

**The Institute of Marine Engineering,  
Science and Technology  
102nd Annual Dinner**

*Professor Martin Stopford,  
Grosvenor House Hotel, London,  
Friday 11th March, 2005*

*Marine Engineering - Facing the Challenge of "Extreme Competition"*

Mr. President, My Lords, Ladies and Gentlemen,

I am delighted you risked inviting an economist to address you this evening. In an effort to focus my remarks I asked the organizers if the audience could be broken down by age and sex, but they said you already were.

However, please don't be apprehensive about the economics. In my experience large quantities taken late at night has exactly the same effect as red wine – it makes you dizzy. And the similarity doesn't end there. When you wake up tomorrow morning I guarantee you won't be able to remember a word I said!

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Well, we may not like economics, but there's no escaping it. The marine world is changing and today it's not just technology that's in the driving seat. But I don't have to remind this distinguished audience of the importance of getting all the facts before we jump to conclusions about where it is heading. Let me give you an example of the dangers of incomplete information. I'm going to read you the transcript of a trial reported in the New York Times.

Lawyer: Before you signed the death certificate, had you taken the pulse?

Pathologist: No.

Lawyer: Did you listen to the heart?

Pathologist: No.

Lawyer: Did you check for breathing?

Pathologist: No.

Lawyer: So, when you signed the death certificate you weren't sure he was dead, were you?

Pathologist: Well, let me put it THIS way. The man's BRAIN was sitting in a jar on my desk. But I suppose it's POSSIBLE he's out there somewhere practicing law.

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Today the FACTS could hardly look better. Shipping is enjoying the boom of a century. To match it we have to go back to 1900 when a broker wrote "It is hard to find any year during the century which compares in respect of the vast trade done and the large profits safely housed". Doesn't that sound

familiar? Incidentally in “brokerese” that translates as “I bought a Porsche with my bonus, what did you get?”

Many records were broken. Last year the average merchant ship earned \$29,400/day, compared with \$12,000/day in the 1990s. Even more amazing, a Capesize bulker ORDERED in 2002 for \$36 million, and delivered in 2004, was RECENTLY sold for \$84 million.

Shipowners banked around US\$80 billion cash and promptly ordered \$69 billion worth of new ships, another record. By year end owners were scrambling for the few remaining berths and as the orderbook passed 200 m dwt, the price of a new VLCC reached \$120 million.

Coming at the end of a decade when shipbuilding output grew at 11% per annum, marine engineering has at last dispelled its “sunset industry” image.

The stock market, which ignored the marine industry in the 1990s, is taking notice. Hamworthy PLC was recently named IPO of the Year, demonstrating the new respect in which the industry is held (I would like to take this opportunity to congratulate Kelvyn Derrick and his team on this remarkable achievement).

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Well, the statistics paint a glowing picture, but like a bikini, what they reveal is important, but what they conceal is vital. Short shipping cycles are just the revolutions of the propeller driving the maritime industry through much longer cycles that have, in the past, turned the industry on its head<sup>1</sup>.

For example in the 1860s compound steam engines and screw propellers changed the business. Alfred Holt set up the Ocean Steam Ship Company in 1865 and took delivery of the *Agamennon*, the first modern liner, in 1866. This triggered a battle between sail and steam which lasted fifty years and transformed the marine engineering business. Containerisation is another example. The first containership was delivered in 1965 and a whole generation of shipping companies was swept away by the Tsunami, including Ocean Transport as it was now called. They sold their last cargo ship in 1990. So long cycles matter.

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Today a very different cycle is propelling the maritime industry forward. Shipbuilding is increasingly an Asian business and since 1990 Europe’s market share has fallen from 28% to 18%<sup>2</sup>. Despite the shipping boom, competition is getting tougher. S. Korea and Japan now have two thirds of world capacity and China, which already has 15%, aims to be the top

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<sup>1</sup> Over the 400 years since 1698 the average cycle lasted 6.5 years, though the length of individual cycles varied widely from 3 year peak to peak to 13 years

<sup>2</sup> In CGT output increased from 3.3 m CGT in 1990 to 4.5 m CGT in 2004. We no longer include the UK in our tables of shipbuilding output.

shipbuilder by 2015. To prove the point they took 6 m CGT of orders in 2004.

Everyone is a little frightened by the way China has grown in the last five years. The facts justify this concern. China produces 58% of the clothes, 75% of the toys, 29% of the phones and 50% of the cement manufactured in the world today.

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We can derive some comfort from the fact that this is just the latest in a series of economic "invasions" experienced, and survived, over the last 50 years. 30 years ago Western executives were just as mesmerized by Japan's success. In 1972 "almost half of all world seaborne raw materials went to Japan and between 1965 and 1972 Japanese imports produced 73 per cent of the growth"<sup>3</sup>. Now it is China's turn, but let's keep things in perspective. China's seaborne imports account for just 10% of sea trade, compared with Europe's share of around 25-30%.

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Another source of comfort is the "Maritime Cluster", reviewed in a recent report by the City of London<sup>4</sup>.

The "clusters" theory was developed by Professor Michael Porter in the 1980s<sup>5</sup>. After lengthy research he concluded that economies develop in stages. At Stage 1 newcomers are "kick started" by cheap labour, and at Stage 2 they invest in core industries, using borrowed technology and still cheap labour to make them competitive. This is the model followed by Japan in the 1960s and South Korea in the 1980s.

However by Stage 3, where European industry is today, costs have risen and Porter argues that success depends on the ability to innovate. This is where the "clusters" come in. At Stage 3 businesses draw on the strengths of their "cluster" to produce a stream of innovations that allow them to survive, despite their high cost base.

Porter identifies four ingredients of a successful cluster: –

- a. a pool of specialist expertise;
  - b. a large local market;
  - c. a highly developed network of supporting industries;
  - d. Intense local inter-firm rivalry<sup>6</sup>.
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In these terms European marine engineering cluster looks well placed. Europe has a pool of marine specialists and a network of maritime colleges and research centers. It also has a large local market, with European

<sup>3</sup> Stopford R.M. "Key Factors in Forecasting the Dry Cargo Trade" Strathclyde University, 9<sup>th</sup> November 1976

<sup>4</sup> "The Future of London's Maritime Services Cluster: A Call for Action" Fisher associates August 2004

<sup>5</sup> Michael E. Porter (1990) "The Competitive Advantage of Nations", The Free Press, New York

<sup>6</sup> Porter (1990) op cit Chapter 4

shipowners controlling 20-30% of the world fleet. The network of support industries is unrivalled – a colleague who races production cars in Hong Kong sends the engines to the UK to be tuned. And, of course, there is intense competition, even if you have put it aside for a few hours this evening.

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So we're OK – or are we?

Well unfortunately the world has changed in the 15 years since Professor Porter published his study. A recent report by McKinsey reaches a very different conclusion. It argues that world industry, including marine engineering, is entering a new phase of "Extreme Competition" against which local clusters will offer LITTLE PROTECTION<sup>7</sup>.

They argue that transport and information technology are changing the world in much the same way that steam technology did in the 1870s and Containerisation in the 1960s. There are many factors at work, but let me pick out three. Firstly 20 years ago it cost \$480,000 to lease a 1.5 mbps digital transmission line. Today the cost is closer to \$15,000, so global networks are cheap. Secondly transport has got even cheaper. You can ship a video recorder across the world for 80 cents<sup>8</sup>. Thirdly capital is cheap and abundant.

All the signs are there. After a bumpy birth in the 1990s, E-BUSINESS is surging ahead, allowing businesses as well as consumers to shop worldwide.

The principle is simple enough. These changes will create transparent global markets and will dilute the cluster effect, leading to what McKinsey describe as "supply-side turbulence".

You may not believe this "extreme competition" hypothesis but, like global warming, there is enough circumstantial evidence to leave us with an uncomfortable feeling that it could just be true.

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If the theory is right, the need to innovate will become more pressing than ever. Survival in the world of "extreme competition" calls for a strategy capable of producing a continuous stream of innovation against all comers and this is where we should be concentrating. I have two suggestions for the way to proceed.

The first concerns the management of innovation. In the 1960s the Japanese shipyards demonstrated the power of applying systems technology to the complex task of building a ship. Yards that did not follow were soon launched down the slipway to oblivion. Managing continuous

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<sup>7</sup> W.I. Huyett and S. Partick Viguerie "Extreme Competition" McKinsey Quarterly 2005 No 1 page 47

<sup>8</sup> The calculation is based on prices supplied by the FEFC for shipping a 40 foot container containing 4,400 units for a box rate of rate USD 1826/TEU in Q3 2004

innovation is every bit as complex as building a ship and Technology Resource Management (TRM) is, therefore crucial. This undervalued science is crucial and like logistics, we have much to learn from the military. For example the work on Technology Readiness Levels (TRLs), which aims at systematically improving technology management goes to the heart of the problem<sup>9</sup>.

The second issue is R&D resources. Today the divide between university research and company development work is as wide as ever. As the protective mantle of the "cluster" dissipates, companies will need all the resources they can muster. Surely that should include more integration of academic expertise into commercial development programmes.

Well, that's one vision of the future. It sounds tough, but "a smooth sea never made a skilled mariner" and it may not happen. But if it does, let me finish with a little story that explains why you are sure to win in the end.

"An architect, an artist and an engineer were discussing whether it is better to have a wife or a mistress. The architect said he preferred a wife, to build an enduring relationship. The artist said he preferred a mistress, for passion and romance. The engineer said, "I would like both." "Why, they asked." "Well, said the engineer. If you have a wife and a mistress, they will each assume you are spending time with the other woman, and you can go down to the plant and get some work done."

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So tonight let's celebrate the Super-Cycle and the fact that you have such dedication to inspire young people entering the business.

Mr. President, My Lords, Ladies and Gentlemen it gives me great pleasure to propose a toast to this outstanding Institution. Will you please be upstanding and raise your glasses to The Institute of Marine Engineering, Science and Technology.

Martin Stopford  
Thursday, March 10, 2005

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<sup>9</sup> AMS Guidance on Technology Levels (TRLs) 4 February 2002