Kinks in the Intermodal Supply Chain:
Longshore Workers and Drayage Drivers

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The logistics intermodal supply chain has been shaped by globalization, containerization, deregulation, and interorganizational relations and strategies. As a chain of linked and integrated organizations characterized by sequential interdependence, spatial dispersion, and multiple technologies directed toward not the production, but movement, of commodities, one finds a range of industrial practices, organizational arrangements, labor market conditions and workplace practices. In spite of the increasing importance of this economic sector, transportation and logistics organizations and workers in goods-moving versus goods-producing industries have not received sufficient attention in the socio-economic literature. This paper compares and contrasts the organizational structures and strategies of the port container terminal operators and the port drayage trucking segments of the intermodal supply chain, their interorganizational relationship, and the labor conditions for longshore workers and drayage drivers.

The paper combines insights from organization theory and labor studies as well as outlines the ways in which environmental forces have differentially impacted the port terminal and port drayage industries resulting in divergent organizational structures and practices. We also include a brief case study relevant to the question based on research conducted on drayage drivers at the Port of Jacksonville Florida (Jaxport). This demonstrates how the differences in industry/organizational characteristics translate into working conditions and intermodal forms of antagonism between drivers and longshore workers. This has implications for the integrative efficiency of the intermodal supply chain as well as the prospects for labor solidarity among logistics and transportation workers. The core argument of the paper is that the relationship between the port terminal and drayage operations is characterized by *intermodal disarticulation* and *intermodal labor segmentation*.

**TERMINOLOGY**

Because this paper seeks to integrate literatures and areas of inquiry that do not routinely intersect, it is important to define some terminology that is more familiar to students of transportation and logistics than to social scientists studying work and
organizations. A *supply chain* is defined as “a set of three or more entities…directly involved in the upstream and downstream flows of products, service, finances, and/or information from a source to a customer.” (Mentzer, DeWitt, Keebler, Min, Nix, Smith, & Zacharia, 2001, p. 4). The same authors define *supply chain management* as “the systemic, strategic coordination of the traditional business functions and tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole” (p. 18). *Logistics* is considered one aspect of supply chain management and is concerned with the planning and management of the movement and distribution of materials through the supply chain. *Intermodalism* refers to the movement of goods or materials using integrated but different modes of transportation. The *shipping container* is a technology that has enhanced and facilitated the intermodal transport of goods due to its standard size and the existence of common handling equipment. Thus, in a supply chain, a container holding finished or semi-finished cargo can be transported by and transferred between container ship, truck chassis, and/or rail car. The focus of this paper is on the industries and organizations responsible for handling containers at the port terminal and moving the containers off the terminal by truck.

**THE LANDSCAPE OF THE PORT ECONOMY**

The process of globalization and associated global commodity chains, global production networks, and global value chains (Gereffi & Korzeniewicz 1994; Henderson, et al., 2004; Coe, et al., 2004) have generated a spatial dispersion of economic activities. Under a globalized production system, raw materials are extracted in one place, parts and components may be produced in another, manufacturing may take place in yet another, and final consumption still another. As the geographic space between interdependent activities in a commodity chain increases, *transportation and logistics* take on an increasingly vital role in the circulation and distribution of commodities and in the coordination and integration of interdependent units and activities (Panayides, 2002).

In this paper the focus is on the elements of the intermodal supply chain that are associated with the port economy. On the one hand, the port, as a node in global
production networks, has increased in relevance and significance as a result of the spatial dispersion of production, the growing distance between production and consumption, and the subsequent need for transportation and logistics networks and gateways (Hesse & Rodrigue, 2004, 2006). On the other hand, the port economy itself engenders a spatially concentrated set of interdependent landside distribution activities, usually in urban settings (see Jacobs, Ducruet, & de Langen, 2010), the integration of which is the primary focus of this inquiry. In the context of the firms serving the port economy, Aoyama, et al. (2006: 335) note this dual spatial relationship “…although the logistics industry serves an integral function in the globalization of production, it also remains one of the most localized and embedded industries of all” (for countertrends see Notteboom & Rodrigue, 2005).

The present analysis views the port economy as a by-necessity geographically concentrated set of organizational actors – given the need for the two sectors of interest to physically interface in the movement of containers -- that are integrated on the basis of intermodal functionality and interdependence (Van Der Horst & De Langen, 2008). Logistics related services are central to this concentrated activity, described by Bonacich (2008:64) as “a special kind of industrial district, one geared to the process of international trade.” Rodrigue, Comtois, and Slack (2009) describe these areas as “freight distribution clusters where an array of distribution activities agglomerate” with the advantages of spatial proximity based on the factors of land, accessibility, infrastructure, planning and regulation, economies of agglomeration, and internal multiplying effects. And, in relation to the focus of this paper, Robinson (2006) argues that “port-oriented freight movement, may be conceptualized as chain structures involving transactional relationships between corporate players in logistics pathways between sellers and buyers” (p. 46). Spatial concentration applies especially to the corporate players of the supply chain under analysis in this paper – terminal operations and drayage trucking.

A focus on the port economy generally, and intermodal logistics activities specifically, introduce a set of new and interesting questions about divisions of labor and interorganizational integration:
1. Most of the work on inter-organizational relations in the organization theory and management literature focuses on the relationship between suppliers and producers in the production process, or the sphere of production. In contrast, the port economy pertains to the sphere of circulation or distribution of semi-finished and finished goods. It, therefore, is less about the geography of production than the geography of distribution (Hesse and Rodrigue, 2004). In Marxist terms, this is conceptualizing as the means of ensuring rapid turnover time in the circuit of capital and the “annihilation of space-by-time” (Harvey, 1989; Janelle & Beuthe, 1997; Stratton, 2000).

2. Following directly from #1, the interorganizational relations in question are not involved in a sequential process of transforming/assembling of raw materials and components into a finished product but rather the sequential transportation of containerized finished (or semi-finished) products from one transport/distribution mode to another on the way to the final point of consumption. Thus, we examine the relationship between modes of transportation and distribution, or what is referred to as “intermodalism”. While the analysis of intermodal supply-chains include some theoretical terrain familiar to many economic sociologists and organization theorists – such as the globalization of production, commodity chains, transaction costs, and interorganizational networks – it has largely been neglected by social scientists (for notable exceptions see the work of Bonacich and Wilson, 2008 and Bensman, 2008a). This paper advocates much more theoretical and empirical attention to the sphere of circulation and distribution (as opposed to the spheres of production and consumption) and the logistics industry. An examination of the port economy, the intermodal transportation of goods, and the logistics industry highlight a different but related set of organizational challenges revolving around the pressure to construct an integrated seamless interorganizational interface.

3. A singular technological innovation has driven and facilitated the intermodal system and network. This is the shipping container (see Levinson, 2006). The challenge is moving the container, and its contents, door-to-door from the point of production to the point of consumption.

6. Unlike production workers who may engage in economic activity for interdependent organizations, workers in different sectors of the intermodal supply chains may come in
contact with one another and interact in the course of moving the goods or containers from one point to the next.

ORGANIZATION THEORY AND INTERORGANIZATIONAL DYNAMICS

The questions examined in this paper connect to a well-established literature in organization theory. I have placed the question on interorganizational relationships and arrangements in the context of a larger meta-tension inherent to all organizations – arranging a rational division of economic activities and, at the same time, ensuring that these activities are coordinated and integrated (Jaffee, 2001). Differentiation, divisions of labor, and specialization are fundamental economic and organizational principles. No single individual or organization is able to assume responsibility for all production and distribution activities. This necessitates interdependence and inter-party transactions. Once divided and differentiated, how do different workers, jobs, departments, units, and organizations coordinate and integrate their interdependent activities? This question has posed a major challenge for both organization theory and management practice in terms of conceptualizing and implementing organizational changes and strategies.

There are two divisions of labor that all organizations must configure and address. The first operates at the intraorganizational level involving the division of activities within the firm, enterprise, or organization. This is the technical division of labor. This includes not only the horizontal dimension, where humans carry out different kinds of tasks at the same level of the organization, but also the vertical dimension involving differences in power, authority, rewards and decision-making.

A second division of economic activities takes place at the interorganizational level among separate production units. This is the social division of labor. It involves the exchange of inputs and outputs, the buying and selling, and the supplying and distributing relationships among firms. The general challenge for both divisions of labor stems from the interdependent nature of economic activity within and among firms and the need to coordinate and integrate these activities. The focus in this paper will be on the social division of labor.
A consideration of the social division of labor involves transactions among interdependent but distinct phases or sequences in a production or distribution process and the functional integration of these interdependent production units. Organizational differentiation that is mediated through a market exchange and contractual arrangements between organizations can pose uncertainties that threaten the ability to carry out a well-coordinated production process. This creates pressures for a more tightly integrated chain of inter-organizational relations.

One approach to this problem is provided by the transaction cost model of Coase (1937) who identified the problems involved in market exchange under conditions of self-interest and insufficient information. This necessitates contractual verification and protection; but negotiating, writing, and enforcing contracts is costly. A “firm”, or organization, may decide to reduce these costs by assuming the activity itself rather than relying upon another organization. This would be an alternative to market exchange. Once the activities are controlled by a single organization, market transactions are replaced by directives and commands. Transaction costs associated with obtaining information about prices, or establishing contractual obligations, are eliminated. Coase’s conceptual framework has been extended and modified in the work of Williamson (1975; 1985) who describes the non-market solution as “hierarchy” which is more commonly known as vertical integration. This is the process of joining sequentially related and interdependent production units and processes under the control of a single organizational authority system. Vertical integration will make sense when the cost of hierarchical administration is less than the cost of market transaction (Teese, 1976). The tension arises as to whether the organization should specialize in what it does best and rely on the social division of labor to access needed resources, or integrate the entire process under a single organizational umbrella, or develop an alliance of independent but affiliated firms.

Langlois and Robertson (1995) make the important distinction between ownership integration and coordination integration. Generally, ownership integration is the assumed outcome of hierarchy. One firm buys up another firm, owns its assets, and presumably integrates its economic activity into its own. Coordination integration implies coordinating the activities of legally independent entities. Langlois and Robertson correctly emphasize that ownership does not automatically create tight
coordination, cooperation, or structural and social integration. It is conceivable that higher levels of collaboration and cooperation can exist between two legally independent firms. This suggests that control and certainty can be established without resorting to a vertically integrated arrangement.

Resource dependence theory (Pfeffer & Salancik, 1976) offers another way to look at inter-organizational relations. This perspective goes far beyond the immediate exchange partners to consider the larger resource environment that impacts an organization. The greatest focus has been on the “task environment” (Dill 1958; Scott 1981). This refers to those elements of an organization's environment which have a direct impact on the ability of the organization to carry out its specific production-related tasks. The four major sectors of the task environment include: customers, suppliers, competitors, and regulatory groups. Since the focus here is on the relationship between two directly interacting segments of the intermodal supply chain, it is customers and suppliers that would constitute the most relevant elements. One strategy suggested by resource dependence theory is “bridging” (Pfeffer and Salancik 1976). This involves developing relationships and formal connections with other organizations in the task environment. Bridging can include long-term contracts that establish supply and price over an extended period, or a joint venture that brings together the managerial personnel from different firms and contributes to a perception of common interests between the interdependent entities. A further bridging strategy is the vertical merger in which, for example, a producer buys out a supplier and gains control of the critical resource.

The various bridging strategies identified by resource dependence theorists have informed the more sweeping organizational trend among theorists who have opted for a middle ground solutions between markets and hierarchies that some have described as embedded networks (Gereffi and Hamilton, 1996). This term connotes aspects of interorganizational relations that defy the market-hierarchy duality. Network relations imply some structural interdependence; embeddedness implies that the relations are situated in a social normative context. An embedded network is just one of the many ways to articulate the myriad interorganizational arrangements that defy the market-hierarchy duality and which have become increasingly common. Embedded networks can include temporary alliances, arrangements, or agreements designed to combine the
core competencies and capacities of different firms. The network is characterized by cooperation, collaboration, and the sharing of information.

Information technologies play a key role in facilitating the rapid transmission of information among firms -- through computer networks and telecommunication systems -- and permit the integration of differentiated units. One of the key attributes of the successful network is its “connectedness” (“its structural ability to facilitate noise-free communication between its components”) and “consistency” (“sharing of interests between the network’s goals and the goals of its components”) (Castells 1996:171). Connectedness implies communication and coordination; consistency implies shared goals and objectives.

Here we examine the differentiation-integration tension in the context of the port economy and the inter-organizational relations that are configured to move containerized commodities from a container vessel to the warehouse/distribution center or railhead. More specifically, within this intermodal supply chain, we will examine the relationship between the port container terminal and drayage operations and the workers in each of these organizational settings.

In the analysis here, we argue that there may be forces impeding the implementation of ideal-type integrative strategies suggested by various interorganizational theories. First, as with the commodity production process and related commodity chains, in the intermodal logistics supply-chain there are also strong pressures to squeeze costs out of the goods moving transportation logistics processes. This means that while theoretically there may be optimal means for ensuring interorganizational integration, as suggested above, there are also cost considerations and institutional/structural constraints that may work to support and preserve organizational arrangements that are less economically efficient but that shift costs from one party to another, and are therefore tolerated (see e.g. Nickerson & Silverman, 2003). Second, interorganizational chains of transportation and distribution may possess distinct properties that make models based on interorganizational chains of production less applicable (Pirrong, 1993; Lafontaine & Masten, 2002). For the structural relationship between the drayage sector and the port terminal operations, this will imply the existence of persistent intermodal disarticulation.
THE INTEGRATION AND DIFFERENTIATION OF LABOR

The transaction cost and resource dependence literature cited above -- central for organization theory -- is written largely at the level, and from the perspective of, the firm, and pertains to how business and capital seek to develop seamless and economically rational relationships among interdependent organizations. For the workers involved in these interdependent industries and organizations, there are different interests and concerns, theoretically and practically. The question here is: how do workers in sequentially interdependent industries and organizations differ, interact, cooperate, relate to, and build solidarity with one another. There is very little theoretical or research literature that addresses this question.

One theoretical point of entry into this issue is through the study of labor markets and the now well-recognized fact that labor markets are segmented, bifurcated, and non-equivalent (Piore, 1972; Reich, Gordon, & Edwards, 1973; Harrison & Sum, 1979; Dickens & Lang, 1988). There are two interrelated theoretical approaches that can inform this analysis – segmented or dual labor market theory (Edwards, Reich, & Gordon, 1975; Beck, Horan, & Tolbert, 1978) and split labor market theory (Bonacich, 1972). Both theories point to the structural factors that account for different labor market experiences and working conditions for workers in the same and/or different occupations, industries and economic sectors.

Segmented labor market theory provides a descriptive and explanatory framework for studying how work in different industries, economic sectors, and organizations shape the labor market outcomes of different workers (Reich, Gordon, & Edwards, 1973; Edwards, Reich, & Gordon, 1975; Beck, Horan, & Tolbert, 1978). The theory revolves around the distinction between the primary and secondary sectors, or core and periphery, of the economy. In the primary sector one finds large capital intensive firms exercising quasi-monopoly pricing power; as a consequence, labor market conditions are more favorable to workers. These might include unionization, collective bargaining, productivity-based wage increases, and health and retirement benefits. In contrast, the secondary sector is characterized by smaller labor intensive firms operating in highly competitive environments with downward pressure on profit margins. As a consequence,
workers in this sector experience greater economic insecurity, low wages, weak bargaining power, and few if any fringe benefits. The two sectors also differ in terms of the skills and job requirements of workers. This theory can inform the variable labor market experiences that characterize different segments of the intermodal logistics supply chain. That is, to what extent are the differences in working conditions across the logistics supply chain attributable to the variation in industry and organizational structure?

Split labor market theory (Bonacich, 1972) explains divisions among workers where there is competition between well-paid dominant group workers and low paid minority group workers in the same occupation or skill class. Ethnic and racial antagonism, hostility, and conflict can emerge from the tensions produced by economic competition between different groups of workers vying for labor market advantages and resources. This theory can inform an understanding of the relationship between workers in different segments of the logistics supply chain and the source of potential tension (see Cummings, 1980; Turner, 1986). That is, to what extent is the conflict and hostility between workers in different segments of the logistics supply chain the result of perceptions of competition from cheaper labor and/or resentment toward workers who are perceived to be occupying a privileged status?

Closely related to the work on segmented labor markets are the various employer strategies designed to create greater flexibility and cost control over the deployment of labor such as numerical or external flexibility (see Kalleberg, 2003). Numerical flexibility involves the creation of nonstandard employment relations which “limit the duration of employment through the use of parttime and (especially) short-term temporary workers who (a) are often viewed as being disposable and can be recruited and selected quickly, (b) may be used when the organization does not have the authorization to hire, and (c) often cost less than regular, full-time employees. These workers are on the company payroll but have relatively weak ties to the organization, are generally hired for finite periods on an as-needed basis, and, at least in the United States, typically receive no or few benefits. In addition, organizations can obtain numerical flexibility and often reduce costs by externalizing administrative control…” (Kalleberg, 2003, p. 155). The fact that such employment relations have become increasingly common (Beck, 2000;
Osterman, 2000) would suggest that a growing proportion of the United States labor market is taking on the characteristics of the secondary sector. Further, it is not uncommon to find standard and nonstandard, or secure and precarious, employment relationships existing among workers in the same organization, industry, and economic sector though significant research has been devoted to correlating the use of temporary, nonstandard, and external employment relations with organizational and industry characteristics (Kalleberg, Reynolds, & Marsden 2003; Masters & Miles, 2002; Davis-Blake & Uzzi, 1993; Kalleberg & Schmidt, 1996).

For the purposes here, we are interested in the labor market conditions that prevail in two adjacent and interacting supply chain industries, port terminal and drayage trucking operations, the relationship between workers in these industries, and how that can impact both supply chain integration and labor solidarity. Where there are sharp dual economy differences in industry and organizational characteristics, and correlating differences in racial/ethnic composition between the two sectors, we would expect higher levels of antagonism.

**PORT TERMINAL AND DRAYAGE SEGMENTS OF THE SUPPLY CHAIN**

In order to better understand the inter-organizational relations we must identify and describe the focal industries, organizations, and workers. For our purpose, we will focus on two segments of the chain – the container port terminal and drayage trucking in the United States. We will discuss the organizational characteristics and labor relations in each and then turn to the challenge of structurally and socially integrating these segments of the chain.

**Port terminal organizations.** Rather than focus on the port as the unit of analysis, there is a growing consensus for conceptualizing the “terminalization of seaports” as a way to correctly identify the relevant unit of analysis (Slack, 2007; Olivier & Slack, 2006; Rodrigue & Notteboom, 2009)). A more accurate description of the maritime landscape, according to these theorists, is a corporate network of terminal-operating transnational corporations. A single port may have multiple terminals that “throughput” very different types of cargo and are managed by very different types of administrative arrangements, public and private. In an effort to remain competitive, port
authorities are increasingly ceding control of the terminals to the shipping lines and/or privately-owned global terminal operators (Olivier & Slack, 2006; Slack & Fremont, 2005) employing the now dominant “landlord” port model that represents the furthest privatization of port operations (Baird, 2002; Turnbull & Wass, 2007). It is increasingly common for a particular terminal to be leased, managed, and operated by a private firm specializing in terminal operations (e.g. Dubai Ports World, Port of Singapore Authority, SSA Marine, Hutchison Port Holdings, APM Terminals) or by a single shipping line that has vertically integrated their operations to include terminal operations (e.g. Mitsui shipping lines and Tra-Pac terminal operations).

Economies of scale are reflected in the increasing concentration in the container vessel industry, the increasing size of the container vessels, and the increasing investment in and space devoted to containers terminals (Notteboom, 2004; Heaver, Meersman, Moglia, & Van De Voorde, 2000; Nootbeoom & Winkelmanns, 2001; Notteboom & Rodrigue, 2009). Concentration has resulted from horizontal integration through liner conferences, operating agreements, and mergers and acquisition (Notteboom, 2004; Fremont, 2009). Fewer shipping lines control a greater proportion of terminal slot capacity and the global TEU (twenty-foot equivalent) container throughput (Notteboom & Rodrigue, 2010). In addition, a greater proportion of containers are being transported by the largest container vessels that can transport over 5000 TEU containers (Notteboom, 2004). Container terminals are becoming larger, are controlled by a smaller number of global terminal operators who lease dedicated container terminal facilities and have been the recipient of massive financial capital investment. In 2006 American International Group (AIG) bought six U.S. terminals from Dubai-owned company DP World. In that same year, Goldman Sachs acquired Associated British Port Holdings, and in 2007 the investment bank bought a 49% share in Carrix, a subsidiary of SSA Marine, the largest US-based terminal operator. As reported in the business press at that time, “Ports and port operators have become the hottest investment targets for fund managers across the world…” (Arabian Business 2006).

The primary forms of labor conducted at the port terminal involve stevedoring (by longshoreworkers) – the loading and unloading of cargo from ocean carriers – and the transferring (by clerks and checkers) of cargo to other modes of transportation. We focus
here on containerized cargo which is loaded, unloaded, and maneuvered by the use of cranes. Once unloaded from the ship, containers can be placed directly on a truck chassis, can be placed on a rail car, or can be stacked at the terminal for movement at a later time. Of the different labor forces involved in the intermodal supply chain, a significant segment of port terminal workers can be regarded as the “labor aristocracy” by virtue of their representation by longshore unions. In spite of some major setbacks stemming from the reorganization of the shipping industry (Turnbull & Wass, 2007), most notably containerization, the waterfront remains a relatively unique organized labor stronghold. Finally, as noted above, the global terminal operators, and the shipping lines to which many are linked, represent industries that are in the core or primary sector of the economy. These organizations are capital intensive, hold pricing power, can establish strong bargaining power, are multinational, and have profit margins large enough to make them attractive to major investment banks.

What are some of the other factors contribute to the ability of waterfront unions to exercise bargaining power? Erik Olin Wright (2000) has outlined the various ways in which “class compromise” involves the interaction between the strength of the associational power of labor and the realization of the material interests of capital. The extent to which compromise or accommodation is possible hinges on the degree to which the level of associational power is either a direct threat or a potential contribution to an employer’s objectives. Compromise is most likely in the latter case. Hypothesized as a reverse J-curve, low levels of working-class associational power are associated with a greater realization of capitalists’ interests. As associational power increases, there is a continuing decline in capitalists’ interests, but as working class power increases beyond some intermediate threshold, the curve bends upward with high levels of working-class organization potentially benefiting the material interests of capital. The logic of the non-inverse relationship between working class power and capitalists’ interests is based on the potential for “high levels of bargained cooperation between workers and capitalists, rationalized systems of skill upgrading and job training, enhanced capacity for solving macroeconomic problems, and a greater willingness of workers to accept technological change given the relative job security they achieve because of union protections”
As it relates to the waterfront and the situation of dockworkers, one can bring some greater specification to the class compromise dynamic. There are several factors to consider. First, the port is a geographic node that cannot be relocated and thus the threat of offshore capital flight is nullified. Second, the gigantic size of container vessels and container terminals create economies of scale and massification levels (Rodrique, et al., 2009) that enhance and strengthen the conditions for collective labor organization. Third, as already noted, vertical integration, involving ocean carriers extending their control over the terminal operations, and concentration within the industry more generally, can work to strengthen the bargaining power of workers and unions (Finlay, 1987). Fourth, once cargo arrives at the port it is vital, given the sequentially interdependent “just in time” supply-chain system, to move it as quickly and efficiently as possible without any threat of delays, slowdowns, or stoppages. Equally important, the shipping lines have an interest in unloading the cargo and redeploying the vessel capacity for additional container business. Lastly, Silver’s (2003) observation about transport workers applies most specifically to this labor force: “Transport workers have possessed and continue to possess relatively strong workplace bargaining power. This is especially clear after we conceptualize their workplace as the entire network in which they are enmeshed. Thus, the source of the workplace bargaining power is to be found less in the direct impact of their actions on immediate (often public) employers and more on the upstream/downstream impact of the failure to deliver goods, services, and people to their destinations.” (p. 100). The desire by capital to ensure stability and certainty in the movement of cargo works to the advantage of labor, who are able to exercise “interdependent power” (Piven, 2006). We will see that there are some limits to this assertion as we move to the next transport mode in the supply chain.

However, longshore labor is not invulnerable. Forces that have and can erode the relative strength of port unions (Fisher & Kondra, 1993; Turnbull & Wass, 2007) include containerization and related “technological fixes”(Levinson, 2006; Ircha & Garey, 1992; Turnbull & Wass, 2007); port competition (Heaver, 1995; Heaver, Meersman, & Van De Voorde, 2001); the existence of two different labor unions
representing East (ILA - International Longshoremen’s Association) and West coast (ILWU - International Longshore and Warehouse Union) longshore workers (Monaco & Olsson, 2005); threatened and actual shifting of cargo from the West to East coasts of the U.S. (Jaffee, 2009); the introduction of “flexible working practices” Turnbull & Wass, 2007); and the continuous effort to automate as much of the waterfront cargo handling process as possible (Schwarz-Miller & Talley, 2002; Betcherman & Rebne, 1987; Killingsworth, 1962). Like all workplaces, the waterfront remains a contested terrain.

It is because of these various threats, and the fact that the numbers of longshore workers handling cargo on the waterfront is diminishing, that one of the longshore unions (ILWU) is setting its sights inland on the other cargo moving/handling sectors that have experienced employment expansion. Thus, a major study conducted by the University of California’s Institute for Labor and Employment (Dube, Evans, Hall, Olney, Swearington, Willis, & Wolff, 2004) recommended that the union “must confront the challenge of thinking industrially beyond the docks and organizing the full cargo-handling supply chain whether on or off the docks…Increasing solidarity among longshore and warehouse workers (and potentially truck drivers)…is the only one that provides any hope of shifting the balance of power in the logistics industry…” (p.35). This suggests a different kind of integration strategy designed to socially integrate labor across the supply chain as a way to retain power and leverage vis-à-vis private employers. However, as longshore unions begin their “march inland” the first labor force they will confront are the port truckers, to whom we can now turn.

**Port drayage organizations.** The unloading of shipping containers at the port terminal, carried out by the increasingly privatized and specialized terminal operators, is followed by the transferring to another transport mode for movement off the terminal, out of the port enterprise, and to a distribution facility or other transport mode. The most common mode of transport for the movement of containers from the terminal is by truck and known as “drayage”. Drayage is the hauling of intermodal containers on a detachable trailer chassis and an essential link in the intermodal movement of goods, serving as the link to/from the port terminal and to/from railhead and distribution centers across inland portions of North America.
The drayage sector is characterized by a large number of logistics and trucking firms, many quite small, that contract with shippers for the movement of containers. Drivers in this sector may be employees of the firms but are much more commonly, “independent owner-operators”. If dockworkers are the labor aristocracy, owner operators are the serfs of the intermodal supply chain.

The most comprehensive study and general treatment of truck driving working conditions is Michael Belzer’s *Sweatshop On Wheels* (2000). It is a story about the steady decline in labor market conditions revolving around the transition of trucking from the status of a protected and regulated, to unprotected and deregulated, industry with the passage of The Motor Carrier Act of 1980 (Belzer, 2000; Belman & Monaco, 2001; Bensman, 2009a; Peoples & Talley, 2004). Prior to the 1980 Act, licensing requirements enforced by the Interstate Commerce Commission restricted the number of trucking firms and trucks. This had the effect of stabilizing prices and, with Teamster representation of drivers, providing truckers with attractive compensation and benefits. Rising wages and operating expenses were simply passed on in the form of higher shipping costs. The Motor Carrier Act radically altered the trucking landscape allowing the entry of low-cost, non-union trucking firms. The low barriers to entry, increasing number of players, and the heightened competition exerted a downward pressure on trucker compensation and a steady decline in union representation. Particular sectors, including drayage, became highly competitive and fragmented as a result, and the net effect has been a decline in compensation levels and mass de-unionization (Belzer, 1995).

Another major consequence of deregulation was the rise of the “owner-operator” or “independent contractor” arrangement. Under this now-dominant drayage industry standard, trucking firms -- rather than owning trucks and hiring workers as employees -- contract with “self-employed” drivers who own or lease their own truck. These drivers work for, but are not officially employed by, the trucking companies, and they are paid by the trip or load, instead of by the hour. They are typically prohibited from working for more than one company. The implication of being an independent owner-operator, as fictional as the designation might be in practice (see Bensman, 2009b), effectively frees trucking companies from any financial and legal obligations they would incur under an official employment relationship (e.g. social security, health benefits, retirement).
Finally, and quite significantly, as an “independent business”, rather than a company employee, the owner operator is prohibited from joining with other owner-operators in organizing a labor union, as this would violate federal anti-trust laws.

While the deregulation of trucking has negatively impacted working conditions for many drivers, it is port truckers who face the most severe circumstances. According to Prince (2005), the trucking labor force is internally stratified. At the top of the pyramid are the fulltime employees of the major national trucking firms who may also be unionized. Below this relatively privileged segment of the trucking labor force are the various owner-operators. Among owner operators there is also a hierarchy. “At the bottom of the pyramid are owner-operators hauling international containers – the fastest growing segment of intermodal traffic. After expenses, many of them make about $6 an hour, less than what many fast-food jobs pay” (Prince, 2005, p. 13). Or, as Bonacich notes, “Of all the global trade related logistics workers, port truckers are the most oppressed” (2003, p. 46).

Several studies provide insight into the condition and character of work for this segment of the logistics labor force serving U.S. ports (Monaco & Grobar, 2004; Bensman, 2009a, 2009b; Bensman & Bromberg, 2009; Harrison, Hutson, West, & Wilke, 2008; Port Jobs, 2007; East Bay Alliance for a Sustainable Economy, 2007; Jaffee & Rowley, 2009). A number of patterns have been identified. A majority of drivers in all cases occupy minority group status (for example Hispanic/Latino drivers made up 92% in Los Angeles/Long Beach and 66% in New Jersey; in Jacksonville African American and Hispanic/Latino combine to make up over 50% of drivers). This signals the “racialization” of this particular segment of the trucking labor market in which ethnic and racial minority groups occupy and are concentrated in the least advantaged employment categories, and/or move into those occupational sectors that have experienced downward mobility in terms of compensation and working conditions (see Bonacich, Alimahomed & Wilson, 2008). Trucking generally, and port drayage in particular, is representative of this type of occupation.

Further supporting evidence for the marginalized character of port drayage is provided by the fact that the majority of drayage drivers are owner-operators – from 86% in Los Angeles/Long Beach to 68% in Jacksonville Florida according to the studies cited.
above. As noted, the owner-operators are essentially “dependent” contractors who are not allowed to work for more than one trucking firm, receive no employee benefits, are compensated by the trip rather than the hour, and absorb all costs associated with the operation of their vehicles as well as the inefficiency of the system. In terms of the latter, what are most significant are the routine but costly delays and bottlenecks (terminal security clearance, dependence on terminal operations to locate containers or provide roadworthy chassis). For owner-operators who are paid by the trip rather than the hour, wait time at the container terminal and warehouse/distribution center is one of the most significant factors impacting extended hours and low rates of compensation. The average net income (after subtracting truck expenses) of drivers in LA/LB was $29,903 (2004 dollars) and in NJ it was $30,000 (2008 dollars). These figures include both employees and owner-operators. Consistent with the literature on the relative position of the owner-operator drayage trucker, Bensman and Bromberg report an average net income of $35,000 for employee drivers and $28,000 for owner-operators. To place this level of compensation into a larger context, it is important to consider the number of hours per week driver’s work to achieve these levels of income. At LA/LB the average number of hours drivers worked per week was 56, in NJ 58, and in Houston 55. This figure is consistent with the “self-exploitation” that would characterize owner-operator conditions that involve no salary or hourly wage and constant pressure to maximize the number of “trips” or “turns” in order to increase income.

The two sectors of the logistics industry – container terminals and port drayage – and their contrasting structural characteristics and labor market conditions, conform in many ways with the theoretical expectations of dual economy theory and labor market segmentation. How do these differences impact the integration of these two intermodal supply chain segments?

**INTERMODAL DISARTICULATION**

We have described two segments of the intermodal logistics supply chain that are very different in terms of industry structure and labor market conditions. Yet the two segments must interface and ideally integrate their operations in a seamless fashion so that the goods can move rapidly through the supply chain. In this section we describe
and attempt to explain the disarticulation problems between the two sectors and some strategies that have been suggested or used to improve efficiency.

As the goods move between the various modes and organizations, there is enormous pressure for seamless integration and rapid transit (Van Der Horst & De Langen, 2008; Panayides, 2002; Capineri & Leinbach, 2006; Robinson, 2006). As Panayides (2006) has observed, “The convergence of maritime transport and logistics may be largely attributed to the physical integration of modes of transport facilitated by containerization…At the centre of maritime logistics is the concept of integration, be it physical (intermodal), economic strategic (vertical integration, governance structure), or organizational (relational, people and process integration across organizations)” (p. 5). The integration imperative for intermodal flows -- or what one author describes as the “speed imperative” (Kasarda, 2000) that implies “time-based competition” (Meersman & van de Voorde, 2001) -- suggests a need for tighter control and coordination across the supply chain.

In the context of the integration imperative, there is a clear argument for viewing the port as an integral, rather than peripheral or incidental, part of the supply chain and, further, that the port’s integration with other organizations is critical to its competitive viability (Heaver, 1995; Bichou & Gray, 2004; Jacobs & Hall, 2007; Marlow & Paixao, 2003; Song and Panayides, 2008; Robinson, 2002; Notteboom & Winkelmans, 2001; Heaver et al., 2000; Fremont, 2009). The combination of containerization, intermodalism, and discretionary cargo give shippers and carriers greater latitude in selecting ports of call which intensifies the competition between ports. This weakens the bargaining power of ports in terms of providing unique access to a particular geographic location or market, creates greater dependence of ports on the decisions of ocean carriers, and relegates ports to ‘pawns in a game’ controlled by larger global corporations (Slack, 1993). This has also required ports to be more entrepreneurial and more active in developing, marketing, and demonstrating their logistics and supply chain capacities. As Jacobs and Hall (2007: 328, emphasis added) argue: “…the port authority or operator’s competitive strategic advantage is not only based upon operational efficiency or location, but increasingly on the degree to which it is embedded in supply chains, is able to enhance the efficiencies within these supply chains, and is able to extract value from them.” They believe that
ports vary in their level of embeddedness and, accordingly, there ability to provide highly integrative services to their customers.

Private terminal operators have recognized the value of extending their services into the supply chain in an effort to enhance integration. If not involving actual vertical integration into inland transport, third party logistics providers, and warehousing, there can be systematic coordination with these supply chain entities. SSA Marine, for example, boasts of its provision of rail yard, trucking, warehousing, and off-dock yard services. In the case of Hutchison Port Holdings, they have created a separate logistics division – Port Services and Logistics – which can offer customers “seamless logistics support around the world”. Similarly, an ocean carrier may “in-source” terminal operations to a subsidiary (e.g. Mitsui’s Tra-Pac Inc. or Maersk’s APM Terminals) that also forges an integrative relationship at least as far as the terminal. This is where one is most likely to find vertical integration in the intermodal chain. While a great deal has been written about the activities of shipping lines in more fully integrating their operations, it has been much more at the level of horizontal than vertical integration, and in maritime versus inland transport (Evangelista & Morvillo, 1999). This has resulted in significant economies of scale at the ocean carrier level. However, Fremont’s (2009) analysis challenges the claim that ocean carriers are extending the integration in a fully vertical direction controlling inland logistics operations. He argues that the greatest concern is with – not surprisingly – “vessel logistics” and the full utilization and capacity of vessels, the minimization of costs, and the optimization of cash flow. Secondly, “container logistics” entails the procurement, organization, monitoring, and balancing of the container fleet among the different trade routes. There is far less involvement or concern with controlling the actual drayage process or operations.

The extent to which a container terminal is integrated into the larger supply chain is the focus of a study by Panayides and Song (2008). They develop a theoretical and empirical construct – “terminal supply chain integration” (TESCI) -- that is based on the four critical indicators of a container terminal’s integration with the supply chain: information and communication systems for the sharing of information with supply chain partners; the provision of value-added services; the use of multi-modal transport systems
and operations; and the planning and organization of supply-chain integration practices that extend beyond the borders of the terminal.

One common strategy, given the range of parties and transportation modes involved in the movement of goods, has been for shippers to outsource the integration and coordination function of intermodal transport to what are called third-party logistics firms, or 3PLs. From this perspective, the 3PL conforms to the definition of Lieb et al. (1993) which “involves the use of external companies to perform logistics functions that have traditionally been performed within an organization. The functions performed by the third party can encompass the entire logistics process or selected activities within that process.” More generally, it is safe to say that the 3PLs owe their existence and rising prominence to the trend toward increasingly complex global production networks and the pressure to keep the freight and cargo in constant motion from production to consumption. Or, as Bonacich (2008: 15) has remarked, “logistics experts operate on the principle that capital not in motion ceases to be capital”.

In spite of the recognition that the terminal is most competitive and effective when it forges integrative connections, and the use of 3PLs to assume responsibility for coordinating movement across the chain, there seems to be a unanimous opinion that the terminal-drayage connection is the weakest and least efficient link in the intermodal logistics supply chain (Morlok & Spasovic, 1994; Srour, 2010; Bensman, 2009a, 2009b; Taylor & Jackson, 2000; Payne, 2007; Coalition for Healthy Ports, 2009; Monico & Grobar, 2004). Observers site a wide range of deficiencies. The various problems identified include the following interrelated factors: traffic congestion, environmental impacts, pickup scheduling, truck terminal delays, uncertainty, inadequate communication and application of IT solutions, poor working conditions and compensation for drivers, the inefficient allocation of empty containers, diseconomies of atomization in the trucking industry, extended turn times, inefficient procedures for locating and positioning containers, and unavailability and poorly maintained maintenance of container chassis. What might account for these persistent and widely-recognized intermodal deficiencies?

Within the context of the theoretical literature on interorganizational integration (e.g. transaction cost and resource dependence), the logic and incentives for particular
integrative strategies are based on a customer-supplier model and set of functional linkages that do not entirely apply to the intermodal transportation logistics chain generally, or the container terminal-drayage nexus, in particular. Most significant is the fact that the drayage sector is neither a customer nor a required resource for the terminal operator. The terminal is primarily concerned with meeting the needs of the backward linkage (on the import side) to the shipping lines. Once the terminal operators unload the cargo from the vessel they have an obligation to make it available and accessible to the next mode of transport but strong financial incentive structures are much weaker than they would otherwise be if terminal operators were paying trucking firms for a service provided. Williamson’s (2008) recent application of transaction cost economics (TCE) to supply chain management reiterates that the “paradigm transaction” of TCE is the make-or-buy decision. He asks: what is the paradigm problem for supply chain management? I would answer that for the intermodal case studied here it is not “make or buy” but “the handoff”. What seems most critical is not the cost and quality of the physical objects being moved through the chain, but rather the speed at which the objects are moving.

At closer examination it seems clear that there are other parties that have a greater interest than the terminal operators in the expeditious and seamless handoff of containers. One is the port authority that bases its competitive position on marketing and demonstrating the efficient integration of terminals with inland transportation modes. The other is the third-party logistics firms, brokers, and shippers who are trying to ensure the rapid transit of freight through the supply-chain and, importantly, who are the customers of the trucking firm.

The structural economic dualism represented by the two interacting sectors may also be a major factor contributing to integrative inefficiencies. Rodrigue, Comtois, & Slack, 2009 have identified this situation as a problem of “massification” and “atomization” in the “last mile” of freight distribution. “The containerization process is thus confronted with a growing tension between a massification at sea and an atomization on land. Growing vessel size has led to the massification of unit cargo at sea. On terminals and at the landside, massification makes place for an atomization process whereby each individual container has to find its way to its final destination.” While this is an inevitable aspect of the geography of distribution, it is severely exacerbated and
introduced prematurely by the fragmented drayage industry yielding an array of different
trucking firms, brokers, and logistics companies moving containers off the terminal.
Whatever economies of scale are achieved at the vessel and terminal level, they are
quickly eroded at the drayage level.

The persistence of this widely acknowledged dysfunctional system would suggest
that there are benefits deriving from the arrangement for particular parties. The cost
effectiveness of such a system may be associated with the party that bears the greatest
direct economic cost – the drivers. Poorly organized, as atomized as the industry in which
they work, and largely powerless, costs and risks are shifted to, borne by, and
concentrated among the owner-operators or, more accurately, “dependent contractors”.
One of the consistent observations made by those who study the port drayage system
pertains to the issue of who bears the costs and risks, and who would have the greatest
economic incentive to institute alternative arrangements (Bensman, 2009a, 2009b;
Monaco & Grobar, 2004). If the terminal operators paid a direct economic price for the
delays and bottlenecks reported by drivers, there would be an incentive to streamline the
system or negotiate different terms with the unionized port workers responsible for
operating the gates and directing the truckers through the terminal. If the drivers were
organized and/or paid by the hour, the trucking firms would have an incentive to organize
for a more rational system that would minimize time delays. Firms have little incentive to
pay drivers as employees, by the hour, when up to half the working day is spent waiting
rather than actually moving a container. As it currently stands, the negative external
effects of congestion, delays, or inefficient terminal operations are borne and absorbed by
the drivers. In short, it is profitable, or at least cost effective, to take the “low road”
strategy when it comes to the drayage side of the equation (Milkman, 2002). As is often
the case in these situations, what is individually rational for the trucking firms is
collectively irrational for the larger supply chain. These delays and inefficiencies impact
all parties in the sequentially interdependent inter-organizational supply chain. Therefore,
there should be a common interest working to ensure a more timely movement of
containers from the terminal to the subsequent mode of transport or distribution. More
generally, this issue points to the need to internalize costs that are currently externalized
and to modify the employment relationship that reinforces an arrangement that minimizes
the costs to “employers” and maximizes the costs incurred by workers (see Hacker, 2006 on this larger trend in the U.S. labor market).

There are several developments in the area of drayage that are intended to address the weak links and gaps in the system. First, designed to reduce wait times and congestion, is an appointment system for procuring containers. Second, and most consistent with strategies discussed thus far, there is the vertical coordination between the ocean and landside carrier. Several recent examples include a joint venture between APL shipping lines with Con-way Freight to integrate and customize intermodal container transit. The fact that APL has access to dedicated terminals enhances the ability to make such collaboration possible. Similarly, J.B. Hunt Transport Services has partnered with ocean carrier Matson Navigation to integrate services and guarantee transit and delivery times. Finally, the fragmentation of the trucking industry is being addressed with the emergence of large scale nationwide trucking firms. Most notable is Roadlink USA which was created out of the merger of seven regional intermodal transportation companies. Roadlink claims to be the “largest private, independent North American Intermodal Logistics service provider” combining local market expertise with the scale and scope of nationwide coverage and service. These strategies are designed to match the scale economy of terminal operations with scale economy of drayage operations (see Watson, 1999).

A number of other proposals have been suggested for improving drayage related efficiencies. The “virtual container yard” is aimed at eliminating the wasted transport time and resources devoted to returning and picking up empty containers (Theofanis, Boile, Janakiraman, & Naniopoulos, 2007; Rodrigue, Comtois, & Slack, 2009). The system would coordinate the regional demand for containers with drivers delivering containers directly to the point of use rather than temporary port stockpiles. Two other proposed enhancements are related to the congestion and delays associated with having to match a particular driver with a particular container or a particular chassis. Solutions involve the creation of a “trucking pool” from which drivers working for different firms could be used to transport containers for any other firms (Payne, 2007). Similarly, a chassis pool would be established from which drivers could use any available chassis regardless of which shipping line had ownership. All three of these proposals to address
bottlenecks in this particular segment of the chain require cooperative and collaborative relations among separate and potentially competing firms. They also point to the way cooperation rather than competition can produce a more optimal arrangement for the efficiency of the supply chain.

None of the proposals above address directly the problematic owner-operator status of drayage drivers. The conversion of owner operators to employees could conceivably be either a cause or consequence of improving the efficiency of the system. On the one hand, if firms were paying drivers as employees they would have an incentive to fix the system. On the other hand, if the system were more time efficient the firm might be more willing to pay drivers as hourly employees.

INTERMODAL LABOR SEGMENTATION

We do not have good information on the nature of the relationship between workers who interact and can potentially contribute to the greater efficiency of the intermodal system. What is rarely examined are the occasions when the different labor forces from the different segments come in contact with one another and interact in the process of moving the goods. In this section, based on research on port truckers conducted at the Talleyrand terminal in Jacksonville Florida (Jaffee & Rowley, 2009), we consider some interesting organizational and labor dynamics illuminated by the interface between the drayage and terminal operations. While the analysis here is preliminary, we hope that it can point the way to future research on how the intersection of different labor forces and conditions can impact the quality of work, interorganizational integration, and prospects for labor unity.

We have already described the work environment and organizational challenges facing drayage drivers. In a survey distributed to drivers at Jaxport, respondents were invited to add additional comments and information about their working conditions. The qualitative data derived from this section of the survey pointed to several key issues not addressed by the closed-ended survey items in our study. One of the most frequent comments, or complaints, registered by the drivers concerned the poor treatment they receive from the terminal employees. This ranged from a lack of respect to an indifferent...
attitude toward the drivers’ need to obtain and transport the container in a timely fashion. Some representative expressions are as follows:

- **The ILA clerks are in no hurry to do anything as they are paid on an hourly basis and are SLOW, SLOW, and SLOW!**

- **Redundant holdups, dealing with people who could care less that a driver has a time schedule to keep. Arrogant disregard with any problem a driver has. They label us as stupid truck drivers!**

- **At the port, they are very nasty to drivers. They discriminate at the port. They treat drivers like dirt when we are the ones responsible for their salary. They treat the minorities very badly.**

- **The way that they treat drivers at the port is humiliating**

Bonacich and Wilson’s research on the West coast ports reports similar tensions and animosities between drivers and terminal workers. “Port truckers complain that the ILWU [International Longshore and Warehouse Union] clerks treat them discourteously or take breaks, leaving drivers to wait in long lines. Drivers feel that they face some racism from ILWU members. And the truth is that some ILWU members blame the immigrants for the downfall of the union in the ports” (2008, pp. 223-224). The study of port truckers in Seattle (Port Jobs, 2007, p. 39) also highlights this issue:

- **Conflict between longshore workers and truck drivers at the marine terminals is a problem that is acknowledged by all stakeholders in the system. Miscommunication and disagreements in this high-stress environment can lead to physical altercations. This affects working conditions for everyone at the terminals, and can reduce the efficiency of terminal operations. Drivers report that they are often treated disrespectfully; while longshore workers report that they are often frustrated by inexperienced drivers.**

In Jacksonville, the clerks and checkers working at the port terminal are represented by the International Longshoremen’s Association (ILA). It is worth noting that the ILA has a long-standing and largely accepted (on both sides) history of “biracial unionism” (Nelson, 2001; Arnesen, 1998). This is manifested in a racial division of labor
with African-Americans dominating the cargo handling and stevedoring functions while white workers are heavily overrepresented among the clerks and checkers. In fact, in Jacksonville, as in some other East and Gulf coast ports, there are two separate ILA locals – one for the stevedores and one for the clerks and checkers. In this context, the racial dimension becomes somewhat more significant given that African-Americans are disproportionately overrepresented among the drivers while the clerks and checkers are largely white.

The divergent working conditions conform with the dual economy and segmented labor market perspectives where the longshore workers exist in the primary sector (or core) and the drayage drivers exist in the secondary sector (or periphery). These models associate different industrial/organizational structural characteristics with divergent labor market conditions. These sectoral differences have also been alternatively described above as massification in the primary sector and atomization in the secondary sector. This situation creates not only potential bottlenecks and supply-chain inefficiencies, but the juxtaposition in organizational structure is replicated at the level of working conditions in the two industries. The term “economic apartheid” has been used to describe the contrasting situation for the two groups of workers. While these labor forces are sequentially interdependent, the divergent organization conditions have contributed to an inability to communicate effectively, build solidarity, or act collectively. Kalleberg (2003) has noted how such segmentation can also have a direct impact on organizational performance. “Nonstandard employment relations are attractive to employers because they may often reduce employment costs in addition to enhancing flexibility. On the other hand, in some cases the use of nonstandard workers may create conflicts with regular employees and thereby diminish cooperation and teamwork.” (Kalleberg, 2003, p. 171). The same disarticulation that hampers supply-chain efficiency also undermines cooperation, teamwork, social integration that can translate into high performance workplace – due to low road strategies and the existence of core/periphery distinctions throughout the supply chain that translate into flexible labor arrangements and nonstandard work.

While the data collected at the Jacksonville port only represent the perspective of the drivers, conversations with longshore workers and terminal operators suggest several
additional speculative explanations to account for the less than harmonious relations. At the most rudimentary level, longshore workers may simply disrespect drivers on the basis of status/racial/ethnic differences. The “racialization” of drayage has already been noted. In addition, the immigrant status of drivers as well as communication problems stemming from language differences may also fuel tensions. Further, the longshore workers may regard the drivers as a disorganized collection of menial laborers who lack any class consciousness and who undermine and threaten the skill-based and relatively high-wage environment established by longshore workers. On the surface, these seem to be operative dynamics.

However, we should consider more carefully the workplace context and the particular identities of the interacting workers in order to develop a more nuanced analysis. There is something relatively unique about one group of workers physically encroaching upon the terrain of another. In this case drivers are entering the terminal, or “the waterfront”, which is regarded as the sacred jurisdiction of longshore workers. These workers have a long history of labor solidarity among their members and an established set of work rules and procedures for moving, organizing, consigning, and physically arranging shipping containers. The drivers, on the other hand, have one objective – to obtain the container as quickly as possible in order to complete a trip. They have typically spent time waiting to get into the terminal, and experienced delays at the gate while their credentials and truck are checked for security purposes. When they finally reach the container yard they are ready to grab the load. They are not interested in union-based protocols or work rules. Further, the sense of urgency and impatience expressed by the drivers may be regarded as an imposition on the longshore workers. Under such a scenario, it is not difficult to imagine how tensions and antagonisms can quickly develop between the two groups of workers. Thus, added to the structural and impersonal intermodal disarticulation based on poorly integrated transport processes and manifested in bottlenecks and delays in container transit, are the personal relations between drivers and longshore workers based on segmented labor markets and manifested in intergroup antagonisms.

Beyond these personal animosities and tensions are the questions this raises for organizing different workers that are potentially united by their common involvement in
moving cargo, possessing interdependent power by virtue of their strategic position in the supply chain, but practically divided by organization, industry, race/ethnicity and labor market status. As mentioned, one of the objectives of the ILWU is to “march inland” to organize cargo moving workers and expand union jurisdiction. How will the divisions between the adjacent labor forces that we have described impact such a strategy?

**DISCUSSION AND CONCLUSION**

This paper has examined two segments of the intermodal container supply chain – the port container terminal and drayage operations. The purpose was to develop a better understanding of the different organizational and industrial features of the two interdependent sectors, the divergent labor market and working conditions, and the extent to which such differences impact the level of integration and seamlessness between the two interacting segments of the supply chain. The analysis has been informed by the interorganization theories of transaction cost and resource dependence as well as labor market theories of segmentation and dualism. The sharp differences in industrial structure between the two segments – in terms of scale economy, capital intensiveness, concentration, multinational reach – and consequent labor market conditions generate both intermodal disarticulation and intermodal labor segmentation that undermine the supply chain objectives of integrative seamlessness as well as prospects for labor unity.

There are some larger implications, both theoretical and practical, that are also worth noting. First, the study of interorganizational integration and governance structures has been heavily influenced by transaction cost theory. However, the analysis here would suggest that the intermodal transport chain is characterized by unique interorganizational relations and characteristics that cannot be completely incorporated into the logic of transaction cost theory. The terminal-drayage nexus does not conform to a “make-or-buy” calculus or the common supplier-customer relationship inherent to production processes. More generally, this points to the need for greater specification of the differences between production and distribution processes in the application of transaction cost theory and what would constitute optimal governance arrangements in intermodal supply chains (see e.g. Pirrong, 1993; Lafontaine & Masten, 2002). Even if we were able to easily apply transaction cost theory to this case, a second related issue
would immediately emerge – the extent to which costs come into play and, more specifically, how they are externalized. From the perspective of the terminal operator, the container has been received, is stacked in the container yard, and is made available for pickup. The primary costs are associated with container movement, storage and space utilization rather than expeditious departure. From the perspective of the trucking firm, there is an interest in moving the container expeditiously to its next destination but while delays and bottlenecks associated with port terminal entry are widely recognized and acknowledged, there is no alternative terminal where a container can be obtained, and the costs are absorbed by the drivers rather than the trucking firms. Externalization of costs, rather than the absence of costs, in this case, makes the transaction cost model problematic as a basis for predicting interorganizational arrangements and solutions (see Bensman, 2009a for a full inventory of externalized costs). This is just one example of the larger phenomenon in which negative externalities are not cost-accounted for by firms and, in turn, not reflected in the market price of commodities or services (Patel, 2010).

A second major implication of this study pertains to relations among workers at different points in the intermodal supply chain. While all are contributing to the movement of commodities, there are sharp disparities in compensation and working conditions between workers in the different organizations and industries involved in intermodal transport and cargo handling. Dual economy and segmented labor market theories can inform and contribute explanations for these differences but greater theory and research should be directed toward those occasions of direct interaction between workers and the translation of structural differences into hostility and antagonism that impacts both efficiency and labor solidarity. The existence of nonstandard and temporary labor arrangements, becoming increasingly common, exacerbates social divisions across the intermodal supply chain.

Among the policy implications, Bensman (2009a) has outlined some of the key elements in his analysis from the drayage side of the equation. Generally, this would involve a reregulation of the drayage sector with the objective of more accurately classifying owner-operators as employees, implementing stricter diesel emission standards that would remove older trucks from the road, and develop uniform chassis standards to address highway safety. As already noted, and as Bensman emphasizes,
internalizing costs to trucking firms would provide a strong incentive to invest in the technologies and electronic information and communication systems that would tighten the drayage-terminal and drayage-warehouse interface.

In addition, on the port terminal side, there is a need to organize meetings with and facilitate greater communications between longshore workers and drayage drivers to discuss the issues of concern and to establish mutual respect and understanding of the challenges facing both groups of workers in carrying out their jobs. This raises the larger question of responsibility and accountability in a port economy, which often becomes muddled under particular port governance arrangements (Brooks, 2003). For example, under the increasingly dominant “landlord” model, the port leases its property to various “tenants” (Slack & Fremont, 2005). The landlord port is often reluctant to impose prescriptive and/or restrictive guidelines and will typically view actions by tenants, assuming they don’t violate federal or state laws and regulations, as managerial prerogatives. This can make it more difficult to align the port economy with the interests of the larger community or the range of stakeholders (Notteboom & Winkelmans, 2003) or for the port authority to mitigate negative externalities.

Finally, on the drayage issue the recent implementation of clean ports programs, most notably at the Port of Los Angeles, has brought the status of port responsibility and drayage driver classification status to the forefront while also potentially addressing, maybe unintended, the broader efficiency of the drayage-terminal linkage. Because many owner operators drive older trucks that expel greater levels of toxic diesel emissions, and because the cost to either upgrade to new models or retrofit is beyond the financial capacity of most drivers, the Port of Los Angeles mandated that only employee drivers, rather than independent owner operators, could enter the terminal. This was designed to improve air quality by ensuring that newer emission compliant vehicles, bought, owned, and maintained by trucking companies rather than owner operators, would be doing the local drayage. As employees paid by the hour, and with newer truck models, incentives would be in place to reduce time delays and implement electronic information and communication technologies. The Port of LA policy was challenged by the American Trucking Association, and the employee only provision was deemed unconstitutional. However, recent congressional hearings on the Clean Truck programs at the ports of Los
Angeles and Long Beach ended up focusing primarily on the plight of the owner operators, their contractual arrangements with trucking companies, and their misclassification as “independent” contractors. There is likely to be further investigation of this issue and some federal policy proposals that could ultimately impact the drayage-terminal nexus.
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