of supply and value chain mapping provides enlightenment about the structures of power in different types of supply and value chains. The first article by Chris Lonsdale demonstrates that, drawing on a case study of Hewlett-Packard, it is possible to outsource safely and become an assembler in a supply chain. The key, however, is always the ability to understand how to retain power over suppliers, through the ability to achieve effective control over, and to avoid dependency on, those to whom formerly insourced resources are outsourced. There are clearly major similarities here with Toyota's structured dominance approach. The second article by Paul Ireland demonstrates that in some types of supply chains it is possible for power to rest firmly with suppliers

operating in highly contested markets. In this case it is the IT systems integrators who are the dominant players in the chain. Their possession of superior knowledge and information asymmetry between themselves and their customers ensures that the majority of these players in the chain are able to earn above average margins from their relatively dependent customers.

The case presented by Glyn Watson demonstrates that in particular supply and value chains there are often only two effective choices for key participants. In the direct-marketing publishing supply chain publishers have two difficult choices. They can either pursue strategic innovation, but can only achieve very temporary advantages because they cannot close markets to other competitors, or they must recognise competition and pursue a low margin strategy based on a treadmill to oblivion. The final article by Joe Sanderson demonstrates that even in a supply chain with a dominant player, who owns the critical assets in the chain, the power to appropriate value that this ownership and control potentially provides can be significantly dissipated by government regulation. In this case, even in the absence of contestation, value is passed to customers in an attempt to delight them rather than to satisfy them.

The research projects from which these examples have been drawn are not yet fully completed. Nevertheless, early evidence

seems to indicate that the theoretical propositions outlined in this article are significantly substantiated by the empirical cases that we describe[1]. There are clearly a variety of power configurations within different types of supply chains, and these configurations occur for a variety of reasons. The conclusion that must be drawn from this is, therefore, that there cannot be any one single approach to supply chain management that is appropriate in all circumstances. Clearly, certain approaches will be more or less conducive to particular supply and value chain power structures. While we are still a considerable way from completing the proper analytical categorisation of supply and value chain power types, and the linkage of these types with the most appropriate management strategies for appropriating value, we believe the first steps in that direction are now in place.

## Note

- 1 A great deal of the current research activity at the CBSP is based around two engineering and physical sciences research projects. The first project is entitled: "Developing audit tools and techniques for business strategy and supply management" (EPSRC Research Project No: GR/L86395), under which this and the other articles in this volume are written. The second project is entitled: "The management of outsourcing risk" (EPSRC Research Project No: GR/K86121). This provided funding for the research reported by Chris Lonsdale in this volume.

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