Intermodal Transportation and Commodity Chains: New York and the Global, Regional and Local Nexus

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New York as a Nexus: Commodity Chains and Transportation

Commodity Chains

Global
- Production
- Gateways

Regional
- Distribution
- Corridors

Local
- Consumption
- Terminals

Integrated Transport Systems

Transportation
The Global Nexus: Commodity Chains and Global Production Networks

1

Global Production Networks
Container Ports as Gateways
Integrated Transport Systems

UPS Willow Springs Distribution Center, Chicago
Spaces, Networks and Flows in a Global Economy

- **Globalization; a clustered and spatially diffused process**
  - In terms of production and consumption.
  - Distribution is reconciling spatially diverse demands for raw materials, parts and finished goods.

- **The backbone of globalization**
  - Networks are established to support distribution.
  - Nodes are regulating the flows within networks.
  - As international trade increases, nodes have become strategic locations.
Commodity Chains and Added Value

Commodity chain

Manufacturing

R&D

Branding

Globalization

Sales / Service

Marketing

Distribution

Concept

Design

Logistics

Manufacturing

Branding

R&D

High

Added value

Low

Commodity chain
Disconnection of Global Production and Distribution

R&D → Distribution → Marketing / Retail

Manufacturing Base
The Emergence of Global Production Networks

The Logistical Nexus

- Fast growth of international trade with the full realization of comparative advantages.
- Geographical and functional integration of production, distribution and consumption.
- Commodity / Supply Chains.
- Transportation integrated in the production / retailing process.
- Global Production Networks (GPN).
- Logistical poles where value added activities are performed.
- Entirely new nodal locations.
# Integrated Transport Systems: From Fragmentation to Coordination

## Table

<table>
<thead>
<tr>
<th>Factor</th>
<th>Cause</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Containerization &amp; IT</td>
<td>Modal and intermodal innovations; Tracking shipments and managing fleets</td>
</tr>
<tr>
<td>Capital investments</td>
<td>Returns on investments</td>
<td>Highs costs and long amortization; Improve utilization to lessen capital costs</td>
</tr>
<tr>
<td>Alliances and M &amp; A</td>
<td>Deregulation</td>
<td>Easier contractual agreements; joint ownership</td>
</tr>
<tr>
<td>Commodity chains</td>
<td>Globalization</td>
<td>Coordination of transportation and production (integrated demand)</td>
</tr>
<tr>
<td>Networks</td>
<td>Consolidation and interconnection</td>
<td>Multiplying effect</td>
</tr>
</tbody>
</table>
### The Three Main Gateways of North America

<table>
<thead>
<tr>
<th>Gateway System</th>
<th>Gateways</th>
<th>Total share (%)</th>
<th>Imports / Exports ($ billions) 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern California</td>
<td>Port of Los Angeles, Port of Long Beach, Los Angeles International Airport, Otay Mesa (Port of Entry)</td>
<td>18.3%</td>
<td>$255.9 $77.8</td>
</tr>
<tr>
<td>New York / New Jersey</td>
<td>JFK International Airport, Port of New York / New Jersey</td>
<td>13.1%</td>
<td>$163.0 $75.8</td>
</tr>
<tr>
<td>Detroit</td>
<td>Detroit (Port of Entry), Huron (Port of Entry)</td>
<td>9.8%</td>
<td>$97.9 $81.8</td>
</tr>
</tbody>
</table>
The Regional Nexus: Freight Distribution, Gateways and Corridors

Intermodalism and Transmodalism Corridors

Translift crane, NS Rutherford yard, PA
Intermodal and Transmodal Operations

- Intermodal Operations
  - On-dock rail
  - Transloading
  - Port container yard
  - Intermodal Terminal

- Transmodal Operations
  - DCs / CD
  - Thruport
  - Ship-to-ship
Intermodal Transport Chain

Composition

Transfer

Interchange

Decomposition

‘First mile’

Local / Regional Distribution

National / International Distribution

Transport Terminal

‘Last mile’
Main North American Trade Corridors and Metropolitan Freight Centers

Map showing key cities and major transport hubs in North America.
Level of Congestion of the Interstate Highway System

Volume to Capacity Ratio (1998)
- Less than 0.6
- 0.6 to 0.9
- More than 0.9

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The Local Nexus: Terminals

Terminalization of Ports
Port Regionalization

APL “Australia” entering San Francisco Harbor
The Value Capture Process along Commodity Chains

- Port Authority
- Maritime Services
- Port Services
- Inland Services
- Vertical Integration
- Port Holding
- Horizontal Integration
- Commodity Chain

- Maritime Shipping
- Port Terminal Operations
- Inland Modes and Terminals
- Distribution Centers
Logistics: Soft Pressures on Hard Assets
Port Holdings as Elements of the Maritime / Land Interface

- **Horizontal integration using fixed assets**
  - More than 40% of global containerized traffic (2006).
  - Gain a foothold in a wide variety of markets (strategic positioning).
  - Financial assets.
  - Managerial expertise.
  - Gateway access.
  - Leverage.
  - Traffic capture.
  - Global perspective.
The Spatial Development of a Port System: Towards Regionalization

Phase 1: Scattered ports

Phase 2: Penetration and hinterland capture

Phase 3: Interconnection & concentration

Phase 4: Centralization

Phase 5: Decentralization and insertion of ‘offshore’ hub

Phase 6: Regionalization

Legend:
- Load center
- Interior centre
- Freight corridor
- Deepsea liner services
- Shortsea/feeder services
- Regional load centre network
Cargo Handled by the Port of New York, 1991-2006 (metric tons)
Annual Traffic at Some NY / NJ Crossings, 2005 (millions of vehicles)
Truck Freight Corridors

New Jersey
New York
Long Island
Brooklyn
Queens
Staten Island
Bronx
Manhattan
GWB
TNB
WSB
TZB
VZB
TBB
LT
HT
OCB
GTB
BYB
Connecticut
JFK
LGA
EWR
About 70 million truck crossings per year

Major Crossing
23.2
2.0
1,000 of Trucks per Day (2000)

8.6
7.4
7.8
5.7
5.2
5.2
8.4
8.4
8.4
4.8
4.2
1.9
1.5
About 70 million truck crossings per year
Rail Freight Corridors and Port Facilities

NJ Distribution Cluster

New Jersey

New York

Brooklyn

Queens

Manhattan

Staten Island

Bronx

Long Island

Port Terminal

Intermodal Terminal

Distance Scale:

0 2.5 5 10 15 20 25 Miles
Intermodal Facilities and Navigation Channels of the Port of New York, 2007

1- Port Newark
2- Port Elizabeth
3- Global Marine

Navigation Channel
Control Depth (feet)
Intermodal Terminal
Container Port (proposed)
Major Highway
Proposed rail tunnel

Albers Equal-Area Conic Projection

Daily Truck Movements (one way), 2001

Red Hook
Global Marine
Port Newark
Howland Hook
Port Elizabeth

Newark Bay Channel
Hudson River
Upper Bay Channel
East River
Red Hook
South Brooklyn
Howland Hook
Port Newark
Global Marine
Red Hook
Howland Hook

0 2000 4000 6000 8000 10000

Daily Truck Movements (one way), 2001

Port Newark
Port Elizabeth

40 40 37 40 40 40 40 45 42 50 50 50 40 40 40 40 40 37 37 37 37 37
The Regina Maersk Could Barely Make it but The Emma Maersk Cannot...