Trucking regulation as a critical supply chain asset in port complexes

Peter Hall and Thomas O’Brien
International Urban Freight Conference, 2015
**DRAYAGE FLASHPOINTS**

- **VANCOUVER**: Port drivers strike to protest pay and turn times at Port Metro Vancouver.
- **LOS ANGELES/LONG BEACH**: Terminals struggle with long turn times, chassis dislocations, yard congestion, volume spikes.
- **OAKLAND**: Drivers strike to protest pay, costs of newer trucks.
- **CHICAGO**: Intermodal rail terminals slowed by chassis shortages, winter weather.
- **NEW YORK/NEW JERSEY**: Chassis shortages, weather disruptions hit port that endured weeks of gridlock last summer.
- **VIRGINIA**: Port task force discusses trucker complaints about turn times, chassis, appointment system.
Overview

• Trucking as a critical asset and policy dilemma

• Conceptual considerations
  – Ports as elements in supply chains
  – Ports as coalitions
  – Ports as terminalized and regionalized
  – Ports: transactions, resources and boundaries

• Illustrations
  – Vancouver
  – Los Angeles / Long Beach

• Tentative conclusions
of Porter [63] and Hamel and Prahalad [64]. Cox argues that ‘...within any primary supply chain some of the resources which are necessary to deliver an end product or service to a customer are relatively more important than others...These key resources, which shape and determine the allocation of value within a supply chain, can be designated as critical assets...(and)...are of central importance to the appropriation and accumulation of value in supply chain and, as such, are the critical assets which companies must control and leverage if they are to achieve sustainable business success’ [65]. Further, as Cox argues, ‘...those who own and control critical supply chain assets will be able to dominate the process of value accumulation and appropriation...’ [66].

Note, of course, that assets that are critical at one point in time may not be critical at another; and that patterns of control will create constant tension in complex business environments.
Dilemmas....road-pricing and -building

• What happens on the terminal in terms of productivity and space utilization, affects what happens off the terminal in terms of queuing and congestion... and vice versa (LeGriffin and O’Brien 2013)

• De Borger and De Bruyne (2011) conclude that vertical integration between terminals and port trucking may lead to more congestion on the roads around ports.

• “Adding local roads tends to benefit the port and harm its rival (in terms of throughput) by reducing road congestion. However, the overall impact of road provision on ports’ throughput varies among the sample ports, as road capacity expansion may affect ports’ output through channels other than road congestion delays.” Wan, Y., Zhang, A., & Yuen, A. C. (2013).
Conceptual considerations

• Ports as elements in competing supply chains
  • Supply chain integration
  • Technology
  • Ship size

• Ports as terminalized and regionalized
  • Power of terminal operators as core technology
  • Regionalized scale of activity system, challenged jurisdictions

• Ports as quasi-stable, quasi-integrated coalitions
  • (Landlord) Port Authorities
  • (Rent-paying) Terminal Operators
  • Port labour
  • Trucking: drivers, dispatchers, servicing
  • Shippers
  • Ocean-side (carriers)
  • Land-side (warehouse, rail)

• Ports: transactions, (critical) resources and (organizational) boundaries
Competing supply chains, both integrated and disintegrated

Port

Carrier’s terminal

3rd Party Logistics (contractual)

Added value

2PL

Virtual integration
Big ship ready today

Bigger ship ready tomorrow

With a 76-foot deep main channel, 15 deepwater berths, 54 post-panamax gantry cranes, a robust workforce and the largest distribution network in the U.S., we’re ready for today’s big ships. And we’re the best fit for the larger ships to come, thanks to our bold investments in leading technology and giant terminals with shore power and on-dock rail. Around here, we think big.

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Mediterranean Shipping Co.’s Oscar is currently the world’s largest container ship by TEU capacity, able to carry 19,224 TEUs. It has an 11-cylinder engine providing power to its 1,800 reefer plugs, and is capable of reaching speeds of 23 knots while its propeller can attain 84 RPM. The Oscar is 1,297 feet long and has a draft of 52.5 feet and a bulbous bow. It was built at a cost of $140.5 million by Daewoo Shipbuilding and Marine Engineering in Geoje, South Korea, and entered service Dec. 29, 2014. (MSC Oscar, Oliver, Zoe and Maya). 194 ft beam.
Terminalization and Regionalization

• “They represent a fundamental shift in the concept of a port, from one whose operations are coordinated and controlled by a public agency... to one that is made up of independent terminals whose activities are determined by the commercial interests of its transnational owners/long term lessors” Slack, 2007; 42).

• “Regionalization represents a new phase in the development of port systems, which has traditionally focused on the port itself. In this phase, inland distribution becomes of foremost importance in port competition, favouring the emergence of transport corridors and logistics poles.” (Notteboom and Rodrigue, 2005; 311).
Port-logistics firms in the BC Lower Mainland, 2007
“Pool of Pools”
### Global terminal operators, 2011

<table>
<thead>
<tr>
<th>Operator</th>
<th>TEU (mill)</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSA</td>
<td>47.6</td>
<td>8.1%</td>
</tr>
<tr>
<td>HPH</td>
<td>43.3</td>
<td>7.4%</td>
</tr>
<tr>
<td>DP World</td>
<td>33.1</td>
<td>5.6%</td>
</tr>
<tr>
<td>APMT</td>
<td>32.0</td>
<td>5.4%</td>
</tr>
<tr>
<td>Cosco Group</td>
<td>15.4</td>
<td>2.6%</td>
</tr>
<tr>
<td>TIL (MSC)</td>
<td>12.1</td>
<td>2.1%</td>
</tr>
<tr>
<td>China Shipping</td>
<td>7.8</td>
<td>1.3%</td>
</tr>
<tr>
<td>Evergreen</td>
<td>6.9</td>
<td>1.2%</td>
</tr>
<tr>
<td>Eurogate</td>
<td>6.6</td>
<td>1.1%</td>
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<tr>
<td>HHLA</td>
<td>6.4</td>
<td>1.1%</td>
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<tr>
<td><strong>Top-10</strong></td>
<td><strong>211.2</strong></td>
<td><strong>35.9%</strong></td>
</tr>
</tbody>
</table>

Drewry Shipping Consultants, 2012

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**Morgan Stanley Acquires Montreal Gateway Terminals, the Container Port of Montreal**

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**The Wall Street Journal**

July 3, 2012, 10:52 AM EDT

**Flinders Ports Buys Adelaide Container Terminal**

By Gillian Tan

Privately owned Flinders Ports has bought the 60% interest in the Adelaide Container Terminal business held by DP World South Australia, giving it sole control of the operation.
Conventional Port Authority

- Landlord
  - Planning and management of port area.
  - Provision of infrastructures.

- Regulator
  - Planning framework.
  - Enforcement of rules and regulations.

- Operator
  - Cargo handling.
  - Nautical services (pilotage, towage, dredging).

Expanded Port Authority

- Landlord

- Regulator

- Operator

- Cluster Governance
  - Service Efficiency
  - Logistical Integration
  - Infrastructure and Growth Management
  - Port-City Integration
Resource-dependency

• “No organizations are self-sufficient, and thus they must engage in exchanges with their environment in order to survive. Organizations need to acquire resources from their environment, and the importance and scarcity of these resources determine the extent of organizational dependency in and on their environment. For example, information is a resource organizations need to reduce uncertainty and dependency, and thus organizations seek information to survive” (Pfeffer and Salanick, p. 403).
Boundary-spanning

• Inspired by Thompson (1967)
  • Applied to ports by Boshken (1988)
  • “in stable homogenous environments and organizations with highly routinized technology, strategic information is less important” (Aldrich and Herker, 1977; 218)

• PA: mediating technology
  • Organizations who link customers/stakeholders together
  • Need to have lots of boundary-spanning

• MTO: long-linked technology
  • Gain efficiency through standardized large volume production
  • Will seek to protect core technical units
  • Shed non-core functions (e.g. chassis...)
Conceptual considerations

• Ports as elements in competing supply chains
  • Supply chain integration
  • Technology
  • Ship size

• Ports as terminalized and regionalized
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  • Regionalized scale of activity system, challenged jurisdictions

• Ports as quasi-stable, quasi-integrated coalitions
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• Ports: transactions, (critical) resources and (organizational) boundaries
Vancouver

• Federal port does not have control over trucking
Figure 9.1: Summary Profiles of Major Subgroups (Source: LABOUR FORCE PROFILE OF PORT DRAYAGE DRIVERS IN METRO VANCOUVER)

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Union Status</th>
<th>Payment basis</th>
<th>% of Selected Sample</th>
<th>Primary Language (% Punjabi)</th>
<th>Average Age</th>
<th>Average Drayage Income</th>
<th>Average Years Exp</th>
<th>Average Company Years</th>
<th>Average Daily Hours</th>
<th>Average Hourly Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee</td>
<td>Non-union</td>
<td>hour</td>
<td>19%</td>
<td>51%</td>
<td>38</td>
<td>$38,878</td>
<td>6</td>
<td>4</td>
<td>10.4</td>
<td>$18.42</td>
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<tr>
<td>Employee</td>
<td>Non-union</td>
<td>trip</td>
<td>16%</td>
<td>55%</td>
<td>37</td>
<td>$31,537</td>
<td>5</td>
<td>3</td>
<td>11.5</td>
<td>$14.01</td>
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<tr>
<td>Employee</td>
<td>Union</td>
<td>hour</td>
<td>10%</td>
<td>10%</td>
<td>46</td>
<td>$51,375</td>
<td>8</td>
<td>5</td>
<td>10.9</td>
<td>$19.59</td>
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<tr>
<td>Employee</td>
<td>Union</td>
<td>trip</td>
<td>5%</td>
<td>69%</td>
<td>38</td>
<td>$41,183</td>
<td>5</td>
<td>3</td>
<td>11.3</td>
<td>$18.75</td>
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<tr>
<td>Owner-Operator</td>
<td>Non-union</td>
<td>hour</td>
<td>1%</td>
<td>50%</td>
<td>44</td>
<td>$30,500</td>
<td>15</td>
<td>10</td>
<td>9.4</td>
<td>$17.07</td>
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<tr>
<td>Owner-Operator</td>
<td>Non-union</td>
<td>trip</td>
<td>21%</td>
<td>57%</td>
<td>41</td>
<td>$33,868</td>
<td>10</td>
<td>5</td>
<td>12.0</td>
<td>$13.16</td>
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<tr>
<td>Owner-Operator</td>
<td>Union</td>
<td>hour</td>
<td>3%</td>
<td>21%</td>
<td>45</td>
<td>$31,071</td>
<td>15</td>
<td>7</td>
<td>10.0</td>
<td>$15.48</td>
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<tr>
<td>Owner-Operator</td>
<td>Union</td>
<td>trip</td>
<td>24%</td>
<td>61%</td>
<td>45</td>
<td>$37,395</td>
<td>13</td>
<td>9</td>
<td>11.4</td>
<td>$14.22</td>
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<tr>
<td>Grand Total</td>
<td>–</td>
<td>–</td>
<td>100%</td>
<td>51%</td>
<td>41</td>
<td>$37,313</td>
<td>9</td>
<td>6</td>
<td>11.2</td>
<td>$15.62</td>
</tr>
</tbody>
</table>
Container Truck Access to the Port

August 2011
Implementation of 90-day pilot program by the Port (Major Road Network (MRN) Routes)

Ensuring Trucks Stay on the Major Road Network
Restrict Right Turns onto 41st and Broadway off of Clark Drive

Port Destined Container Trucks

Ensuring Trucks Stay on the Major Road Network
Restrict Left Turns onto Naniamo and Renfrew Streets off of Broadway

TRUCK SPEED LIMIT
30 KM/H

Port Destined Container Trucks
“in an effort to mitigate the impact of container trucks accessing the Port via city streets, Port Metro Vancouver will implement a Truck Traffic Pilot Program requiring container trucks to use only Major Road Network (MRN) authorized routes in Vancouver. Nanaimo Street is not a Major Road Network route”  
(PMV 2011)
“The results of the assessment of land use, traffic safety, traffic volume, public health and air quality issues indicate that while the prohibition of trucks from 32 Avenue may improve local traffic conditions, this is to the detriment of adjacent corridors and the region as a whole. Maintaining 32 Avenue on the Surrey truck route network is consistent with TransLink’s regional goals for reducing overall GHGs, supporting efficient goods movement, and overall transportation network management.”

San Pedro Bay Ports:
64% of U.S. Pacific Containerized Cargo
54% of Total Pacific Containerized Cargo
35% of Total U.S. Containerized Cargo
2000 – Environmental Study
2000 – Law Suits: NRDC vs. Port of LA
  • China Shipping Terminal
  • Cold ironing
2001 – 9/11
2002 – Opening of Alameda Corridor
2002 – West Coast Port shutdown
2002 – I-710 Expansion study

Public response: growing resistance to expected trade growth, facility expansion to facilitate growth; political pressure to reduce local external costs. Many legislative actions followed.
Map of Alameda Corridor
An industry response to legislative pressure and the 2004 peak crisis

- Implemented July 2005
- Provisions
  - Fee of $40/TEU for all road cargo entering/exiting during peak hours ($50/TEU as of 4/06)
  - Peak hours = M-F 3AM – 6 PM
  - Exemptions
    - Empty returns, chassis returns, domestic freight, transshipments to other ports, cargo subject to ACTA fee
  - System operated by PierPass; registration required
  - Net revenues allocated to terminals to offset costs
Local Response: Clean Air Action Plan And Clean Trucks Program, 2006

- Environmental Goals
  - Aggressive implementation schedule led by ports
  - Established fee structure to pay for environmental mitigation efforts
  - Getting ahead of environmental mandates good for regional competitiveness

- Environmental Policy and Process
  - Precedent for extra-regulatory policy making
  - Risk of creating multiple and competing standards
  - Uncertainty bad for regional competitiveness
Supply Chain Working Group

• Supply Chain Optimization (SCO) Working Group
• Group consists of stakeholders from the good movement sectors, including: shipping lines, cargo owners, labor, railroads, trucking owners, and equipment interests, among others.
• Seven Working Groups
  • Peak Season 2015, Container Terminal Optimization, Chassis, Off-dock solutions, Key Performance Indicators/Data Solutions, Intermodal Rail, and Drayage.
Peel Off program

• Designed to combat recent congestion by allowing containers from major customers to be moved to a designated area where truckers could quickly peel off those containers destined for distribution centers inland.

• Pasha Stevedoring & Terminals L.P. and trucking company Total Transportation Services Inc. operate the yard, a 17-acre property at Navy Way and Reeves Avenue that could accommodate as many as 500 containers.
Is CA unique?

**YES**
- LA/LB size and west coast dominance
- Scale of congestion, pollution problems
- Frequency and scope of state regulatory efforts
- Effectiveness of environmental advocates

**NO**
- Growing congestion, air pollution problems in other metro areas
- Ports as links in a system wide chain
  - Is all cargo now discretionary?
- Others (NY/NJ, Seattle, Vancouver, etc.) adopting CA measures
- Need to fund infrastructure
Vancouver and LA/LB

• Vancouver
  • Continental gateways
  • Driver organizing
  • Community pressures
  • Modest scale
  • Geographically dispersed terminals
  • PA: Federal agency
  • MTO: Almost monopoly
  • Federally mediated rate-setting
  • Provincial regulator
  • Port: vehicle clean-up and access regulation
  • Involvement (port and/or key coalition members) in regional truck-routing

• LA / LB
  • Continental gateways
  • Driver organizing
  • Community pressures
  • Large scale
  • Geographically concentrated terminals
  • PA: Municipal authority
  • MTO: Oligopoly
  • Inter-terminal system organizing
  • Industry access self-regulation as response to regulation threat
  • Port: vehicle clean-up after legal clarification
  • Rail infrastructure investment
Tentative conclusions

• Port trucking / drayage is (currently) a critical supply chain asset
  • Related to terminalization-regionalization-integration

• Little expectation of ‘easy’ integration or infrastructural solutions

• Can expect:
  • MTOs to favour ‘narrower’ strategies that protect core technology and operations
  • PAs called upon to engage in boundary-spanning roles including convening, governance reform and regulatory experimentation
  • Jurisdictional conflicts and uncertainties across supply chain
  • Actual experiments may vary according to source of uncertainty-instability and institutional configurations