

PORT-ORIENTED LANDSIDE LOGISTICS IN AUSTRALIAN PORTS: A STRATEGIC FRAMEWORK

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Even the most cursory examination of port-oriented, landside freight systems suggests at best partial policy frameworks and at worst a serious policy vacuum. In Australia – and certainly at the ports of Melbourne and Sydney – port-adjacent and inner city gridlock is driving the mantra of ‘more containers on rail’.

This paper cautions against defining policy and strategy for landside logistics operations on the basis of intuitive solutions and as coping rather than as development strategies. Rather, it argues that there is a critical need to understand that fundamental restructuring in port landside operations is a function of two key issues - pervasive value migration in landside operations and progressive strategy decay as ports struggle to redefine themselves.

The paper offers a conceptual framework for strategy and policy definition that deals explicitly with both issues and is summarized within a ‘centre-periphery’ model that suggests the necessity of a comprehensive, strategic approach.

Key words: Value migration; value pools; strategy decay; landside logistics; strategic framework.

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INTRODUCTION

In the capital city ports of Melbourne and Sydney in Australia, as elsewhere, persistent though not spectacular increases in container throughput over a decade have triggered significant gridlock in inner city precincts and high levels of traffic congestion and social diseconomies in other port-linked road systems. This may not be surprising given the heavy dependence of terminals on road and trucking operations (though the terminals themselves are operating well within capacity limits) and the legacy central locations of terminal facilities.

Interestingly the conventional wisdom for solving these ills, now well-embedded not only in the industry and public psyche but also in some State Government planning and decision-making agencies, is encapsulated in the mantra of ‘more containers on rail’ (and, *ipso facto*, the containment of trucking operations) – the notion that all will be well if rail assumes a greater share in the landside movement task.

The proposition is intuitively attractive; and there is no doubt that an increased rail share would ameliorate some pressing movement problems. But there is a grave danger that the mantra underlies a *coping* rather than a longer term *development* strategy – in effect, a short term mechanistic and interim solution before chronic disequilibrium will require drastic retrofit solutions (as the Alameda Corridor project for access to and from the San Pedro Bay ports) or relocation solutions as the end game. This is not to say that interim solutions may not be critical; but do not longer term *development strategies* require a much more incisive understanding of the drivers and dynamics of landside logistics? Do we not need to be more insightful in the search for effective development strategies? Specifically, are there not fundamental changes at work restructuring port-oriented landside freight movements that unless taken into consideration will lead us into wrong diagnoses and into wrong solutions?

This paper is strategic in outlook; it takes the view that pervasive value migration has created new value pools in port-oriented handling systems; and that along with strategy decay the critical need is not for coping strategies but for strategies that are based on nothing less than the search for new business designs and business models that will deliver superior value. The paper falls into three substantive parts – the first focuses on the notion of value migration and the ‘new’ value that is emerging in the landside logistics markets; the second part raises the issue of which firms might capture the ‘new’ value in those markets and on what basis they might do so; and the third part explores the implications of these insights for defining a conceptually sound framework within which to define appropriate and realistic solutions for effective, port-oriented landside logistics strategies.

VALUE MIGRATION: IDENTIFYING THE ‘NEW’ VALUE IN LANDSIDE PORT OPERATIONS.

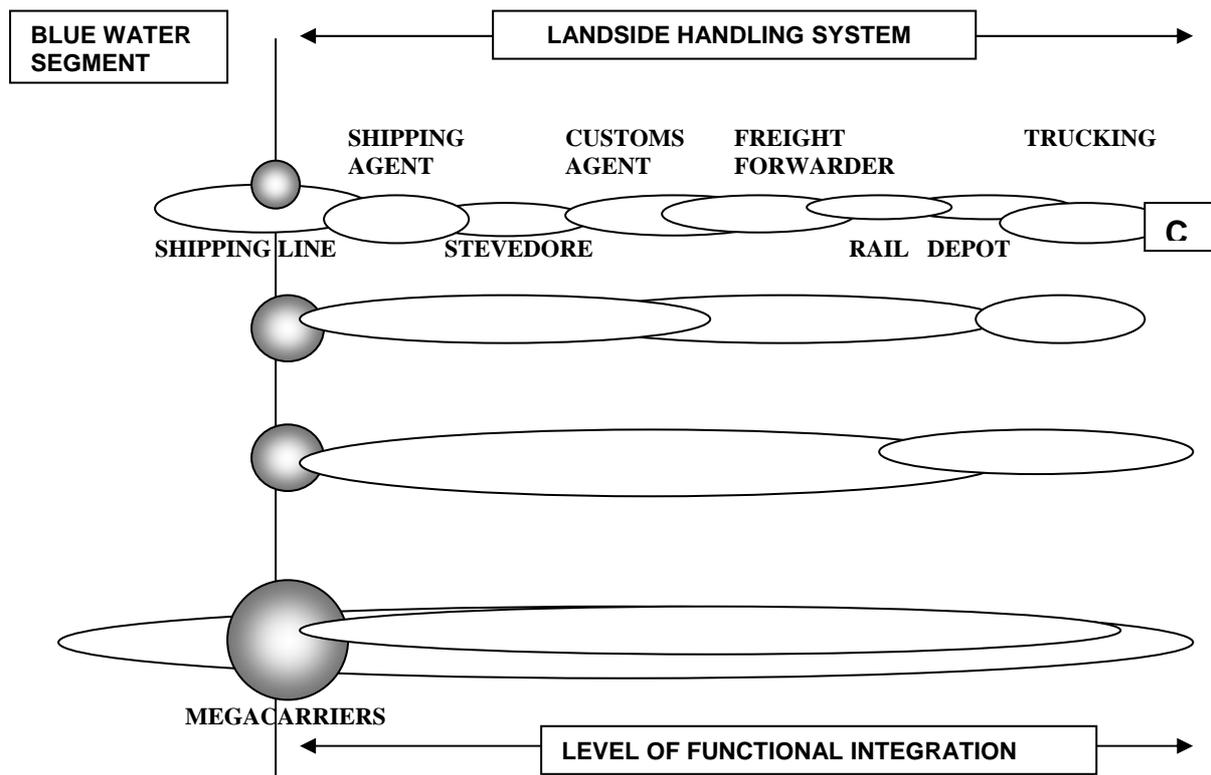
Slywotzky’s notion of value migration is a useful one (Slywotzky 1996); it suggests that value in an industry shifts over time and reworks business landscapes; that ‘value migrates from outmoded business designs to new ones that are better able to satisfy customers’ most important priorities’; that a business design ‘is the totality of how a company selects its customers, defines and differentiates its offerings, defines the tasks it will perform itself and those it will outsource, configures its resources, goes to market, creates utility for customers, and captures profit’ (Slywotzky 1996, p4); and that the task of top management is to understand ‘the direction and velocity of value migration’ (Slywotzky 1996, p12).

Where then, in industry markets, is value to be found and where can profits be made? ‘Customers make choices on their priorities...At any given time, the pattern of those choices allocate value to various business designs. *As customers’ priorities change and new designs present customers with new options, they make new choices. They reallocate value. These changing priorities...are what trigger...the value migration process*’ (Slywotzky 1996, p13; Weston and Robinson 2005)).

Where is the value in the landside logistics marketplace?

The Changing Landside Logistics Marketplace.

There has been, and continues to be, significant restructuring and rationalization of port-oriented freight chains as highly segmented and cost-plus chains disintermediate inefficient and/or unwanted firms and existing chain players or new players assume control over reconfigured chain segments or, indeed, in some cases over the end-to-end chain (Heaver et al. 2000; Notteboom and Winkelmann 2001; Robinson 2002). Figure 1 suggests a hypothetical though not unrealistic sequencing of chain restructuring as container trade expands, as port throughputs increase and as corporate players seek economies of scale, scope and network intensity.



Source: Robinson 2002

Figure 1: Port-oriented chain systems.

The sequence of chain restructuring is seen to proceed from an atomistic, segmented pattern of relatively independent logistics functions to progressively integrated chains in which single entities control sets of logistics functions. The end game is one in which control over the end-to-end chain is in the hands of one operator – effectively both a third party and a fourth party service provider and in this case seen to be a megacARRIER. Whether or not the single party involved is a megacARRIER or whether or not the single party owns or in fact alliances to exert control over the chain is less important in the conceptualization than the *ability to exert control*. In fact, the notion that one or other or several of the megacARRIERS exert control over landside operations almost certainly oversimplifies the situation. In many container ports there has been a rather late realization by endogenous players in the landside chain – the port authority, stevedores and rail operators, for example - that control over landside competitive

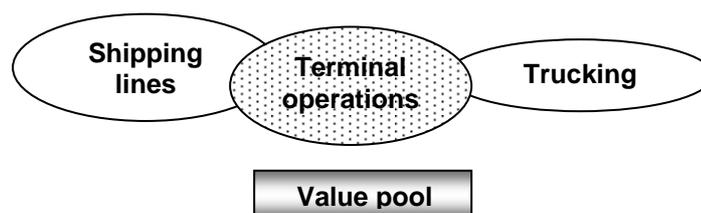
space is where significantly higher margins are to be had in container operations and a sometimes frantic effort to acquire critical assets and/or infrastructure of one sort or another has followed.

New Value Pools.

In effect, value has migrated from the individual logistics functions *per se* and from the corporate operators of those functions to *sets* of logistics functions offered by existing operators or by new entrants or by some combination of the two. The landside freight handling market is recreating itself – it is doing different things and it is doing things differently. The new value is in the ‘integration’ of functions and is increasingly in the hands of the integrators – of those whose new business model or design can offer customers superior value and who can, of course, appropriate value to the firm itself. The quite exceptional change here is that the efficiency of the logistics function is no longer seen, *per se*, as the business objective; *that managing for efficiency in individual functions or networks or nodes is not an end in itself but a means of delivering the value that is a priority for the customer.* In infrastructure and asset-rich systems there is an exceptional obsession, understandable as it may be, with ‘efficiency’; *but the new value is to deliver superior value by meeting the customers’ priorities; and by extension, it is only possible to do this by understanding what those perceptions and needs are; and by then designing a ‘product’ that may require new patterns of ownership or alliancing or of the ‘bundling’ of services in particular ways.*

Conceptually, we are arguing the migration of value from *one function* to a *set of functions* in landside logistics operations. Particularly, we are arguing that value has migrated from the container terminal operation and to a much lesser extent from trucking operations to an integrated set of operations controlled by an ‘integrator’ – whose precise functionality is likely to be different under different circumstances.

A. Terminal stevedoring



B. Integrated functions

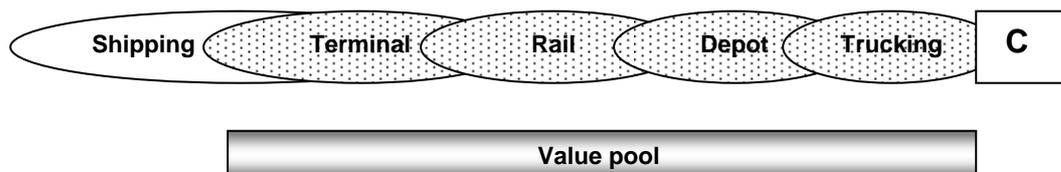


Figure 2: Value pools in landside logistics

Figure 2A suggests that the container terminal, not only the classical ‘articulation’ or common point between complementary modal networks but also a point that has likely enjoyed monopoly power in its marketplace (or at most operated in duopolistic or tightly oligopolistic marketplaces), has captured – and in many cases, continues to capture - much of the value pool in landside and port-oriented container operations.

But in competitive and particularly deregulated marketplaces the commoditization of container handling has, not unusually, squeezed margins; and significant cost and competitive pressures on shippers, shipping lines and chain stakeholders more generally have created conditions conducive to thin margins in end-to-end chain structures. Not surprisingly, the value and the value pool have migrated to the chain players able to offer integration of functions rather than particular, specialized logistics functions. For it is in the integration – both of discrete though interdependent logistics functions and often of disparate and independent corporate entities – that margins and profits can be cumulated into new value pools as the costs associated with friction at the functional and corporate interfaces are diminished or eliminated. Effectively, of course, the new value is appropriated by the integrators (Figure 2B).

CAPTURING THE ‘NEW’ VALUE: THE CONSTRAINTS OF POWER RELATIONSHIPS IN CHAIN STRUCTURES.

In the landside logistics marketplace who, then, are the integrators? And what is being integrated? And on what basis?

In Figure 1 we noted that the integration of landside functions was, in some cases, being driven by the very large shipping lines or megacarriers, operating to some extent as exogenous drivers of the landside operations; but there are other options that may suggest a system that is endogenously driven. To what extent, for example, can the port authority, or the terminal operators, or the road or rail or depot operators operating as third party service providers (or recreated as third party, or indeed fourth party logistics providers), assume the role of integrators? The answers are not self-evident although in a competitive marketplace each corporate player will seek to capture higher margins if for no other reason than to avoid disintermediation; but not all players will have a similar capability or indeed any capability at all, of exerting control over segments of the chain. Why is it so?

In this context we will argue, albeit briefly, a conceptual framework to demonstrate the underlying principles and dynamics of landside operations rather than debate the issue of which particular player may or may not be able to ‘integrate’ the chain – an issue we will look at more closely in the following section of the paper. Particularly, we will argue

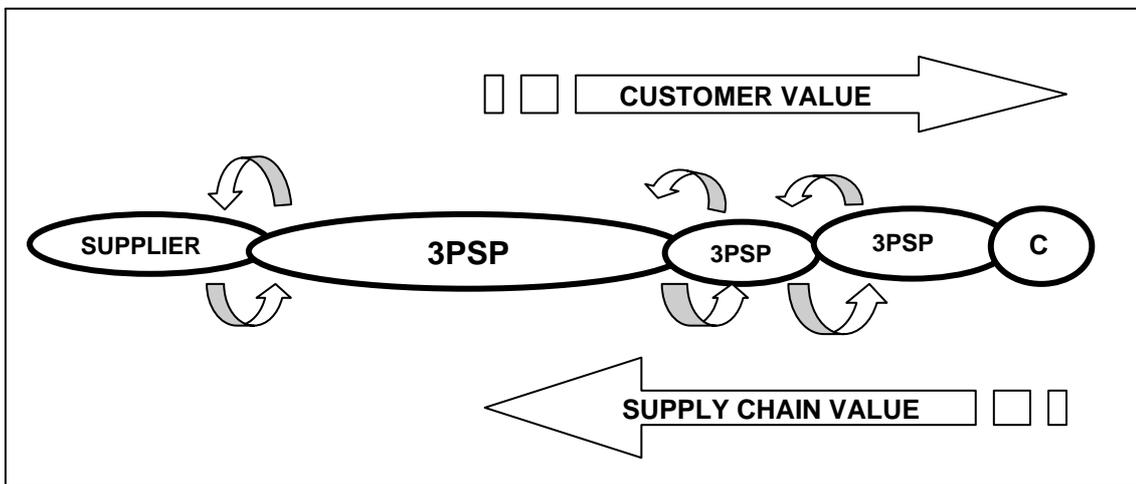
- That freight movements and the business of third party service providers are carried out in chains
- That such chains are characterized by the ability of some players to have dominance over other players in recognizable patterns of power relationships
- That entrepreneurial firms in chains will seek strategies to allow them to move from positions of relative weakness to a position of relative strength in the chain; and

- That in freight chains the dyadic partner may not be the contractual partner or customer; and the value required in structuring the chain will be determined by the end seller or buyer who will likely be an nth order (rather than the first order or adjacent) dyadic partner – in fact, the customer’s customer.

Chains and Chain Structures.

It is well to remember that all end-to-end freight movements, and in this context port-oriented freight movements, may be conceptualized as chain structures involving transactional relationships between corporate players in logistics pathways between sellers and buyers. Further, for third party service providers all business is transacted in chains; and though chains compete with chains to deliver the value that customers need, third party service providers compete against their competitors to provide service within that specific chain. Effectively, in end-to-end freight chains *the customer chooses the value* offered by the chain rather than that of the individual firm within the chain (Robinson 2002; 2003; 2004) – though he may not, of course, make decisions about the internal structuring of the chain!

Figure 3 suggests a simple export chain structure in which a production firm of one sort or another rails product to the port, is loaded onto a shipping line’s vessel for direct unload into a customer’s port-located facility. It is the chain that delivers the value that the customer seeks; and a portion of the price that the customer pays is returned as payment for services rendered by the third party service providers – in the form of freight rates and charges for example.



Source: Robinson 2003

Figure 3: Value relationships in a simple, hypothetical port-oriented chain system.

Power Relationships in Chains.

All firms in competitively structured chains from seller to buyer will be integral to the operation of the chain and to its ability to deliver the value required by the customer; but each will have a differing ability to set prices and to capture margins reflecting

differences in power relationships along the chain. In this context the work of Cox is of special importance (Cox 1997; Cox et al. 2002; Cox et al. 2005) and underpins our conceptualization. For Cox, the power of a firm is seen as its ability ‘...to own and control critical assets in markets and supply chains that allow it to sustain its ability to appropriate and accumulate value for itself by constantly leveraging its customers, competitors and suppliers’ (Cox et al. 2002, p3). Dominance of one player over the other is seen, therefore, to be a function of the firm’s control over critical assets and other power resources – whether they be physical or infrastructural assets or particular core competencies (unique sets of skills and technologies that deliver the firm competitive advantage) - for example.

In a simple ‘power matrix’ Cox suggests a four-way categorization of dyadic power relationships that rest upon the notions of the relative utility and scarcity of resources held by the buyer and supplier as dyadic partners (Figure 4).

Note that power may vary between players from a position of total dominance in which the player has a critical asset (one that is scarce and of high utility) to one in which a player has no power (independence)! The more usual condition is likely to be one of ‘interdependence’ – in which each partner has something to offer the other. For Cox, then, ‘...the ideal position for earning rents – or high levels of profit on a sustainable basis – is straightforward. ‘When...a company is selling to customers the ideal must always be to have monopoly ownership of inimitable supply chain resources that are needed (not merely wanted) and highly valued by everyone. When...a company is buying from suppliers, the ideal must always be to be a monopsonist, who is able to source from suppliers located in highly contested markets in which there are low switching costs and low barriers to market entry’ (Cox et al. 2002, p7).

High	BUYER DOMINANCE	INTER-DEPENDENCE
	INDEPENDENCE	SUPPLIER DOMINANCE
Low		
	Low	High
	Relative utility and scarcity of supplier’s resources for buyer	

Source: Cox et al. 2005, p40.

Figure 4: The Cox ‘power matrix’.

This conceptualization adds significant insights to our concern about who the integrators might be in landside freight chains. In Cox’s terms it is clear that the

ability to wield power in the chain will be a critical issue; but note that the integration in any chain may be only partial or segmental and hence Cox's warning that it is '*...the self-regarding efforts of the multitude of actors in complex supply chain networks to appropriate and accumulate value*' that will frustrate efforts to fully integrate chains' (Cox et al. 2002, p74).

From Positions of Weakness to Positions of Relative Strength in Chains.

Entrepreneurial firms will seek to leverage improvements in their relative power positions in chains to capture increased value and margins and will develop strategies to do so. Buyers will seek to avoid supplier dominance in which the supplier is in a position to set prices and margins and to control the rate of innovation, for example. The buyer will seek a position of dominance as the preferred position though where this is not possible the firm may, for example, seek an interdependent relationship with the supplier in which, though the value captured will be lower, the buyer will still retain some power. For suppliers seeking high revenues and returns the preferred position would be one in which the firm could close the market to other suppliers and in so doing create a high level of dependence for the buyer.

Clearly, there is a range of options that the firms may (or may not) be able to choose from; but the ability of individual firms to close the market, the volume and frequency of spend, the uniqueness of the value proposition, the switching and search costs involved and the level of information asymmetry involved, for example, are likely to be involved in the firm's response. In any case the *level* of relative power that the firm has reached at any particular point in time as well as the *stability* of the power relationships in chain structures will be important factors in the issue of the integration of the chain.

Value Delivery – To whom?

Who delivers value to whom in export freight chains?

Note that in freight chains the individual service firm may not have a contractual relationship (and in that sense, a transactional \$ relationship) with its immediate upstream or downstream dyadic partner (or first-order partner). Under such conditions the relative power relationships and/or the business models of the partners will likely dictate the value extracted between the firms. Alternately, if there are strong integrative mechanisms at work in the chain the value relationships will be influenced by the value required by the whole chain in delivering the value required by the end customer. Where a contractual relationship exists the value, other things being equal, would be as specified under contract.

It is an important characteristic of freight chains that the value to be delivered by the chain is that required by the end customer; but the third party service providers that effect the movement of freight are in many if not most cases well removed from the end customer – effectively, the end customer will represent their customer's customer or be even further removed than that. *The task of the integrator is the non-trivial one of ensuring appropriate and acceptable value levels among chain partners and at the same time deliver the value from the chain that the customer requires.*

DEFINING PORT-ORIENTED LANDSIDE LOGISTICS STRATEGY: A FRAMEWORK.

From Coping Strategies to Development Strategies.

This paper has argued that although it is imperative that ways and means are found of dealing with short-term pressures in the landside operations of the port the real challenge is to define *development* rather than *coping* strategies. The reason for this is that short-term dysfunction may be symptomatic of, or may simply be masking, longer term trends and changes that will reshape the industry; and that strategy definition, following Hamel and Prahalad (1994) and Hamel (2002) is having a view about the future, of finding new competitive space and of defining the ‘white spaces’ in a future competitive landscape.

Here it may be useful to briefly note again these changes and to point to their implications for strategy and policy definition. It has been suggested that two fundamental changes are at work.

First, industry value and profit pools in port landside logistics operations are indicating value migration from the operations of the container terminal and to a lesser extent from linked trucking operations (essentially because of the criticality of function of the terminal but also because of its monopolistic or tightly oligopolistic competitive position vis-à-vis the trucking operations and the trucking market) to the integration of the set of functions between the terminal and the end customer – and to the integrators able to mesh these functions.

The further reality is, however, that the integration of these functions (indeed of functions embedded in end-to-end chains and supply chains) will be impacted by the power relationships that exist within the chain as firms with essentially different business models and different strategic positions struggle to capture and accumulate value. Two points follow. First, that the integrators will be those firms with significant chain power; and second, that in defining strategies any discussions of ‘optimal’ or ‘economically rational’ locational patterns are likely to be meaningless unless there is a clear recognition of the existence and stability of existing power relationships.

Second, significant strategy decay has left ports ‘wildly out of step with marketplace realities’ (Gerstner 2002, p176). Inappropriate strategies deliver wrong outcomes. For the port of Melbourne, for example, a ‘landlord’ model based on the ‘disintegration’ of landside and blue-water operations – with a port authority responsible for land operations and a channel authority responsible for blue water operations - provided a framework for strategy development that seriously impacted the port’s development (Russell 2001; Robinson 2003). On the other hand, as argued elsewhere, a port which operates as a through point delivering and capturing value in value-driven chains is likely to be very much in step with the new realities of the marketplace (Robinson 2002). More recent (2003) legislation for the port of Melbourne ‘re-integrated’ landside and water operations providing, at least prima facie, a strategy framework for achieving appropriate outcomes.

It is argued here that the key strategic issues to be addressed are informed by these insights into the dynamics of changing port-oriented landside logistics chains and market structure; and that there are two priority and fundamental strategic issues –

- that related to the structuring of port-oriented chains to ensure capture of the margins associated with the integration of the port/terminal to consumer chain elements and functions; and
- that related to the transformation of the port into a through point rather than as a managed landuse precinct.

The following sections of this paper explore the complexities of these issues.

Integrating Landside Chains: the Reality of Chain Power.

What is the essential structure or morphology of the landside system with which we are dealing? Who are the players involved? Who is it among them that may undertake the role of integrator? And how might it be done?

Figure 5 indicates key elements not uncommon to many port-oriented logistics systems – though in this case there is more than a passing reference to the port of Melbourne which provides a contextual reality check without compromising our conceptual focus. The container terminal is shown to be embedded physically within the port but also is under the port authority’s jurisdiction as a leaseholder. Shipping networks and lines link the terminal to external ports and customers. The landside links comprise four fundamental patterns – a rail link to an intermodal terminal with trucking links to customers; a road link to a depot with onward trucking to customers; a direct delivery trucking pattern from terminal to customers; and a truck-linked pattern of container storage, off-hire depots that cluster around the port/terminal location and that almost certainly generate high levels of inter-depot and terminal truck traffic.

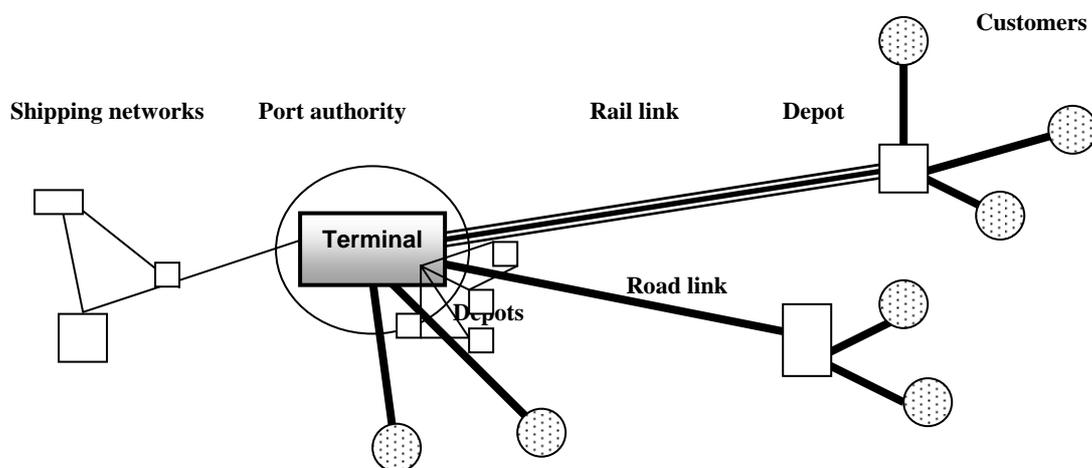


Figure 5: Elements in the landside operations: the Melbourne example.

Figure 6 translates this morphological view of the system into a series of chains that further clarifies the linkage patterns among the players and prompts the question of who, among this diverse group of players, has the capability of integrating the landside operations?

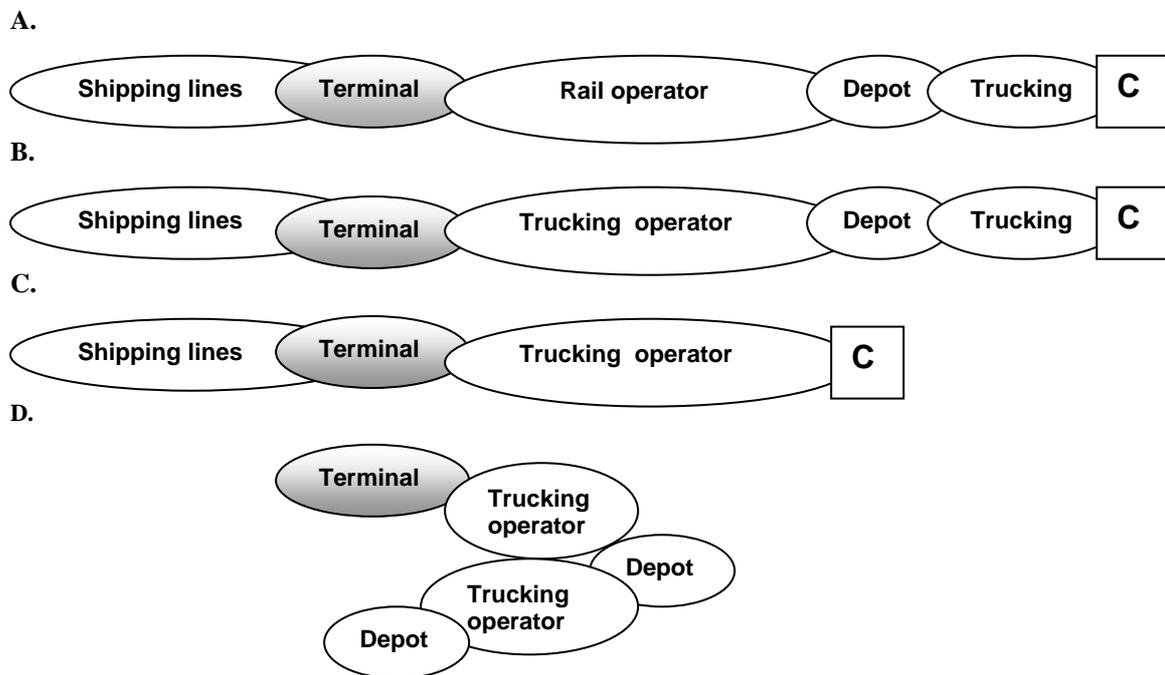


Figure 6: Chain elements in the landside operations.

In the Cox (Cox et al. 2002) conceptualization it is the player who has control over the critical assets and the power resources in the chain; which begs the further question of the nature of such power resources and critical assets in these landside chains. Arguably, control over cargo (and its owner or agent) is critical; as is control over unique and scarce assets and resources – rail links and rail access pathways, depots, terminals; and though not in the diagram, so is electronic or e-Business frameworks which deliver information about the cargo, interpreted by many operators as of equal importance as the cargo itself. To what extent, then, does the shipping line, the port authority, the terminal operator, the rail and/or road operator or the depot operator meet these criteria?

Figure 7 adds further clarification to the issue. Assume a hypothetical though not unrealistic export container movement for which Figure 7 tracks the contractual or payment relationships and the \$ flows required. Note especially that the customer is contracted, in this case, to the shipping line through a freight forwarder, who contracts and pays for the services of a trucking company – which may pay, though on behalf of the customer, the terminal for any storage charges incurred beyond a free storage period. The shipping line is the customer of the terminal and of the container depot and pays for services; and the terminal is the customer of the port authority under lease arrangements.

In this case the shipping line is contracted to the end customer – all other players operate at arm’s length from the end customer - and to that extent has control over the

cargo; if it also has control over the landside links, as we have suggested has been and often is the case with the major carriers or megacarriers, then the line is clearly the integrator. That the shipping line chooses not to extend control over landside operations is a function of its own commercial positioning and its business plan; but the landside power relationships and the resultant yield levels are almost certainly critical inputs to such a decision.

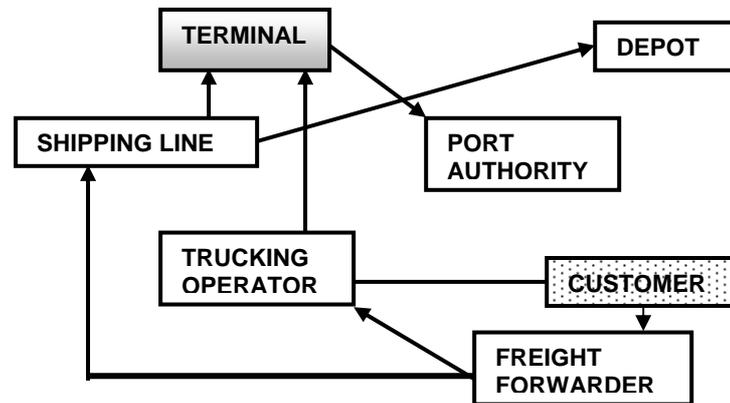


Figure 7: Dollar flows in a hypothetical export container movement.

Assume now that the integrator may be endogenously determined.

In port-oriented flows to and from ports, and no less for the port of Melbourne, there is exceptional flux in the institutional, corporate and operational frameworks as the dynamics of chain control work themselves out. There is strong evidence, however, that the terminal stevedores are able to exert dominance in the marketplace not only because of their considerable market power but also because over a relatively short time they have restructured themselves to operate not simply as stevedores but, if not as yet as full chain service providers, certainly as the providers of integrated chain services.

Patrick, one of the two major stevedores in the port of Melbourne, notes on its website for example that ‘We own and manage an integrated chain of complementary businesses; this enables us to eliminate inefficiencies along the chain and offer our customers comprehensive transport logistics solutions’. Indeed, the company has recently (in partnership with Toll) added major east coast and Victorian railroads (and rail depots) to an already extensive list of port terminal, freight forwarding, trucking and shipping services. P&O Ports, the other major stevedore in the port of Melbourne and other Australian ports, has followed a somewhat different business plan and though its acquisitions or joint ventures have been numerous the company has not acquired railroad capability, at least by purchase. A recent entrant into the port of Melbourne has, interestingly, won its place on the basis of its proposal to redevelop an older part of the port (Victoria Dock) in tandem with the development of an inland ‘port’ or intermodal terminal.

Full integration of the landside chains, whether in the port of Melbourne or elsewhere, remains elusive; but the principles are clear:

- Chain value is driven by the end customer; if the end customer is not a dyadic or transactional partner then the integrator must seek to develop alliances or acquisitions to ensure that the customer's needs and perceptions are met;
- Critical assets that are indispensable, unique and scarce will provide the basis for chain power;
- The bundling of services will reinforce the ability to exert control and induce efficiency in landside chains; and
- Real-time information and e-Business systems will be a key to effective integration and efficiency.

Creating the Port/Terminal as a Through Location: a Response to Strategy Decay.

The imperative that a port (or a container terminal) be interpreted as an element in a logistics pathway from seller to buyer has been argued elsewhere (Robinson 2002). Its critical and defining function is to deliver value to shippers and stakeholders and to capture value on a sustainable basis; and essentially that value will be defined by criteria related to the three generic value variable sets - minimum elapsed time, acceptable cost and required quality. Its function is well described, though for many ports and terminals somewhat idealistically under present conditions, in terms not dissimilar from those used by William Conley, Vice President Logistics and Electronic Commerce, Asia Pacific, a senior executive of FedEx in reference to that company's Express Distribution Centres, – *'they are like pause points in the supply chain where products come in for a few hours, a day and go right back out again. They are high velocity, high turn facilities'* (Conley 1998, p14).

The analogy is a powerful one, with special relevance and significant implications for strategy definition and policy making for ports. Particularly, it provides insight into the functionality of the port or terminal per se, into the relationship between the port as a central focus or articulation point of landside logistics pathways and, as a consequence, into the spatial and functional framework for port development strategies. In the following discussion we note briefly these issues.

Functionality and capacity.

The notion of the terminal as an articulation point, in graph theory, or as a common point between connecting networks and as a 'pause point' immediately defines its functionality – what it does and does not do. It is not essentially a rent-collecting agency; it is not essentially an industrial site; it is not essentially a tool for regional development; it is, in essence a *through* location, the capacity of which is designed as 'fit for purpose' at any particular point in time – shipping movements handle freight flows within closely specified times and at acceptable costs; on-site storage capacity and container dwell times meet similar requirements; pricing strategies may further control and ration capacity under exceptional circumstances; real-time information and e-Business systems underpin time-definite and time-dependent processes; and risk management strategies minimize undisciplined decision-making.

Capacitating nodal systems is a complex task; but it is not at all impossible with sound modelling and management techniques and given clearly defined objectives. There is no ambiguity in this conceptualization; and the effective manager will make landuse and other decisions against the notion of the port as a 'pause point'.

Functionality and capacitating subsystems.

The landside/bluewater interface is only one element in the landside logistics equation; the considerably more difficult task, though little regarded, is that of defining the functionality and capacity of the subsystems linked into the terminal.

It has been noted above (Figure 5) that four landside logistics pathways – a rail/intermodal terminal path, a road/depot path, a direct road haul pattern and a truck-linked depot pattern - are not uncharacteristic of landside patterns and we refer to them in this context as subsystems linked into the main terminal. Figure 8 depicts the patterns within a more general spatial framework.

Note a number of important differences between the functionality of the central container terminal and the depots and terminals embedded within the subsystems. First, that although time remains a critical variable in structuring the whole system the inland or 'peripheral' terminals might be regarded as 'time-tolerant' locations in which storage and value-add activities can be sustained on lower cost, suburban land. Elapsed time, in these circumstances, will contribute to customer value. Second, and not unrelated to the first point, is that these peripheral locations will offer multiple use options – as noted, in value-add activities, stuffing and unstuffing, container refurbishment, off-hire and leasing, quarantine and customs and security monitoring, for example. Third, it is likely that scalability will be a critical factor in these locations. Certainly, the issue of building volumes to achieve economies of scale is an important one for sustainability; and the need to achieve economies of density or intensity on the road and particularly on the rail links will be critical in initial development phases. Fourth, the operational and commercial integration of the terminal or depot with its rail or road providers – either through ownership or through alliancing arrangements of one sort or another - will almost certainly be fundamental to achieving chain efficiency and the delivery of customer value. Fifth, the full and effective integration of the entire system will demand high-level integration of information and almost certainly real time information in e-Business environments.

A 'Centre-Periphery Model': a Summary.

These somewhat more general and to some extent high-level principles should not in any way be seen to underestimate the exceptionally difficult problems associated with the restructuring of these subsystems. In effect, Figure 8 suggests a relatively simple 'centre-periphery model' which offers a conceptually sound framework for strategy definition and policy formulation with respect to port-oriented landside logistics operations and development. Six key elements are seen to be of special importance and are noted briefly; but in strategy-defining exercises each would, of course, require intensive and rigorous analysis and prescription.

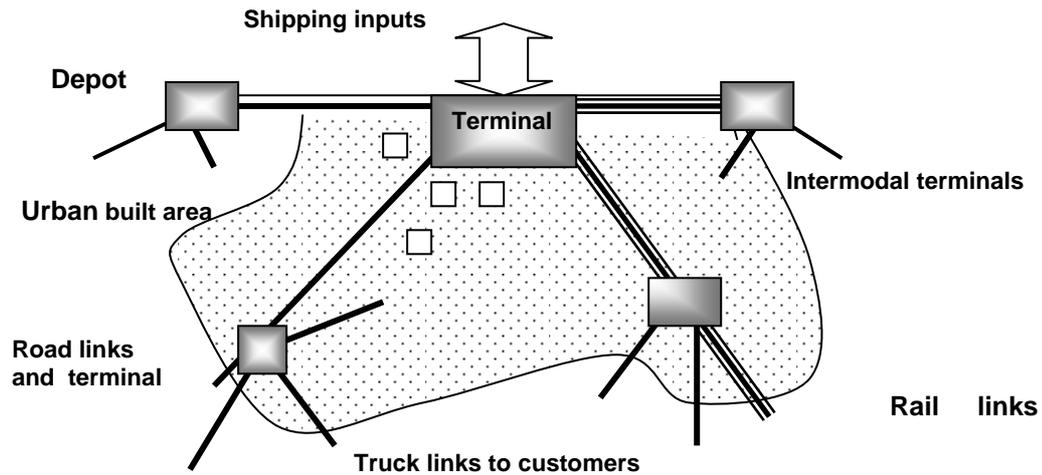


Figure 8: The spatial framework.

i. Landside logistics pathways are focused through a time-critical portside terminal.

Clearly, time will always be traded off against the costs of achieving zero delays; but the important issue here is that the conceptualization of the terminal as a pause point will create new priorities in operational and investment decision making.

ii. Landside container movements are channeled into scaleable density corridors with integrated depot and terminal operations.

Economies of scale suggest movement discipline both in linehaul and depot operations.

iii. Landside container movements may be focused into 'time-tolerant' peripheral depots and terminals.

Time-criticality is less a characteristic of peripheral depots than of the central port terminal; and value-add activities are likely to be less cost intensive in peripheral locations.

iv. Landside logistics pathways are characterized by integrated chain structures that are competitively efficient and that deliver value to shippers and capture value for service providers.

There can be no adequate strategy definition or policy prescriptions without a precise understanding and appreciation of chain and market power. Chain integration is a managed process; and it is effected when value can be captured by key players.

v. Chains are web-enabled to allow for real time integration of business processes.

It is the integration of business processes, not simply the integration of operations and infrastructure, which creates sustainable, efficient and value-

driven chain structures. E-Business, not information technology per se, is the critical attribute.

vi. Landside container movements must be market-driven to reflect economic and social costs though they may require light handed regulatory intervention where market failure is apparent.

Pricing strategies may be important elements in public policy prescription; but as always the structure and incidence of costs must be clearly understood.

The model and its underlying principles are demanding; but it offers a view of the future and is to that extent strategic as intended. If it is a reasonable view of the future then the critical challenge is to create a strategic architecture or a blueprint for achieving it; but that is well beyond the scope of this paper, is essentially port-specific and must be explored in ongoing research.

CONCLUSIONS

It is intuitively obvious that increasing container movements to and from port terminals will increase pressures on urban infrastructure and related systems. Not unreasonably, there is some logic also in the view that, in order to alleviate these pressures, more containers should be moved on rail rather than by trucks. Certainly, in the capital city ports of Melbourne and Sydney and against a background of a recently deregulated and privatized rail market, the conventional wisdom has been to embrace this mantra with some fervour.

This paper has argued for caution in this view because it fails to adequately recognize fundamental changes taking place in port-oriented landside logistics; and because, consequentially, it leads rather too easily to the definition of *coping strategies* rather than to longer term *development strategies*.

Certainly in the port of Melbourne, as elsewhere, container throughputs have increased; but more subtly, value and profit margins in landside logistics operations have migrated from the container terminal operators to the integrators – the third or fourth party service providers who are able to mesh a range of logistics functions together to deliver superior value to shippers and capture value for themselves. At the same time ports have been struggling to redefine themselves as strategy decay has underlined their inappropriate positioning vis-à-vis the marketplace.

This paper offers the view that these changes must be the basis of strategy making and develops a framework within which to do so. Particularly, the framework recognizes two key issues. First, it addresses the issue of strategy decay by conceptualizing the port as a through point, a pause point in a logistics pathway. In so doing it provides an unambiguous basis for understanding and defining the functionality and centrality of the port within the landside logistics system. Second, it explicitly recognizes the migration of value towards functional integration; the delivery and capture of value in chain pathways; and the critical role of corporate power in chain integration or ‘disintegration’.

This conceptualization clearly goes well beyond spatial implications even though the paper offers a much simplified ‘centre-periphery’ model; but the critical need is for a

clear understanding of the drivers of change and of the need to address them within a comprehensive and longer term strategic framework rather than as instant solutions to a short term problem. Not surprisingly, then, the mantra of ‘more containers on rail’ might at best be regarded as a necessary but not sufficient condition for defining appropriate landside logistics policy and strategy.

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