**Industry Structure, Organizational Forms, and Labor Dynamics
in the Intermodal Logistics Supply Chain**

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ABSTRACT

The logistics intermodal supply chain represents a unique case of interorganizational relations, sequential interdependence, spatial dispersion, and multiple technologies. This sector of the economy has not received the attention it deserves in the organizational and labor studies literature given its centrality to global commodity chains and production networks. However, this variegated chain of organizations and labor processes reveal some interesting dynamics relevant to organization theory, logistics, supply chain management, labor organization, and social class relations. This paper integrates these various literatures in examining the intermodal supply chain that runs inland from the ocean container vessel to final points of distribution and the interplay between industry structure, organizational forms, and labor conditions. An additional consideration is how existing and changing industrial and organizational forms might either facilitate or impede the organization of labor and the strategies used by employers to reduce costs and increase flexibility. The paper includes a brief case study of the interface and interaction between workers in the port drayage and port terminal sectors of the supply chain.

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The logistics intermodal supply chain represents a unique case of interorganizational relations, sequential interdependence, spatial dispersion, and multiple technologies directed toward not the production, but movement, of commodities. This variegated chain of organizations and labor processes reveal some interesting dynamics relevant to organization theory, logistics, supply chain management, labor organization, and social class relations. In this paper we attempt to bring these various literatures together and look more specifically at the intermodal supply chain that runs inland from the ocean container vessel to final points of distribution and the interplay between industry structure, organizational forms, and labor conditions. We are also interested in examining how existing and changing industrial and organizational forms might either facilitate or impede the organization of labor (Thurow, 1996; Reich, 1998; Townsend, Demarie, & Hendrickson, 2001) and the strategies used by employers to reduce costs and increase flexibility (Cappelli, 1999; Osterman, 1999).

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

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chassis, and/or rail car. The focus of this paper is on the industries, organizations, workplace settings, and labor relations involved in the movement and consolidation of container cargo from the ocean vessel to the warehouse/distribution center.

Globalization, Maritime Ports, and Logistics

The growing significance of logistics and supply chain management, and the growth in the number and range of business firms involved in the movement of goods, can be linked directly to the larger process of globalization. The spatial dispersion of economic production by capital as a consequence of the economic crisis of 1970's fueled what is now most commonly-referred to as globalization (Dicken, 1998). Employing a 'spatial fix' (Harvey, 1982), capital reorganized the production process geographically by relocating various aspects of the production process in economically and politically advantageous jurisdictions thus constructing what are variously labeled commodity chains, global production networks, and global value chains (Gereffi & Korzeniewicz 1994; Henderson, et al., 2002; Coe, et al., 2004). The chain/network literature highlights the wide range of global, national, and regional firms and institutions that participate in and contribute to commodity production and distribution. As a consequence of the spatial reconfiguration of production there tends to be sharp geographic separation between points of production and points of consumption. At the same time there are strong pressures to keep commodity production closely calibrated with consumer demand to avoid excess stockpiling and overproduction. What is now called the “pull” system (to distinguish it from the “push” system of the Fordist industrial model) is designed to ensure the “just-in-time” provision of commodities when and where they can be “effectively” consumed. Together, these forces raise to prominence the critical importance of transportation, distribution, consumer market entry points (maritime ports), supply chain management, and logistics (Janelle & Beuthe, 1997; Hesse & Rodrigue, 2004; Coe, et al., 2008). Competitive advantage and cost savings in the sphere of circulation and distribution are based on the “speed imperative” (Kasarda, 2000) and “time-based competition” (Meersman & van de Voorde, 2001). Enabling the efficiency of commodity flows are shipping containers, mega container vessels, and global and national intermodal transportation networks. The expansion of economic activity in these

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areas – increasingly goods-moving as opposed to goods producing – has yielded new employment opportunities and labor processes. Consequently, there is growing pressure to control and reduce costs in the now significant logistics supply chain through flexible “just-in-time” labor arrangements (see e.g. Ciscel, Smith, & Mendoza, 2003). This has been facilitated by neo-liberal economic policies promoting deregulation and privatization which have weakened national labor and environmental standards (Teeple, 1995; Meersman & Van de Voorde, 2001; Bensman, 2008c).

Overall, there are few analyses in the business literature on supply chains and logistics that focus on the labor dimension. Most are interested in technical issues, or speak of integration and efficiency as if there were no humans involved in the process (see e.g. Steenken, Voll, & Stahlbok, 2004). In this sense, there is a need for a “logistics as if people mattered” and research on the human and labor relations implications of the integration, reorganization, and reconfiguration of the logistics industry and supply chains (see Coe, et al., 2008). Social scientists have also been slow to recognize the importance of the “goods-moving” industry – the sphere of commodity circulation and distribution -- and, as has historically been the case, remain fixated upon “goods-producing” or manufacturing labor processes.

There are a number of important exceptions to this general pattern of neglect. Most notably, Edna Bonacich and her research companions have undertaken several important studies of the maritime port economy (Bonacich & Wilson, 2008), the larger logistics supply chain (Bonacich, 2003; Bonacich & Wilson, 2005), and the impact of the current financial crisis on warehouse workers (Bonacich & DeLara, 2009). This paper owes a great debt to the work of Bonacich and her colleagues. They have conceptualized the development of supply-chain management within a broader analysis of capitalist crisis tendencies and the need to: calibrate supply and demand to avoid overproduction; employ a demand “pull” rather than supply “push” system; and squeeze costs out of the intermodal links through deregulation, intensified competition, and the weakening of organized labor. While much attention is devoted to the challenges facing labor, Bonacich also points to vulnerabilities that can be leveraged by labor such as the heavy reliance on maritime ports as nodes in the highly interdependent distribution/circulation system of global capitalism and thus representing “chokepoints” for labor action. David

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Bensman has also made a significant contribution to this literature exploring the impact of globalized logistics on labor (Bensman, 2008a), and the way in which competition and liberalization impact the efficiency and safety of the system (Bensman, 2008c).

Before turning to the labor-related implications, we will briefly describe the various industries and organizations that make up the inland supply chain. We then consider the working conditions and labor relations in each of these organizational arenas and the strategies used by employers and labor to advance their interests. A brief case study is then included that highlights one particularly interesting labor arrangement involving the interface between two very different working populations in the supply chain. The paper concludes with an overview of the implications of the analysis of the inland logistics supply chain for understanding work and organizations.

The Inland Supply Chain: Organizational Players

For our purposes, the inland logistics supply chain will refer to the intermodal transportation and distribution of goods from container ship to the pre-retail warehouse/distribution center that involves a range of organizational forms and industry structures. The physical integration of the entire intermodal process has been technologically enabled by the shipping container which is the unit moved from the ocean carrier to points inland via truck and rail. Once containerized cargo, transported by ocean carrier, has arrived at a maritime port, it must be transferred to subsequent modes of transportation and distribution on the way to its final destination.

In order to make sense of the inter-organizational relations we should identify the key organizational players in the inland supply chain. They include ocean carriers, port authorities/port terminals, drayage trucking, and warehousing /distribution centers.

Ocean carriers. The ocean carriers are the shipping lines that own the vessels and are responsible for the maritime transport of the shipping containers to the port terminals. The most immediate link with the inland supply chain is with the port terminal and stevedoring operations (Notteboom, 2004). The liners have an obvious interest in, first, access to a terminal and, second, the swift and efficient handling of the cargo and containers. Excessive time waiting for a berth, or unloading cargo, will negatively impact the ocean carriers’ bottom line (Notteboom, 2006). Ocean carriers are also pursuing

various other vertical integration and vertical coordination strategies designed to ensure their competitiveness as it relates to the movement of cargo from ship to intermodal distribution system. For example, Panayides (2006) notes that “In the liner shipping context, the level of integration in inland transport and logistics has been helped by a series of vertical and horizontal mergers, acquisitions as well the formation of alliances. Because of this many previously independent distribution functions have passed to the control of a single entity. Mergers and acquisitions facilitated the emergence of megacarriers that control many segments of the supply chain.” (p. 8). This has resulted in significant economies of scale at the ocean carrier level (Cullinane & Khanna, 2000). Between 1979 and 2007 the percent of container traffic controlled by the top 20 shipping lines increased from 44% to 83% (Fremont, 2009: 13) suggesting considerable consolidation.

The port terminal. 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; Robinson, 2000). 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).

Port drayage. 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. Drayage is an essential link in the intermodal movement of goods serving as the link to/from ship to rail in and around port areas as well as to/from rail to customer across the inland portions of North America. Some regard port drayage as the weakest and least efficient link in the supply chain (Coalition for Healthy Ports, 2009; Bensman, 2009b; Payne, 2007). The various problems identified include congestion, environmental impacts, pickup scheduling, truck terminal delays, inadequate communication and application of IT solutions, poor working conditions and compensation for drivers, the inefficient allocation of empty containers, and the fragmentation of the trucking industry. 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 or, as is more common, independent owner-operators. The labor force in this sector will receive the greatest attention below as part of the case study of the Jacksonville Florida port economy.

Warehouse/Distribution Centers. A common destination for the drayed containers is the warehouse/distribution center (W/DC). In the supply chain, warehouse/distribution centers (W/DCs) serve a critical function for inventory control and the provision of just-in-time delivery (see Bonacich & Wilson, 2008, chapter 6). Under the now more tightly controlled “pull” system of supply chain management and logistics, there has been a sharp functional shift in these facilities from formerly goods-storage to currently goods-moving. That is, the emphasis is no longer on stockpiling *just-in-case*, but sorting, distributing, and consolidating the goods so that they can keep moving and arrive *just-in-time*. For this reason logistics professionals eschew the label “warehouse”. For goods arriving by container vessel to the United States, the W/DCs are an integral component in the port logistics infrastructure. It is here where the goods are unloaded, sorted, consolidated, and often subjected to some additional value-added processing/packaging. Consistent with the goods-on-the-move imperative, much of the activity is devoted to “cross-docking” where subsets of containerized goods are removed

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and then placed directly in a truck docked on the opposite side of the W/DC for delivery elsewhere.

The industry is characterized by both large and small firms as well as large and small facilities. W/DCs may be owned and operated by the manufacturers of the product produced, the retailer, or a third party logistics (3PL) firm.

Most of the organizational and management literature on W/DCs falls into the realm of technical mathematical models and operations research strategies for the design, planning, and control of W/DC systems (see e.g. Chow, Choy, Lee, & Lau, 2006). Where it is placed in the larger context of an element of the supply chain, W/DCs are linked with the concept of “agility” and the need to have “goods pass through the supply chain quickly so that companies can respond rapidly to exploit market-place demand, without the risk of holding inventories of goods that may become obsolete.” (Baker, 2004, p. 113).

The Inland Supply Chain: Labor Dynamics

In this section we highlight some of the ways in which the goods moving industries and organizations described above configure their labor and employment relations, and the prospects for collective organization.

Container vessels. The labor force serving on board the container vessels has evolved as the shipping industry has introduced new technologies and sought to reduce costs to shippers and suppliers and buyers. While the primary focus here is on the labor forces that staff the inland supply chain in the United States, we should at least note the labor arrangements and conditions that prevail for crews aboard the container vessels. Here we find a globalized labor market alongside a system of occupational racialization. Like the other organizations and industries considered here, container ship crewing has also been impacted by globalization and deregulation (Alderton & Winchester, 2002). At one point in time, crews were recruited from national labor markets and there were national and international standards of training and compensation (Lane, 1997). The crisis of the 1970s and the growing competitive pressures on cost yielded a search for alternative strategies for the major shipping lines. The most significant development was the growing use of open registries allowing vessels to fly “flags of convenience” that did

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not correspond to the vessels home nation but rather to countries (e.g. Panama, Liberia, Cyprus, Malta) with few or any labor regulations (Wu & Winchester, 2005). This allowed ship owners to employ the cheapest labor possible from any country with minimal employment protections or benefits (Wu & Sampson, 2005). Shipping lines use crewing or “manning” agencies to handle the recruitment and screening of workers in less developed countries thus forming a trilateral employment relationship between the three parties (Amante, 2004). The majority of seafarers come from Asia, with almost one in three a Filipino (McKay, 2007), creating a system of racialized subordination (Bonacich, Alimahomed, & Wilson, 2009).

The International Labor Organization (2001) and the International Transport Workers Federation (ITF) (2006) have documented the range of labor abuses and made recommendations for improving the working and living conditions of seafarers (see also Couper, Stanberry, Walsh, & Boerne, 1999; Lillie, 2004; Lillie, 2006). While there is a rich history of seafarer unionism in the United States (see Nelson, 1988), this is no longer the case given the globalization of the labor market and the use of flags of convenience (FOC). Today it is the ITF that has assumed the leading collective bargaining role in representing and protecting seafarers with the primary focus on establishing standards for wages and working conditions aboard FOC vessels (see Koch-Baumgarten, 1998; Lillie, 2004; Lillie, 2006).

Port Terminal. 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, the port terminal workers represent 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.

What are some of the factors that have contributed to the ability of waterfront unions to retain 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” (Wright, 2000, pp. 959-960). This model of associational power applies fairly well to the case of longshore workers.

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, 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. Silver’s (2003) observation about transport workers applies to

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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).

However, there are a number of forces that have eroded the relative strength of port unions. Historically, the most significant factor shaping the nature of work and labor relations at the port has been containerization (Levinson, 2006; Ircha & Garey, 1992). The shift from break-bulk to containerized cargo has sharply reduced the labor requirements, transformed the necessary skills and competencies of longshore workers, and enabled the intermodal transportation of cargo. The net result of the “technological” or “intermodal logistics” fix (Turnbull & Wass, 2007) has been a reorganization of work, a sharp decline in the number of longshore workers, and an ability to move cargo to non-union jurisdictions more easily.

More recently, as a consequence of globalization and neo-liberalism, port competition has also intensified (Heaver, 1995; Heaver, Meersman, & Van De Voorde, 2001). In the U.S. there is increasing competition among a significant number of maritime entry points into a single national market. The competition is sustained by the fact that most of the cargo is “discretionary”— meaning it is not tied to any single urban or regional geographic market within the United States and thus can conceivably enter the U.S. through any port. The highly developed intermodal truck/rail transportation system in the U.S. ensures its delivery to the intended point of consumption. In the case of U.S. ports, the existence of two different labor unions representing East (International Longshoremen’s Association) and West coast (International Longshore and Warehouse Union) longshore workers weakens the power derived from a unified collective organization of an entire industry (Monaco & Olsson, 2005). While the ports cannot be moved offshore, they can be played one against the other as a way for shipping lines and terminal operators to gain concessions and/or weaken labor solidarity (see Slack, 1993).

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The well-publicized threats and actual shifting of cargo from the West to East coasts of the U.S., prompted by the West coast lockout in 2002, illustrates this spatial strategy (Jaffee, 2009). Just as manufacturers engaged in “parallel production” (Bluestone & Harrison, 1982) strategies in the 1980’s, that involved the opening of duplicate facilities for the same assembly process, in order to redirect production in the face of potential labor disruptions, shipping lines are investing in and expanding facilities at ports perceived as more congenial to their interests and as a way to leverage bargaining with the more aggressive and militant West coast unions. In addition to the “liberalization of competition”, Turnbull and Wass (2007) cite the “privatization of port services”, the “deregulation of employment”, and the introduction of “flexible working practices” as restructuring trends producing negative labor market outcomes for dock workers.

Shippers and carriers have pursued these strategies because they do, in fact, advance the material interests of capital in this industry. In addition to the strategies cited above, there are several other relevant factors and developments. First, there is the continuous effort to automate as much of the waterfront cargo handling process as possible (Schwarz-Miller & Talley, 2002; Betcherman & Rebne, 1987; Killingsworth, 1962). With strong unions and contract-based wage costs, the strategy is to reduce the number of workers covered by the labor agreements through capital substitution. This has been an ongoing struggle as long as there have been organized workers on the waterfront. The most significant chapter was undoubtedly the introduction of containers, but the push for capital substitution has accelerated recently with the development of other forms of technology that move and monitor the shipping containers. One highly automated container terminal is now in place in Norfolk Virginia. Opened in September of 2007, the Portsmouth terminal operated by APM, a subsidiary of the Danish shipping conglomerate A.P. Moller-Maersk Group A.P., is one of the most technologically advanced terminals in the world operating 30 semi-automated cranes. The 230 acre terminal employs only about 150 workers. Hanjin shipping lines is planning to construct a similarly highly-automated container terminal in Jacksonville Florida (Jaxport) which is currently the subject of extended negotiations between Hanjin and the International Longshoremen’s Association. At one point in these negotiations Hanjin indicated it was withdrawing its

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plan to build a terminal at Jaxport and would take its cargo elsewhere (the port competition strategy); thus using the threat of exit to leverage their bargaining position.

As the numbers of longshore workers handling cargo on the waterfront diminish, longshore unions are setting their sights inland on the other goods-moving/handling sectors that have experienced an expansion in employment. This includes the knowledge-based technology workers who track and monitor the cargo not on the waterfront but from back office operations far from the port terminal. The forces contributing to a decline in the waterfront labor force, fueling the need to initiate a “march inland” to organize new workers, was the subject of a major study conducted by the ILWU and their research colleagues (Dube, Evans, Hall, Olney, Sweaington, Willis, & Wolff, 2004). The study recognizes the importance of several factors impacting organizational structures, strategies, and labor relations such as globalization, deregulation, technology, and just-in-time inventory control. In addition, the increasingly integrated character of the intermodal system, through both ownership integration and coordination integration (see Langlois and Robertson, 1995), allows for a more flexible shifting of functional activities away from the port terminal. Like most organizational actions, these have paradoxical implications as Dube et al. (2004: 11) note that “...companies that operate across multiple industries have increased maneuverability and the ability to obscure ownership as they negotiate with the union. However, the concentration of actors across industries can increase the effects of action at key points in the supply chain. Further, the high demand for speed, flexibility, and reliability can magnify the impact of collective action.”

Much of the focus of the study is devoted to the way port cargo circumvents the jurisdiction of the ILWU through the increasingly complex interorganizational relations between the shipping lines and logistics firms. This is accomplished through “container freight stations” (CFS) that consolidate and reconsolidate less-than-container-load (LCL) cargo, and the use of non-vessel operating common carriers (NVOCCs) who own no vessels but serve as the carrier for freight forwarding for smaller shipments. These arrangements at West coast ports raise the key question: to what extent are the CFSs and NVOCCs legally or operationally, through ownership or management, affiliated with the shipping lines that are signatories of the master contract with the ILWU and, therefore, as a consequence, required to use ILWU labor for these cargo-handling activities. There is

no unequivocal answer to this question, nor is there any certainty that the discovery of such relations among firms would automatically obligate them to meet provisions of the master contract. However, the conclusion is clear. “The mobility, flexibility and organizational reach of cargo-handling companies operating in this more integrated supply chain provide them with a greater capacity to evade the jurisdictional reach of the union.” (p. 34).

The other major conclusion reached by this study also pertains to the reorganization of the logistics supply chain; more specifically, the geographic dispersion of cargo-handling activities inland from the port terminal to non-union work settings. Thus, the recommendation 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).

Port Drayage. Port drayage truck drivers – those hauling shipping containers in and out of the port terminal – represent a logistics labor force that has received some attention in the social science literature. The single best study and general treatment of truck driving working conditions is Michael Belzer’s *Sweatshop On Wheels*. 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, 2009; 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 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

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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. The implication of being an independent owner-operator, as fictional as it might be in practice (see Bensman, 2009), 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” 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 & Bromberg, 2009; Harrison, Hutson, West, & Wilke, 2008; Port Jobs, 2007; East Bay Alliance for a Sustainable Economy, 2007; Jaffee & Rowley, 2009). Several patterns emerge. In the studies that asked drivers about their racial ethnic status, we find that a solid majority of drivers in all cases occupy minority group status (for example

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Hispanic/Latino drivers made up 92% in LA/LB and 66% in NJ; in Jacksonville African American and Hispanic/Latino combine to make up the majority). 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 is one of the most significant factors impacting compensation and also contributing to the extended hours of the workday.

Given the less than ideal working conditions reported by the drivers in all of the studies, one might expect this labor force to be ripe for union organization if such an option were available. Bensman and Bromberg (2009) included a question on the willingness of the drivers to join a union. Two-thirds of the NJ drivers indicated they would be “very likely” to join a union “if they could”; in Jacksonville Florida 47% of the owner-operators indicated that they would join a union.

However, port drayage drivers may be one of the most challenging labor forces to organize (Belzer, 2000; Belman & Monaco, 2001; Bensman, 2009). This is due to the drayage industry structure that is highly fragmented, atomized, and competitive, coupled with a workforce hamstrung by their status as “owner operators” that legally prohibits collective organization or collusion. In spite of these obstacles, there are some signs of hope. Change To Win, a coalition of five major U.S. labor unions that defected from the

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AFL-CIO, has launched a “ports protection” campaign designed to address the range of working condition issues highlighted above. In partnership with the International Brotherhood of Teamsters, Change to Win is seeking to bring stakeholders together to improve labor and security standards at the nation’s ports. Most significant is the emerging coalition (e.g. the Coalition of Clean and Safe Ports) among labor, environmental, and community groups (e.g. the Natural Resource Defense Council, the Teamsters, and the Long Beach Alliance for Children with Asthma) concerned about the public health consequences for workers and communities of diesel-burning trucks that carry containers on and off the port terminal. Because many owner-operators are either driving early model trucks that do not meet environmentally sound emission standards, or are unable to incur the cost of retrofitting existing vehicles to comply with environmental standards, the coalition is working to get ports to implement concession agreements with trucking companies that would require emission compliant vehicles and employee drivers. This would reduce the number of owner-operators, increase the number of employee drivers, provide greater economic compensation and security for drivers, and make it legally feasible to organize a union. The test case for this strategy is the Los Angeles Clean Trucks program, which was implemented in October 2008 but was halted by a court injunction in March of 2009 by a lawsuit filed by the American Trucking Association. The outcome of this case will determine the likelihood that other U.S. ports would pursue similar “clean ports” concession agreements with trucking companies.

Warehouse/Distribution Centers. There is scant labor-related research conducted on W/DC workers (again, a noteworthy exception is Bonacich & Wilson, 2008, chapter 9). It is interesting to note that most of the academic articles and research that emerge from a literature search on “warehouse workers” focus on ergonomics, occupational safety and health, and the biomechanical dynamics involved in heavy lifting and exertion. This suggests, correctly, that W/DC work is relatively high risk and, accordingly, so is the workers compensation rate. In contrast to drayage, the factory-like workplace conditions in the W/DC sector are much more conducive to worker communication and collective organization. Nonetheless, the industry is fragmented among various types of ownership and management arrangements. The facilities might be owned and managed by a producer, large retailer, or operated by a third party logistics

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(3PL) company. It is then common for the firms to contract with a temp staffing agencies for labor services. It would appear that the labor conditions are least favorable in the W/DCs that serve the containerized cargo supply chain where there is the greatest pressure by large retailers to “sweat the assets” and squeeze costs out of the logistics network. Not surprisingly, warehouse work is plagued by higher than average employee turnover rates and job security is the most significant factor in the predictor for recruitment and retention of warehouse workers (Min, 2007). Studies of temporary workers have also identified warehouses as a location where employment is particularly insecure, poorly paid, and stressful (see McAllister, 1998).

There are three major interrelated strategies used by employers in this sector – low wage compensation, anti-union activity, and temporary staffing. The single largest physical concentration of W/DCs serving intermodal container cargo is found in the Inland Empire in California. This is also where most research on working conditions has been conducted. Bonacich and Wilson (2008, p. 226) estimate that 90,000 W/DC workers are employed in the Inland Empire. Their analysis of this region and industry highlights the role of racialization, temporary staffing agencies, and non-unionization in minimizing labor costs. They estimate that over half the workers are Latino, over half of the workforce is employed through temporary agencies, and union representation is largely non-existent (see also Ciscel, Smith, & Mendoza, 2003 on immigrant labor and warehouse work).

Labor flexibilization, the externalization of cost, and non-unionization are all accomplished through the widespread use of temporary staffing agencies in this industry. One survey of the literature on the planning and control of warehouse systems concludes with the following on the human resource: “Flexibilization of labor is an important issue in warehouses. Flexibilization implies that throughout the day personnel are shifted between activities whenever extra capacity is needed. Furthermore, if the available labor capacity is insufficient, then temporary staff are hired from an agency. Accordingly, labor costs will be minimized” (van den Berg, 1999, p. 760). Human resource and worker compensation costs are also avoided and externalized to the temp agencies. Bonacich and Wilson’s (2008, p. 236) analysis of the W/DC sector in the Inland Empire concludes that “one of the major motives for the use of temp agencies is to avoid dealing with workers’

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comp”. Further, an employment relationship with a temp agency, rather than the de facto employer that owns the W/DC, effectively undermines the ability of the workers to form a union or engage in collective bargaining. Finally, as they do with their suppliers, the large retailers who own and control W/DCs establish contracts with those temp agencies that can compete on the basis of procuring labor services at the lowest cost. The net result is downward pressure on wages and insecure employment for most W/DC workers.

In spite of these challenges Warehouse Workers United – aligned with Change to Win -- has launched a campaign to improve conditions for what is one of the fastest growing sectors of the logistics industry. The key issues are a living wage, ending the use of temporary staffing, providing health benefits, and allowing workers to organize a union for collective bargaining. Much of the effort has been directed at facilities in the Inland Empire region east of the ports of Los Angeles and Long Beach (see Bonacich & De Lara, 2009). There have been several high-profile events, and media reports, designed to draw attention to the working conditions in this industry and region (Meyerson, 2009; Brenner, 2009; Arrieta, 2009). Warehouse Workers for Justice has also formed as an organization to build solidarity among W/DC workers in the state of Illinois where Chicago stands as a major logistics hub for the North American distribution and supply chain (Bybee, 2009). Finally, the ILWU has been organizing W/DC workers for many years and, as already noted above, is determined to follow the cargo inland and extend union jurisdiction. This logically suggests an even greater commitment to organizing W/DC workers.

The Inter-Organizational/Labor Interface:

Port Truckers and Terminal Longshoreworkers at Jaxport

Thus far we have discussed the labor conditions at each stage of the supply chain but there are occasions when the different labor forces come in contact with one another and interact in the process of moving the goods. In this section we report briefly on research conducted at the port in Jacksonville Florida (Jaxport). In an earlier study of port truckers at Jaxport (Jaffee & Rowley, 2009) we discovered that there are 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

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can point the way to future research on how the intersection of different labor forces and conditions can impact the quality of work and prospects for labor unity.

We have already described the work environment and organizational challenges facing drayage drivers. In the survey we distributed to drivers at Jaxport, we invited respondents 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 other survey items. 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 for the drivers to an indifferent attitude toward the drivers’ need to get in and out of the terminal 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.

Differences between the two labor forces can also be linked to the organizational characteristics of the industry. One of the interesting challenges facing the logistics supply chain, that also has direct implications on the conditions of work and prospects for collective organization, is the juxtaposition of “massification” and “atomization” in the intermodal system. As conceptualized by Rodrigue et al. (2009), ocean carriers are now characterized by gigantism in their size and container capacity with a single post-Panamax vessel able to transport 15,000 containers. “The containerization process is thus confronted with a growing tension between a massification at sea and an atomization on land...A major challenge consists of extending the massification concept as far inland as possible.” While the shipping container, as a technological development, has sharply curtailed the quantitative labor requirements on the waterfront it has also produced a scale economy that, at such a critical point in the supply chain, necessitates a predictable and well-trained labor force. The longshore unions on both coasts have been able to exploit these conditions for the benefit of their workers. However, once the containers leave the terminal, the supply chain atomizes and fragments into a large number of small

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logistics and trucking firms operating in a highly competitive environment. This situation creates not only potential bottlenecks and supply-chain inefficiencies, but it also militates against the collective organization of labor. Port truckers have paid the highest price for these organizational arrangements.

The juxtaposition that Rodrigue et al (2009) identify in industrial organization is replicated at the level of working conditions in the two industries. The interface between the union represented longshore workers and the port drayage drivers could scarcely pose a starker contrast. The term “economic apartheid” has been used to describe the contrasting situation for the two groups. While these labor forces are sequentially interdependent, the divergent organization conditions have contributed to an inability to communicate effectively, build solidarity, or act collectively.

DISCUSSION AND CONCLUSION

In this final section of the paper we consider some of the larger themes, concepts, and trends derived from reviewing the organizational and labor-related landscape of the intermodal container supply chain that can inform future research and analysis. These include, and ideally will entail an integration of, insights from logistics, organization theory, and labor studies.

Precarious Work and Labor Market Instability. Like most forms of labor since the 1980s, workers in the logistics supply chain have been subjected to the forces of neo-liberalism, globalization, and deregulation that have impacted labor market conditions and economic security. Kalleberg (2009) uses the term “precarious work” to describe “employment that is uncertain, unpredictable, and risky from the point of view of the workers” (p. 2). While the goods-moving sector of the economy has expanded relative to the goods-producing sectors, buyer-driven commodity chains (Gereffi & Korzeniewicz, 1994) dominated by the larger retailers have squeezed costs throughout the supply chain and, in turn, the workers employed in this sector. Container vessels employ contract labor under flags of convenience that compromise labor standards; longshore workers, the last vestige of labor strength and organization in the chain, are threatened by port competition, automation, and the movement of cargo to non-union jurisdictions; port truckers carry the status of owner operators with no legal employment relationship and

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piece work forms of compensation; W/DC workers are increasingly hired through temporary staffing agencies.

Externalization of Costs and Risks. Consistent with the broader trend of shifting economic costs and risks from employers to workers and intermediaries (Hacker, 2006; Beck, 2000; Kalleberg & Marsden, 2005), and failing to incorporate social and environmental costs into the price of commodities, employers have developed arrangements that shift these burdens to port truckers and W/DC workers. In the case of the latter, costs and employer responsibilities are shifted to temp agencies in the form of human resource management and workers compensation insurance, and to workers in the form of contingent, flexible, just-in-time labor deployment. For drayage truckers, the owner-operator arrangement ensures that the costs of time delays and capital repairs are absorbed by the drivers. The negative externalities associated with diesel pollution from port trucks are borne by the drivers and the port communities. In the case of trucking, there is a strong argument (Bensman, 2009; Monaco & Grobar, 2004) that the *internalization* of costs to trucking firms and terminal operators would contribute to a more efficient supply chain. As Bensman (2009, p. 25) concludes from his analysis of the industry, “Logistics costs could be reduced if port trucking were restructured. If drivers were paid for the time they spend at the terminals, for example, the terminals’ customers would have greater incentive to see that trucks moved through the ports quickly. Warehouse companies would have greater incentive to site and build vertical warehouses closer to the port.” If the ports paid an 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 firms were to more directly incur the costs of unnecessary trips to the port and excessive time spent unproductively by drivers, there would be greater economic pressure and incentive to develop better processes and procedures. If the drivers were organized and/or paid by the hour, the trucking firms would have an incentive to develop a more rational system that would minimize time delays. All of these arguments are founded on the larger principle pertaining to how capital develops new forms of innovation and productivity as a way to reduce

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internalized costs. But the current externalization arrangement represents what might be called, appropriately, the “low road” solution.

Organizing the Chain. One way longshore unions are attempting to sustain their membership is to organize workers downstream in the supply chain by following the cargo inland and expanding longshore jurisdiction. This “march inland” will be particularly difficult given what we know about the impact of deregulation in the trucking sector on unionization (Belzer, 1995) and the likely opposition to collective bargaining among firms where wages are low and the potential union compensation differential is high (Freeman & Kleiner, 1990), which characterizes much of the warehouse and distribution center sector. Additionally, there is a sharp drop off in terms of the size and scale of the economic units that might either support conditions for labor organization or provide owners with an incentive to engage in class compromise. One large scale enterprise where union organizing efforts might gain some traction – Wal-Mart – is a firm that has taken a highly visible and aggressive anti-union stance and that sets the tone and culture for much of the logistics supply chain industry that relies on its business for survival (Lichtenstein, 2007). Deshpande (2006) reports that among trucking firms the most common and successful strategy for dealing with organizing efforts was “union suppression” – “Union busting, committing unfair labor practices or illegal acts, and filing for bankruptcy may be some of the tactics used by some firms under this strategy” (p. 151).

Interdependent Power and Nodal Chokepoints. There are certain features and characteristics of the logistics supply chain that can provide workers with potential or latent power. Most significant are the existence of container shipping ports as nodal chokepoints in global commodity chains, the increasingly taut ‘just-in-time’ supply chains, and the sequential interdependence of the system. Together, this provides an opportunity for labor to engage in disruptive action that can rapidly cripple the global movement of commodities. Lund and Wright (2003) have explored how the tighter integration of supply chains, using information technologies, poses both threats to and opportunities for union bargaining power. As they note, the sequential interdependence of the intermodal system has “the potential for a shut-down or stoppage of one enterprise to have a domino-like effect throughout the broader supply chain potentially wreaking

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havoc within and across industries.” (p. 103). As an example they point to the United Parcel Service strike of 1997. A more salient example, for our purposes, is the 2002 West coast lockout of dockworkers. This model of disruptive action by the workers, enabled by the dependence of the powerful on the compliance and cooperation of subordinate classes and groups, has a long history of successfully advancing progressive social change (Piven, 2006). Theoretically, this relationship between superordinates and subordinates has been described by Giddins (1984) as the “dialectic of control”. The fact of this interdependence “offers some resources whereby those who are subordinate can influence the activities of their superiors. This is what I call the dialectic of control in social systems” (Giddens 1984, p. 16; see also Cohen, 1989).

Spatial Fixes. While it is physically impossible for the inland logistics network to be moved offshore to circumvent labor demands and requirements, it does not mean that geography and space are irrelevant to the strategies employed by capital and labor. In the case of the nodal chokepoints, the lifeblood of commodity chains can travel through more than a single container port and terminal artery. We have already noted how this strengthens the hand of shippers, shipping lines, and terminal operators in gaining favorable conditions vis-à-vis labor. Under this system, U.S. ports compete with each other for the footloose discretionary cargo, and shipping lines set up facilities at more than one location. In this latter action we see how the shipping lines’ interdependence with longshore labor, and the anticipated prospect of a potential work stoppage, sets in motion the “dialectic of control” and the decision to open a “parallel port” at another location. The ability of the ocean carriers to pursue this strategy is strengthened by the differential union representation of East and West coast longshore workers, and the competition among East coast ports as a result of the ILA allowing the practice of local bargaining provisions within the parameters of the master contract. The geographic location for inland terminals, cargo freight stations, and warehouse/distribution centers are also strategic decisions that have implications for labor organization. They can be driven by the desire to circumvent union jurisdiction or exploit labor conditions in areas and regions that are rural, anti-union, and low wage. This is a topic that is in need of additional research and analysis.

This paper has attempted to make a preliminary contribution to what we hope will be a more concerted effort at studying and analyzing the socio-economic and political-economic dynamics related to the logistics industry and global supply chains. The sphere of commodity circulation and distribution has received far less attention than other labor processes. Globalization and the attendant spatial reconfiguration of production and consumption has resulted in an expanding role for the transportation and logistics industry, a proliferation of organizational arrangements, and an associated labor force characterized by a range of working conditions and opportunities for collective organization. There is a need for more rigorous theorizing and empirical analyses of the organizations and labor processes that make up this growing sector of the economy.

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TABLE ONE. The Organizational and Labor Features of the Inland Supply Chain

ELEMENTS	OCEAN CARRIER	PORT TERMINAL	DRAYAGE	WAREHOUSE/ DISTRIBUTION CENTERS
Organizations/ Industries	Shipping Lines	Terminal Operators	Trucking/Logistics Firms	Logistics Firms/Retailers
Organizational Characteristics	Multinational/ Massification/ Scale Economies	Multinational/ Massification/Scale Economies/	National-Local/ Atomization	National-Local/ Atomization
Labor Force	Contract Crew	Longshoreworkers/ Stevedores/ Clerks and Checkers	Truck Drivers- Owner Operators	Packers/Handlers/Fork Lift Operators/Clerks
Employer Strategies/Actions	Flags of Convenience/ Contract Labor	Automation/Wage-Tier/ Circumvention of Union Jurisdiction/ Port Competition	Externalization of Costs/ Piece Rate/ Retain Owner-Operator System	Externalization of Costs/Temporary Staffing/Union Avoidance
Worker Strategies/Actions	International Labor Standards/	Standards for the Introduction of Technology/Enforcement of Union Jurisdiction over Cargo/”March Inland” to organize other cargo handling workers/	Internalization of Costs to Terminal Operators and Trucking Firms/ Employee Status for Drivers/Clean Trucks campaign	Living wage/Permanent employee status/organize labor union
Worker Representation	International Transportation Workers	International Longshoremen’s Association (ILA); International Longshore and warehouse Workers Union (ILWU); Longshore Workers Coalition	Change to Win/ Teamsters	Warehouse Workers United/ Warehouse Workers for Justice