Is container shipping still charting the right course for its customers?

TPM Workshop 3 March 2015
Fifty years ago the next phase was big ships, big hubs and East-West Trade. Is container shipping still charting the right course for its customers?
Three Shipping Heroes Who Built the Liner Business.
It Took 150 Years. Who Will Be Number Four?

150 years ago

50 years ago

Finished the Job

Martin Stopford Clarkson Research
2 March 2015
World Sea Trade 1 AD to 2014 AD

TODAY TRADE IS 500 TIMES BIGGER THAN IN 1865

By 1865 Sea Trade only reached 22 mill tonnes

10 Bn Tonnes
Sir Ronald Swayne, Chairman of (OCL), the container company set up in 1966, observed that "technical development in liner shipping has not been so much a continuous process as an occasional leap forward, precipitated by a compelling call for change."

General Cargo: demanding to transport:-
1. It’s fragmented
2. Its varied (physical structure)
3. It’s “service sensitive”
AGAMEMNON (1) was built in 1865 by Scott and Co. at Greenock with a tonnage of 2280grt. a length of 309ft 6in, a beam of 38ft 10in, 945 HP engine and a service speed of 10 knots.
Mid 1960s cargo liners & ramps carried general cargo

The Priam 1966, 12,000 GRT, 22,000 dwt 21 knots
Automation – move to big ships, big companies

In their 1967 report “Containerisation: the Key to Low-Cost Transport “ McKinsey concluded that “after a long period of stagnation” containerisation would allow the liner industry to automate, just like the car industry had done. This would change the industry:-

“The high volume output of automated plant and the economies of scale possible in progressively larger automated units leads to a few major production facilities supplying the bulk of demand”
McKinsey (1967) thought containerization would:

1. Reduce freight costs 50%+
2. Concentrate cargo in a few ports allowing economies of scale
3. Big ships
4. Small number of liner companies operating globally
5. Transport integrated from origin to destination
The Ships - From “small & versatile” to “big and boxy”

Red line shows cargo liners delivered up to 1969 and the blue bars show containerships

Size of biggest containerships 1969-2015

Size of biggest cargo liners 1865-1967

Fleet Value $ Billion

<table>
<thead>
<tr>
<th>Under 2,999</th>
<th>Over 12,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>$17.8</td>
<td>$21.6</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>3-7,999</th>
<th>8-11,999</th>
</tr>
</thead>
<tbody>
<tr>
<td>$31.6</td>
<td>$30.6</td>
</tr>
</tbody>
</table>

Maximum size GRT

CLARKSON RESEARCH SERVICES LTD
Since 1996 average ship size has doubled and average terminal throughput has trebled.
## Liner Vessel Efficiency

Table 1: Fuel consumption of typical small to medium-sized cargo vessels

<table>
<thead>
<tr>
<th>Year built</th>
<th>Type</th>
<th>GRT</th>
<th>DWT</th>
<th>Cargo tons</th>
<th>Speed knots</th>
<th>Engine type</th>
<th>Horse-power</th>
<th>Fuel type</th>
<th>Fuel Tons per day</th>
<th>Cargo /tonne</th>
<th>Kg fuel/ 000 ton</th>
<th>Cargo</th>
<th>% fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1855</td>
<td>Liner</td>
<td>700</td>
<td>900</td>
<td>750</td>
<td>7.5</td>
<td>Steam 1</td>
<td>400 ihp</td>
<td>coal</td>
<td>12.0</td>
<td>63</td>
<td>88.9</td>
<td></td>
<td>-68%</td>
</tr>
<tr>
<td>1866</td>
<td>Liner</td>
<td>2,270</td>
<td>3,065</td>
<td>2,911</td>
<td>10</td>
<td>Steam 2</td>
<td>945 ihp</td>
<td>coal</td>
<td>20</td>
<td>146</td>
<td>28.6</td>
<td>-22%</td>
<td>-68%</td>
</tr>
<tr>
<td>1895</td>
<td>Liner</td>
<td>3,600</td>
<td>5,500</td>
<td>4,900</td>
<td>9.5</td>
<td>Steam 3</td>
<td>1800 ihp</td>
<td>coal</td>
<td>25.0</td>
<td>196</td>
<td>22.4</td>
<td>-22%</td>
<td>-68%</td>
</tr>
<tr>
<td>1915</td>
<td>Liner</td>
<td>5,300</td>
<td>8,500</td>
<td>7,500</td>
<td>11</td>
<td>Steam 3</td>
<td>2800 ihp</td>
<td>coal</td>
<td>35.0</td>
<td>214</td>
<td>17.7</td>
<td>-21%</td>
<td>-68%</td>
</tr>
<tr>
<td>1935</td>
<td>Liner</td>
<td>6,000</td>
<td>10,000</td>
<td>9,000</td>
<td>12.5</td>
<td>Steam 3</td>
<td>4000 ihp</td>
<td>oil</td>
<td>33.0</td>
<td>273</td>
<td>12.2</td>
<td>-31%</td>
<td>-68%</td>
</tr>
<tr>
<td>1955</td>
<td>Liner</td>
<td>7,500</td>
<td>11,000</td>
<td>10,000</td>
<td>14</td>
<td>Diesel</td>
<td>6000</td>
<td>oil</td>
<td>25.0</td>
<td>400</td>
<td>7.4</td>
<td>-39%</td>
<td>-68%</td>
</tr>
<tr>
<td>2014</td>
<td>Liner</td>
<td>176,490</td>
<td>186,649</td>
<td>177,317</td>
<td>23</td>
<td>Diesel</td>
<td>85705</td>
<td>oil</td>
<td>255.0</td>
<td>695</td>
<td>2.6</td>
<td>-65%</td>
<td>-68%</td>
</tr>
</tbody>
</table>

Notes

FOR 250 YEARS WE HAVE SQUEEZED THE TECHNOLOGY & NOT MUCH LEFT

From 1865 to 1975 ships made massive technical advances. First the move to diesel engines and then Liners and tramps were replaced by much bigger and more specialised ships.
Container Fleet Investment 2014

- Container Investment was $101.6 Billion in 2014.
- That works out at $65 per tonne of cargo transported.
Fuel Economy: Diminishing savings on big ships
KG fuel/000 TM

Rough split of container delivery costs

Containership Size in TEU

y = 129.93x^{-0.499}

Source: based on Clarkson Research World Fleet Register, calculations M Stopford
Containership - carbon footprint

Source: Study by University College London Marine Engineering Department - shows the carbon generated per ton mile by different sizes of ships
Containership Cost – Bigger not much cheaper

Shows cost in 2015 of new containership in $000 per TEU.
Figure 6: Quite big container companies
Top 20 container capacity – share by company 1980-2010

1. Maersk had taken over P&O Nedlloyd (4.6%), putting its share up to 16.4%.
2. MSC and CMA-CGM had doubled their capacity by 2nd hand and newbuilding acquisition.
3. Average share of top 20 up to 3.6%
Economies of Scale – Diminishing Returns?

Based on 14,000 mile round trip, 7 port calls, 90% loading out, 60% return.

To 2000 teu 20% saving

Cost/TEU $ vs Size of containership used (000 teu)

- 2-4,000 teu 7% savings
- 4-6000 teu 4% saving
- 6-18,000 teu 4% saving

Other 13%
Inland 25%
Terminal 21%
Containers 18%
Ship 23%

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The Cargo Growth Containerisable Cargo 1986-2014

Chart shows Containerisable commodities (not lifts) – fastest growing sea trade sector

% growth pa

Trend 6%pa?
Figure 3: Regional Change in the pattern of sea imports

Shows the of OECD & Non-OECD Imports as a % of world seaborne imports

1965: OECD 67% imports

Today Non-OECD is 67% imports – new

OECD imports

Non-OECD imports
Who Imports the Most Cargo By Sea?

- **Japan**: 7.50 tonnes
- **Europe**: 6.30 tonnes
- **N. America**: 3.80 tonnes
- **China**: 1.5 tonnes
- **S America**: 0.6 tonnes
- **Africa**: 0.20 tonnes

**1950-2013**
OECD’s 1.3 billion population dominate sea trade.

**2013-2050**
6 billion Non-OECD population moving towards OECD levels.

**Tonnes of sea imports per person a year**
Figure 5: Where is the Customer Focus Today?

- Container operators are NOT a separate business
- Cargo is differentiated by value (vertical axis) and volume (horizontal)
- Overlap areas A, B & C are the marketing battlefields
- Today’s product is cheap but...
  - Not very flexible
  - Not “through cost” responsive
  - Not very carbon sensitive
- Not much integration
The container revolution turned the chaos of “general cargo” into manageable units.

Today’s digital technology revolution can turn our disjointed and disorganized management information systems into an orderly structure.

System change improved productivity.
The Global satellite Internet

- OneWeb Ltd will build the world’s largest ever satellite network providing high speed internet and telephony to many new areas around the globe.
- SpaceX has $1 billion start up backing from Google and Fidelity to provide global internet access through a constellation of satellites.

7. A compelling call for change?

1. Carriers have been driven down a road of standardization, big ships & cost minimization
2. Ship technology is running out of steam
3. World is changing and needs more than a commodity transport service & quicker adaptation
4. The digital revolution is gathering force. For carriers it could open the door to marketing and service provision
5. “Bespoke” direct service, Lower costs, shorter delivery times, more flexibility and more choice.
6. 3 options a) big companies run diversified services b) entrepreneurs succeed in offering premium services c) Start “tramping containers”