Trends in global port operations and their influence on port labor: Challenges and implications for US East Coast longshoremen

Sotiris Theofanis
Director of Strategic Planning
Center for Advanced Infrastructure and Transportation
Co-director, Freight and Maritime Program
Rutgers, The State University of New Jersey
100 Brett Road, Piscataway, NJ 08854
Tel.: (732) 445-0579 ext 110, Fax: (732) 445-3325
Email: stheofan@rci.rutgers.edu

Maria Boile
Associate Professor, Department of Civil and Environmental Engineering
Co-director, CAIT / Freight and Maritime Program
Rutgers, The State University of New Jersey
100 Brett Road, Piscataway, NJ 08854
Tel: (732) 445-0579 ext 129, Fax: (732) 445-3325
Email: boile@rci.rutgers.edu

William Laventhal (corresponding author)
Research Assistant
CAIT / Freight and Maritime Program
Rutgers, The State University of New Jersey
100 Brett Road, Piscataway, NJ 08854
Tel.: (732) 445-0579 ext 124, Fax: (732) 445-3325
E-mail: william.laventhal@rutgers.edu

Submitted for presentation at the 50th Annual Forum

Transportation Research Forum

March 16-18, 2009, Portland, Oregon

Abstract

The port industry has undergone substantial structural changes during the last fifteen years. The emergence of Global Terminal Operators, a global oligopolistic market consolidation; the changes in liner shipping through vertical and horizontal integration; the new structure of the Global Production Networks in relation to the emerging technologies are only few of the factors that influenced fundamentally port labor. Ports are not isolated functional nodes of the transportation chain any more, but are mostly a fundamental component of a seamless supply chain, working along with satellite and inland terminals. At the same time marine terminals are functioning more and more as extended warehouses, providing flexible virtual inventory.

These developments have created substantial challenges to the port labor regarding the need for upgraded working skills, enhanced productivity, ability to follow flexible working conditions to mention a few. Unionized port labor has been traditionally highly inflexible in changing attitude and adapting to new port work practices. On the other hand, the explosion of port service demand in emerging economies and particularly in East Asia was followed by an unprecedented increase in port productivity, coupled by flexibility in port working practice that cannot be accepted by unionized port labor in the US and Europe.

The paper examines some of the current challenges and implications for the US East Coast port labor force – the International Longshoremen's Association (ILA) - due to the global developments in international trade and global port operations. It proposes that future research incorporate a broad range of disciplines in order to better understand the competitive environment facing longshoremen.

Keywords; global port operations, port labor, longshoremen, global production networks, supply chain and logistics

Acknowledgements

This material is based upon work supported by the National Science Foundation under Grant No. 0624251.

Introduction

The port industry has undergone a radical transformation in the past two decades. The reorganization of international economic production has changed patterns of trade and the distribution of maritime freight flowing through container ports continues to evolve. The emergent global supply chains have impacted all actors in the logistics industry. Longshoremen have been particularly affected as the containerization of manufactured trade has brought mechanization and automation to an industry that had previously been extremely labor-intensive. To properly understand the challenges that longshoremen will face in the future, it is essential to consider the global economic changes, current logistics industry practices, and evolving container port practices.

This paper is divided into five sections. The first section reviews the existing research that has been conducted on longshoremen and the impact of change in the port industry. The next section examines the changes in global supply chains, the transformation of the shipping industry, and the dynamics of the container port industry. The third section proposes that there is a need for a more interdisciplinary approach that incorporates elements from labor relations, logistics and supply chain management, and international economics. The fourth section presents two recent examples where labor's response to port industry change has had repercussions for longshoremen, shipping lines, terminal operators, and port authorities. The final section concludes by noting how longshoremen's response to three trends in the industry will shape the competitive environment for US East Coast ports, including the Port of New York and New Jersey.

Existing Research on Longshoremen

There has been extensive study of longshoremen and their responses to change in the port industry. Literature is most often found in the disciplines of labor and industrial relations, although some economists, political scientists, and policy researchers have contributed to this research. This section summarizes some key points from the existing literature and relies heavily on the works of Betcherman and Rebne (1987), Fisher and Kondra (1993), Waters (1993), Talley (2002), Monaco and Olsson (2005), and McGinn (2007).

There are two main unions representing workers in the US longshore industry. The International Longshoremen's Association (ILA) represents workers at ports on the East and Gulf Coast. The International Longshore and Warehouse Union (ILWU) serves the same function on the West Coast. The ILA negotiates separate agreements for its various regions, but the contract with the New York Shipping Association (NYSA) covers a large portion of workers and influences contracts elsewhere. West Coast employers of longshoremen typically belong to the Pacific Maritime Association (PMA) and negotiate as part of that organization.

Researchers studying the industry have chronicled the relationship between employers and longshoremen unions throughout the past century (for example, Waters 1993). Unions have adopted a variety of means to achieve their objectives, ranging from

negotiations and cooperative agreements to strikes and work stoppages. Union leadership has played in shaping the interactions within the industry. Authors (e.g. Talley 2002) have devoted considerable attention to analyzing the wages differences between the ILA and ILWU in order to assess the differing strategies in accommodating change in the port industry.

Corruption and organized crime has been an important concern in the longshoring industry. Racketeering and theft at ports around the US have often brought unfavorable public attention to longshoremen. The Waterfront Commission in New York/New Jersey was established in 1953 after the US Congress held hearings on ILA-related corruption and racketeering.

Researchers such as Fisher and Kondra (1993) note that the critical role that ports play led to frequent intervention by the federal government during the 20th century. President Roosevelt intervened in the 1934 to settle a violent ILA strike. During the period from 1948 to 1980, there numerous strikes and many government orders sending ILA members back to work. Government intervention has declined in the past two decades as greater cooperation between employers and longshoremen has occurred.

Authors have focused on the decline of the overall longshoremen's community, specifically pointing to declining numbers in the workforce as evidence of fundamental change in modern port operations. McGinn (2007) looks specifically at the case of LA/Long Beach and the impact on neighborhoods, social networks, and longshoremen identity.

Early Issues Relating to Change in the Port Industry

Adjustments, accommodation, and conflict stemming from changes in the port industry are did not only recent occurrences for longshoremen. Some of the earliest issues related to the hiring practices of port labor. Beginning in the 1920's, longshoremen showed up daily for employment, a process called the "shape up" where individuals were selected for their assignments. This for of casual employment was eventually replaced by the creation of a regular work force. By 1969, the list of workers at the Port of New York and New Jersey was closed and longshoremen who did not work a minimum amount became ineligible for future employment (Fisher and Kondra 1993).

Major agreements involving the ILA or ILWU have had far reaching impacts on port operations. The Mechanization and Modernization Agreement (M&M) of 1960 on the West Coast stipulated a variety of benefits for longshoremen including "higher earnings, pay guarantees, attractive pensions, and early retirement scheme, and career employment security" (Fisher and Kondra 1993). In exchange, the PMA was able to introduce new handling procedures and gain concessions on rules of work. Shortly thereafter, a guaranteed annual income (GAI) was implemented and remained an important element in subsequent labor negotiations.

Current Issues Facing Longshoremen

A more recent theme in the study of longshoremen has been the impact of port technology and the ability of employers to introduce new equipment and operating practices. Labor contracts have often included language that set conditions and requirement for performing specific tasks (Waters 1993). The specification of gang size at terminals has been a particularly sensitive topic in negotiations between employers and longshoremen unions. ILA members received benefits similar to those of the M&M during negotiations in the 1960's in exchange for reductions in gang size. The issue of labor force reductions continued to be central to labor negotiations as technological changes rapidly transformed port terminal operations.

Containerization has shifted power away from longshoremen. The labor-intensive practices for handling break-bulk cargo gave workers a prominent role in the operations of the port. Longshoremen were direct participants in deciding how ships would be loaded and unloaded, as well as how cargo would be stowed. Technological changes – mainly containerization – emphasized the use of computers to the very same tasks and transferred more responsibility to terminal and stevedore management (Betcherman and Rebne 1987).

Flexibility has been at the core of conflict over the hiring practices for longshoremen. Unions have traditionally controlled the process of allocating workers to terminals. At certain locations, employers have pushed for an electronic dispatch of longshoremen that reduces the power of unions. In other cases, employers have sought to change the rules that govern how workers are assigned to certain jobs. There has been considerable tension as port labor unions resist the pressures for change (Monaco 2005).

One of the more important topics is that of "jurisdiction" and the fight by longshoremen to maintain their influence in the handling of international trade. Containerization allowed goods to be loaded directly onto trucks or trains and handled at off-port locations. Longshoremen sough to preserve their work by imposing rules on containers that required some containers to be stripped and stuffed at the port. The M&M of 1960 was provided an early indication of future longshoremen concerns as it gave the ILWU "jurisdiction over new dockside equipment". In 1969, the ILA created a 50-mile zone within which it had jurisdiction for loading and unloading of many types of containers (Fisher and Kondra 1993).

The geographic space within which longshoremen compete was expanded as non-union, low cost work forces at ports around the country challenged the monopoly of the ILA and ILWU in handling international waterborne cargo. This threat is made possible by the expanded hinterlands brought on by containerization and intermodality. Shippers, freight forwarders, 3PL's, and ocean carriers have far greater choice of ports and are better able to seek the lowest cost location. A large component of port cost is labor, giving certain advantages to non-union stevedoring services.

Maritime Industry and Containerization

The dynamic environment facing longshoremen is a direct result of the far-reaching transformation in the maritime industry. Supply chains have enabled production to be relocated to all corners of the globe. Linking these production sites are sophisticated shipping networks operated by ocean carriers with global operations. They aim to be extremely responsive to changes in the world economy and exert pressure on the ports with which they do business. The port industry has been impacted as a set of new private actors has emerged to become terminal operators, as well as investors and developers of port infrastructure.

Global Supply Chains

The international economy has undergone a significant restructuring in the past 50 years. Multinational production has shifted manufacturing centers away from large consumer markets in North America and Europe. This has largely benefitted the Asian economies that have become production centers for much of the world's traded manufactured goods. Increasingly complex global supply chains have been developed with multiple layers of suppliers in various countries contributing the final product. Containerization has assisted in the development of supply chains as products are shipped more cheaply and securely in standardized units.

Participation in global supply chains has become a highly competitive process. The complexity of supply chains requires reliable actors. Producers, logistics providers, ocean carriers, and ports need to provide services with few interruptions. Flexibility is also an important component as global supply chains have become increasingly responsive to market demand fluctuations. New production locations and products are introduced very rapidly and participants must be able to adapt quickly. Competitive pressures, however, ensure that reliability and flexibility are achieved without significantly increasing costs. Similarly, slow transit times are not acceptable tradeoffs in global supply chains.

The competitive nature of global supply chains is evident at a variety of levels. Participation in the global system of international production and trade is dependent on manufacturers conforming to supply chain requirements. To fulfill these demands, producers need access to appropriate transportation means that enable intermediate and final goods to reach buyers in a timely and reliable fashion. Ports must offer competitive services, including infrastructure, equipment, and labor. In many cases, this places a responsibility on government to provide the necessary conditions that allow these activities to take place.

Ocean Carriers

Ocean carriers have adapted to the demands of global supply chains by developing new ships and new services capable of handling containerized manufactured goods. The introduction of increasingly large container ships has allowed shipping lines to capture economies of scale. These ships have eliminated on-board cranes and serve ports with

larger, more efficient quay cranes. Ships operate with fewer seafarers, and the unloading process requires fewer longshoremen than with break-bulk ships of the past.

Ocean carriers have added additional routes and schedules to carry cargo between Asia, Europe, and North America. Containerized goods are primarily brought westward to Europe and eastward to North America. From the US West Coast, trains carry containers to the Midwest and, eventually, the East Coast. Some ocean carriers provide all-water routes from Asia to the East Coast ports via the Suez Canal. This enables them to employ ships that are too large to pass through the Panama Canal.

Not only have ocean carriers increased the number of services between Asia-US-Europe, they have also expanded their geographic coverage as a response to the growth in international trade. In order to serve a greater number of ports, shipping lines have formed alliances that generate necessary economies of scale. Alliances reduce the risk of new services and help justify new ship orders. The power of alliances has grown tremendously in the maritime industry and they now account for a large share of the world's container fleet. Their influence with shippers, ports, and governments reflects the power available for cooperation within the container shipping industry.

Shipping lines have expanded their services for customers by also vertically integrating within the supply chain. Ocean carriers frequently offer domestic transportation options and have begun to acquire dedicated terminals in some of the ports that they serve. Customers can obtain a spectrum of services from one provided rather than shopping for services from a multitude of firms. Because of the increased control over the entirety of the supply chain, shipping lines have gained greater leverage in the logistics industry and are more critical components than when they were providers of basic ocean transportation.

Ports and Terminals

Ports have been reconfigured in order to more efficiently handle containerized trade. Specialized container terminals have replaced multiuse terminals that handled breakbulk cargo. There are no longer warehouses and sheds near the quay for the handling of goods. Container-handling port tools and terminal specialization requires sufficiently large volumes of cargo to capture economies of scale that make operations profitable. This has made the consolidation of cargo into a select group of ports a growing trend.

Port investment and management structures have changed as well. A significant and growing trend is the emergence of global container terminal operators. These specialized firms lease, buy, or develop container terminals and operate them for profit. This is an important departure from the model where a port authority balanced profit with competing priorities for local, regional, and national economic benefit.

In addition to private terminal operators whose sole focus is providing port services, shipping lines have expanded their operations and now control terminals in many locations. This vertical integration of the supply chain means that many of the world's

largest ocean carriers are able to offer a more complete range of services to shippers while maintaining control and influence for greater amounts of the supply chain. This has concentrated market power in the maritime industry in fewer hands, a trend with repercussions for ports that will be discussed in subsequent sections.

There is modal competition that threatens a port's competitiveness. Advances in trucking during the 20th century decimated the railroad industry but did not destroy them. In the past 15 years, railroads have experienced a resurgence due to booming world trade. Most ports have generated more traffic for rail, but rail growth on the US West Coast has often come at the expense of East Coast volumes. The landbridge option for moving cargo from Asia to West Coast ports, and then inland via rail has proven very competitive as compared to all-water service from Asia to the East Coast. Previously dominant positions near consumption centers have been eroded as the railroads have become faster, more efficient, and less costly.

Interdisciplinary Approaches to Studying Port Labor

As mentioned earlier in this paper, there has been a considerable amount of research on longshoremen in the fields of labor and industrial relations. There is also an ample amount of research into the transformation of the maritime and port industry in the fields of business, economics, and engineering. Longshoremen have been significantly impacted by the changes in global logistics and maritime industry and have in turn spurred and shaped developments in those industries as well. To better understand the linkages between longshoremen and developments in the port industry, this paper proposes that there are three areas in which greater research is required. First, the flexibility that global supply chains and port operations now require causes friction with established longshoremen practices. Second, competitive port practices have put additional pressure on longshoremen to increase productivity at a rate seldom experienced in many ports. Third and finally, containerization and increased intermodal cargo flows has challenged the traditional jurisdiction of longshoremen. This section will address these three areas in order to convey the need for a new interdisciplinary approach to studying longshoremen and their adapting to change in the port industry.

Flexibility

In terms of flexibility, research on has focused on a few aspects of port labor's response. Longshoremen have in many cases fought to preserve a minimum amount of pay regardless of the activity at container terminals. The types of work that port labor are able or willing to engage in at the terminal are often specified in the longshoremen contract, as are the size of gangs and the duration of shifts, breaks, and leave. For longshoremen, the value of the contracts lies in the stability and certainty that they bring by managing or slowing the pace of change in port operations.

As opposed to becoming more predictable, global supply chains seek out flexibility in the ports through which cargo moves. International producers and logistics providers are

increasingly responsive to fluctuating global demand and are constantly revamping their supply chains to more competitively serve their customers. This focus on flexibility is evident in the shipping industry as routes, schedules, and vessels are continually changing to satisfy global demands. Consequently, port operations have had to incorporate more flexible practices to accommodate the requirements of the global economy, supply chains, and the maritime industry.

Flexibility has not necessarily meant the elimination of unnecessary workers. For example, terminal operators often avoid investing in more technologically advance equipment because of they cannot guarantee which longshoremen are assigned on a particular day (Wright 2008). Newer and more sophisticated equipment may require specialized training. Terminal operators have looked to retain individual longshoremen rather than draw from an officially homogenous pool of labor. They have sought out a greater flexibility in the hiring process than is currently offered at many ports.

Productivity

To capture the economies of scale and generate adequate returns on investment, private terminal operators have put pressure on longshoremen to increase productivity. The performance of labor is determined by a variety of factors. There are specifications in labor contracts that dictate work conditions and impact productivity. These include breaks and the amount of time off. Hiring procedures matter as well, as employers often seek to retain individuals in certain positions on account of their skills and higher productivity. Longshoremen are able to resist what they feel are objectionable conditions with slowdowns or work stoppages, although the instances of strikes are increasingly rare. The protections afforded to them in the contract and through threat of work actions provide longshoremen with a mechanism to counter pressures for increasing productivity.

The push for higher productivity stems in part from the economies of scale in the shipping industry. Larger ships are one example of economies of scale available. A frequently described characteristic of the maritime industry is that ships make money at sea and lose money in ports. Because of the size of new containerships, loading and unloading at port can become a lengthy process without improvements in productivity. Cranes and yard equipment have been redesigned accordingly, but port labor remains a critical component of handling ships in port. Without an ability to use container-handling equipment in the most productive manner, investment in competitive port assets will be limited.

The penalties for low productivity at a port are substantial. Because of improving intermodal connections in many countries (especially in North America), competition from rival ports can divert cargo away from unproductive locations. Ships must be offloaded quickly; trains must be turned around on schedule, and trucks have to be received on a continuous basis. All areas of port operations are experiencing competitive pressures and port labor’s role in facilitating the transformation of port operations is an important one.

Jurisdiction

Prior to containerization, the limits to the jurisdiction of longshoremen unions were rather clear. A large amount of activity related to trade was done dockside. Warehouses were situated on or near the pier. Goods were stacked on the quay before being loaded or after coming off of the ship. All of this activity was within the jurisdiction of longshoremen and went relatively unchallenged. The introduction of containers introduced more forcefully the issue of jurisdiction into the port industry.

Early battles between longshoremen, port management, and shippers involved the dispute over whether containers needed to be stuffed and stripped in the port. Other issues arose over the encroachment by other unions such as the Teamsters into areas traditionally controlled by the ILA or ILWU. Current concerns over jurisdiction center on whether office workers and clerks at terminals must be part of longshoremen unions. Even within ports (e.g. Charleston), some terminals employ union labor while others do not.

Containers have expanded the physical boundaries of port related activities. Empty containers are often stored at off-terminal locations. The contents of containers are rarely handled at the terminal, transferring what was once a significant port activity to other locations. Containerization has also brought new tools to port terminals that previously were not under the jurisdiction of longshoremen. At many US terminals, chassis for transporting containers are inspected and serviced by unionized labor.

Global supply chains' disregard for traditional jurisdiction has clashed with longshoremen activities. Supply chain activities tend to be located where flexibility, reliability, low costs, and fast transit times are most easily obtainable. The question of jurisdiction is unlikely to diminish in importance in the future. In North America for example, there has been a push to shift cargo to alternative modes, including barges and short sea shipping. These modes will bring new practices to existing port terminals, and create activity in locations that had not previously handled international containers. The response of longshoremen will have an influence on the success of policy efforts to shift modes.

Examples of the Intersection Between Port Labor and the Maritime Industry[1]

This section uses two recent developments at ports on the East Coast to illustrate how changes in the maritime industry are impacting longshoremen. The reaction of port labor and their adaptation to these changes has had a direct influence on the competitive position of their respective ports. These events demonstrate the power of global economic forces, ocean carriers, and terminal operators are exerted in the port industry.

[1] Information for this section was obtained from industry news sources, including Bate (2008) [Charleston] and Wright (2008) [Portsmouth].

Maersk and the Port of Charleston

The first example is that of Maersk, the world's largest ocean carrier, and its relationship with the Port of Charleston. Maersk has been using its own dedicated terminal in the port that uses ILA labor. Beginning in late 2008, changes in traffic, in part due to the ongoing global economic turmoil, led to Maersk not meeting the minimum volumes required by their lease agreement. This caused the South Carolina State Port Authority to impose financial penalties on the ocean carrier. In response to these fees, Maersk looked to reduce the cost of labor at the terminal, but the ILA refused. As an alternative, Maersk requested to move to a common-use terminal at the port that is staffed by non-union labor. After the ILA again refused, Maersk announced it was abandoning its operations at the Port of Charleston.

This case highlights how the maritime industry seeks out the maximum flexibility in its interactions with ports. Maersk is both an ocean carrier and a terminal operator at the Port of Charleston. Changes in the global economy lead it to seek modifications to its operating agreements, and the response of longshoremen was instrumental in shaping the outcome. From a port labor perspective, the interaction between the ILA and Maersk is made complicated by the relative importance of the company to the port's overall activities.

APM Terminal in Portsmouth, Virginia

In the Norfolk area, APM Terminals built a new terminal at Portsmouth without the involvement of a public port authority. The highly automated terminal employs the same number of longshoremen as APM's previous terminal in the Norfolk area, despite having increased in size from 70 to 230 acres. More containers are handled per worker at the terminal than at any other port on the US East Coast. Productivity is expected to increase as longshoremen become more familiar with the new technologies that have been introduced.

This example emphasizes the importance of increasing productivity in the port industry. The tremendous cost of privately financing the entire cost of the new terminal was absorbed with the hope of generating substantial competitive advantages. With automated equipment and an advanced configuration, the new terminal is looking to become the leading terminal on the East Coast. The boost in productivity may become a benchmark in contract negotiations with the ILA, and labor leaders will have to respond accordingly.

Trends and Implications for the Port of New York and New Jersey (PONYNJ)

New York's port enjoys the advantage of having an extremely large hinterland within close proximity. For this reason, the threat from other ports has typically been limited. This does not mean, however, that longshoremen are insulated completely from the developments in the port industry. Competitive pressures from ports along the East and West Coast, as well as in Mexico and Canada may be felt at PONYNJ. Advances in

shipping will continue to reshape the industry, as will changes to global shipping routes. For longshoremen, all of these factors must be taken into account as they formulate their strategy for adapting to trends in the port industry. Many of these developments are recent, and labor's response has yet to be fully understood.

Intermodal Competition

Ports along the East Coast, including New York, compete for the market well beyond their immediate hinterlands. A substantial portion of traffic at PONYNJ originates or is destined for markets in the Midwest such as Cleveland, Detroit, and Chicago. New York's dominant position in these markets may be challenged as Norfolk Southern develops the Heartland Corridor - a new rail route between Norfolk and Chicago that will greatly improve the port's ability to compete for customers in the Midwest. Challenges to traditional hinterlands can come from ports outside of the US. A new terminal in Prince Rupert, Canada was created to primarily serve US markets. Plans have been discussed for the creation of a container port in Mexico, south of San Diego, that would also look to the US as its hinterland.

Increases in Ship Size

There will be added pressure on longshoremen at PONYNJ as a result on the inability of the port to accommodate the largest vessels being used by ocean carriers. Because of limitations in the maximum air draft of ships passing by the Bayonne Bridge, PONYNJ's terminals in Newark, NJ cannot handle the same size ships as rival ports along the East Coast. Although few of these ships are currently in use on routes to the US East Coast, it is anticipated that ports in Norfolk and Charleston will eventually serve these megaships. The economies of scale from these operations will place considerable pressure on users of PONYNJ to reduce costs in order to remain competitive. One of the areas in which cost reductions may be sought could be port labor. The response of longshoremen will have an important influence on the continuing competitiveness of PONYNJ.

Panama Canal Expansion

The events in Charleston and Norfolk, as well as the examples of increased intermodal competition and larger ship, focus on the pressures that longshoremen will face to adapt to trends in the port industry. Flexibility and productivity are key concerns and demands on port labor may disrupt traditional practices. The expansion of the Panama Canal, however, offers the prospect of greater traffic at East Coast ports and is expected to increase demand for port labor. PONYNJ is likely to gain some services as a result, as are other ports along the Gulf Coast and East Coast. Anticipating the shift in traffic and understanding the opportunities and challenges will be important for longshoremen.

Conclusions

The push for longshoremen to adapt to change will not necessarily result in job losses and erosion of the importance of port labor. Increases in port competitiveness through productivity gains and concessions for longshoremen may actually result in more port jobs. Improvements in the port industry serve as an enabler for trade at the local, regional, and national level. Despite the current deterioration in the global economy, a return to protectionism and greater barriers to trade does not appear imminent. As the world economy rebounds, cargo volumes may grow in response to improvements at ports and require an overall greater number of longshoremen.

The environment in which port labor operates is complex and continuously changing. The list of issues, forces, and trends listed in the preceding sections is certainly not exhaustive. Longshoremen concerns of the 20th century are not irrelevant and will continue to influence negotiations with employers. In the future, however, the bargaining position of port labor will be strengthened and undermined by a broader range of factors. Longshoremen, private actors in the maritime industry, port managers, and policy makers will be challenged to make sense of the new environment.

Bibliography

Bate, A. 2009, “Charleston Fights to Keep Maersk”, *Containerisation International*, 23 January.

Betcherman, G. & Rebne, D. 1987, "Technology and Control of the Labor Process: Fifty Years of Longshoring on the U.S. West Coast."" in *Workers, managers, and technological change: emerging patterns of labor relations*, ed. D.B. Cornfield, Plenum Press, New York, pp. 73-89.

Fisher, E. & Kondra, 1993, "Responding to Environmental Change in Longshoring: Four North American Experiences", *Journal of Labor Research*, vol. 14, no. 1, pp. 1-27.

McGinn, K.L. 2007, "History, Structure, and Practices: San Pedro Longshoremen in the Face of Change" in *Exploring positive relationships at work: building a theoretical and research foundation*, eds. J.E. Dutton & B.R. Ragins, Lawrence Erlbaum Associates, Mahwah, NJ, pp. 265-275.

Monaco, K. & Olsson, L. 2005, *Labor at the Ports: a Comparison of the ILA and ILWU*, METRANS Transportation Center, Los Angeles, Ca.

Talley, W.K. 2002, “Dockworker Earnings, Conainternisation, and Shipping Deregulation”, *Journal of Transport Economics and Policy*, vol.36, no. 3, pp. 447-467.

Waters, R.C. 1993, "Leadership and its Consequences: Technical Change in the Longshore Industry", *Industrial Relations*, vol. 32, no. 2, pp. 262-271.

Wright, R. 2008, “A Change of Course on the Waterfront”, *Financial Times*, 7 October.