

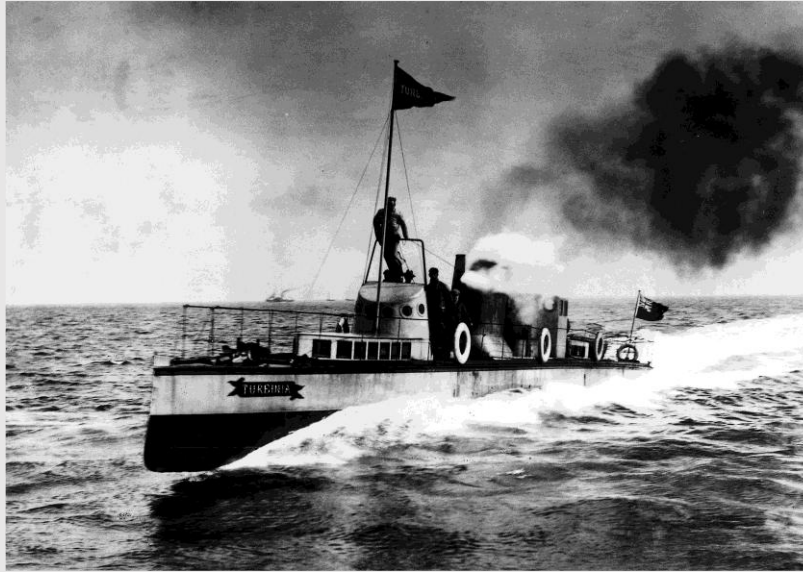
Whatever happened to our shipbuilding industry?

Dr Paul Stott, Strategic Maritime, UK



Who says it has disappeared?





I am talking about
the “*great and
mighty industry*”
that created
significant wealth
in our region and
elsewhere, and
which is viewed in
retrospect with
great nostalgia.



On Tyneside, battleships made up a big part of our shipbuilding DNA.

“In the battleship building era [1860 to WWI], defence expenditure made up about half of the British Government’s budget.....battleship building was the largest element of British Government expenditure [from 1895] up to the start of the First World War and commanded great political and public interest, in much the same way that the health service expenditure does today” Johnston and Buxton, “The Battleship Builders”

**Armstrong built
over 40% of Great
Britain’s
battleships in this
era – and armed
the rest of the
planet**



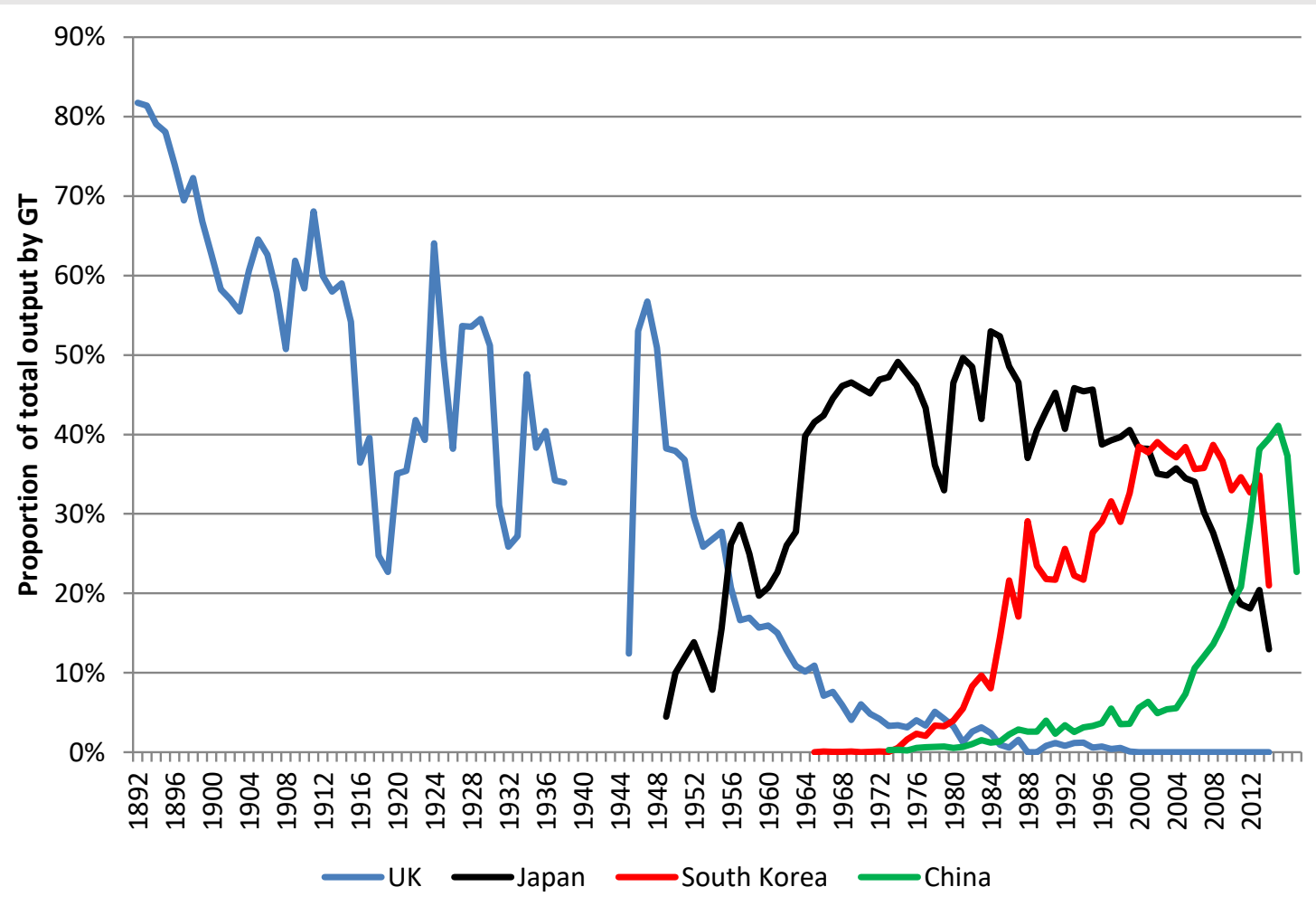
Swan Hunter – Now a park and Roman Museum

So, what happened?



Sunerland North Sands – Now the National Glass Centre

The long decline from greatness.



- Was it something we did or didn't do?
- Would different decisions have saved our world dominance?
- Should we collectively feel guilty in some way?



The grammar school system



Poor industrial relations



Lack of Government support

Source: Scotland now

NATIONALISATION??

Commonly held views on the causes of the decline



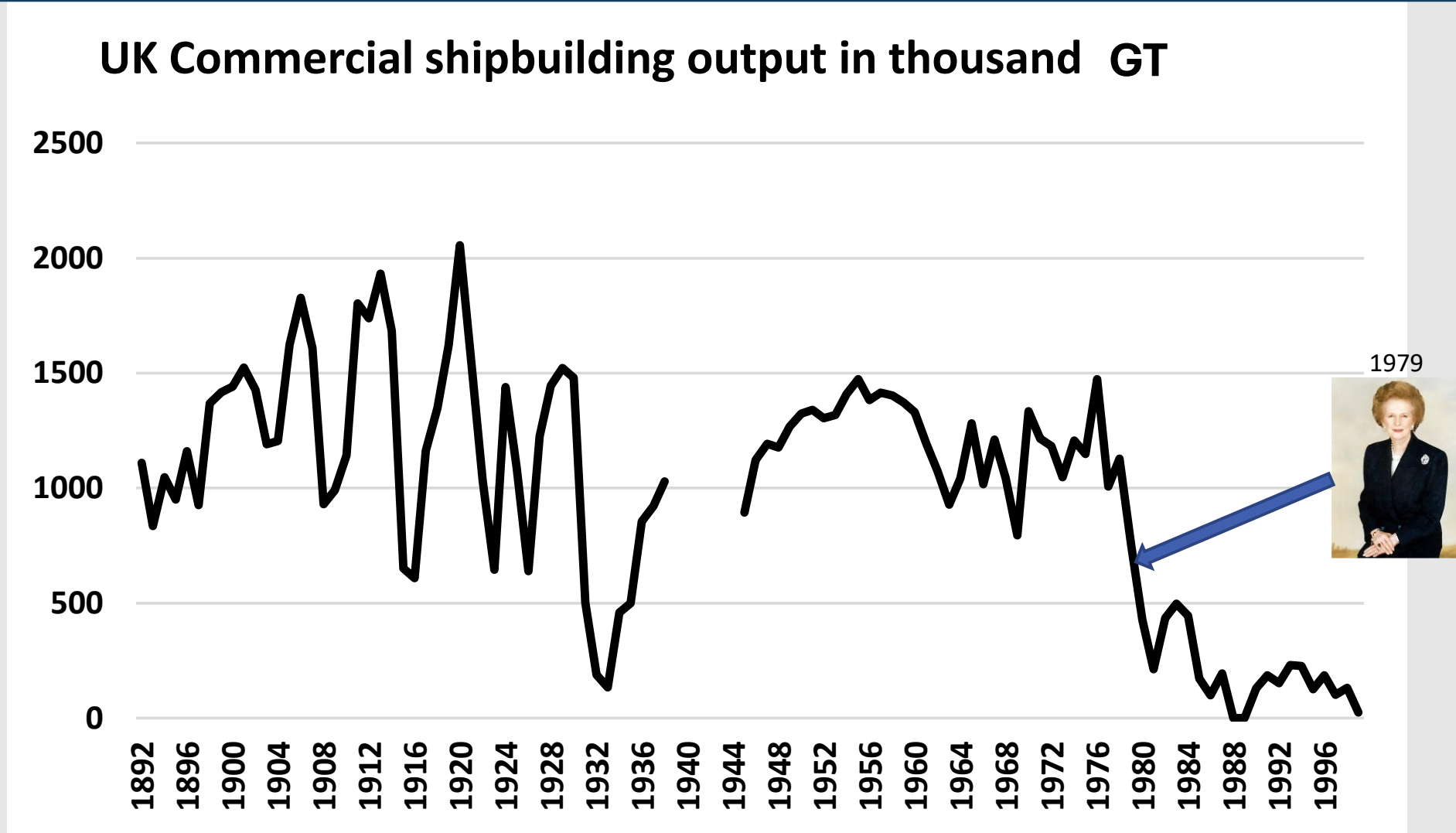
Poor management

Tyne & Wear Archives & Museums



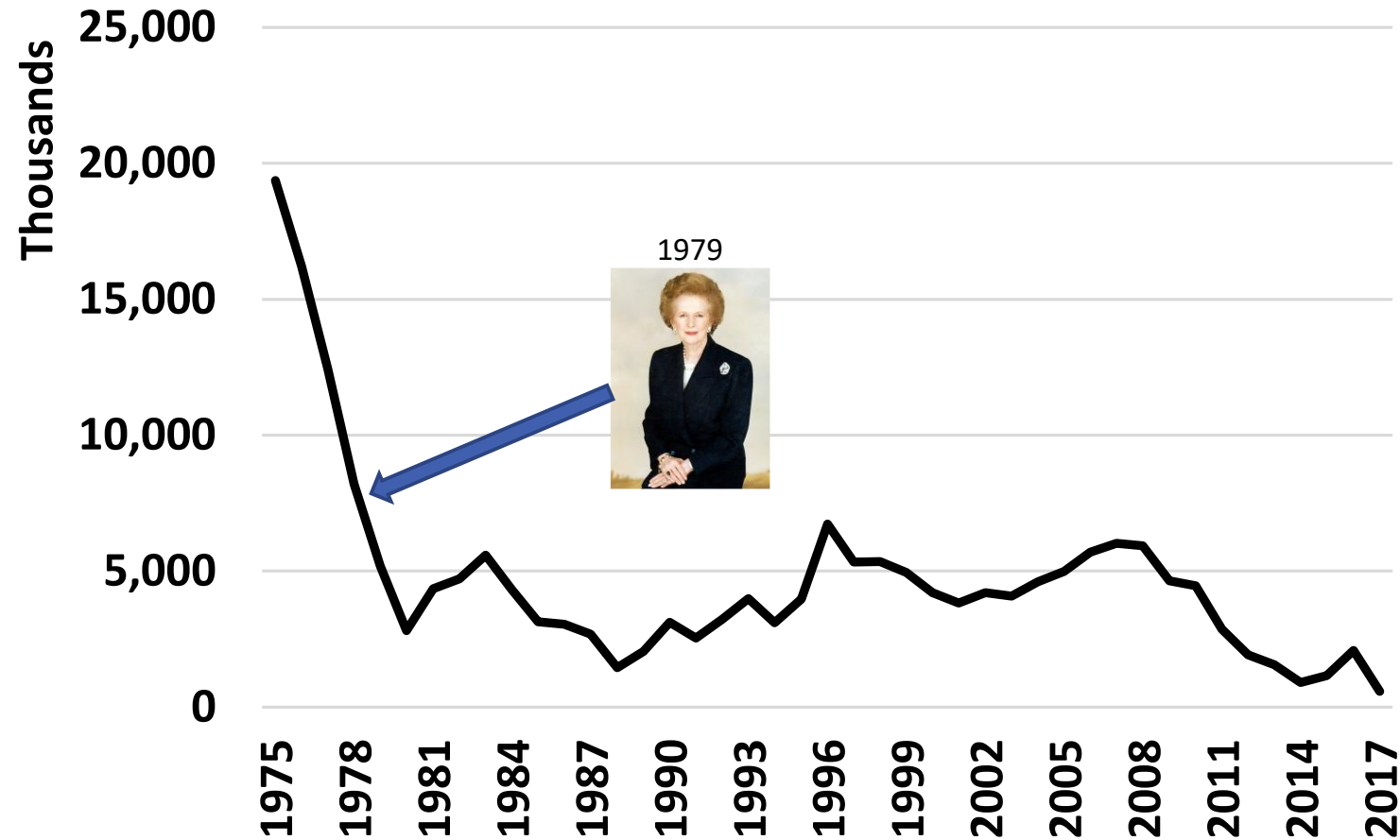
**The attribution of
the death of the
industry to
Margaret Thatcher
doesn't stand up
to scrutiny.**

**Commonly held views on the causes of the
decline**



**The final decline was already well underway
when Thatcher came to power**

Total European Commercial shipbuilding output in thousand tons (GT)



The final decline was felt throughout Europe



The grammar school system



Lack of Government support

Source: Scotland now



Poor industrial relations

**These were
predominantly
symptoms of
overwhelming
changes**



Poor management

Tyne & Wear Archives & Museums



What were the root causes?

We can learn much by considering two key questions:

- 1. How did UK commercial shipbuilding have 82% of the market in the first place?**
- 2. Why is shipbuilding (and coal mining and steel working) viewed retrospectively in such a positive light?**

What were the root causes?

We can learn much by considering two key questions:

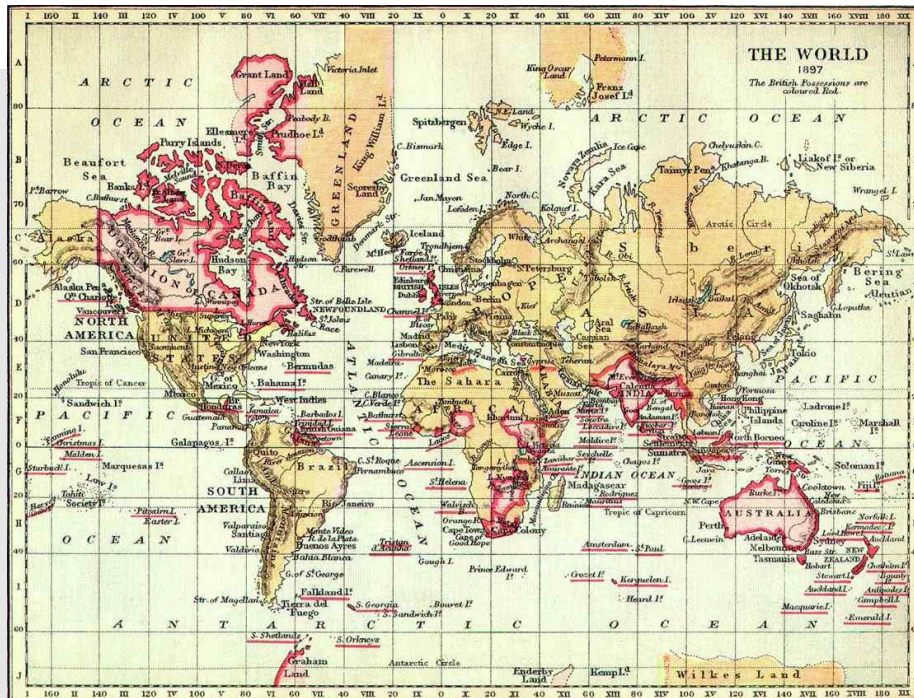
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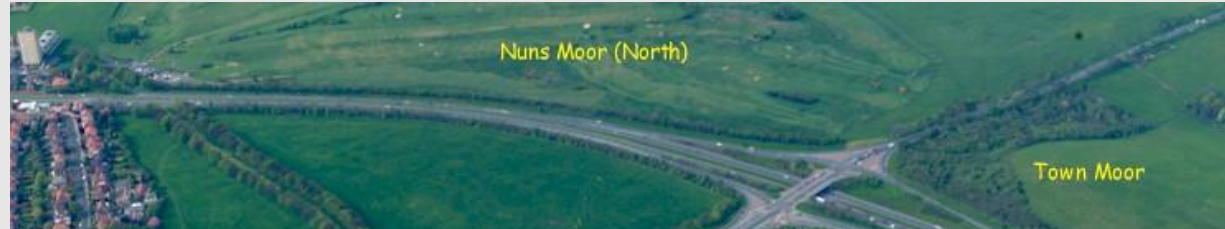
How did we achieve 82%?

UK owned **60%** of the ships.

A significant **home market** for merchant ships and naval ships to serve the mighty British Empire



We needed a lot of ships but in the 19th Century there was a Shortage of wood, which threatened the economy of the empire itself.



It took roughly **6,000 mature oaks (sitting on roughly 30-50 acres of land)** to build one Royal Navy sailing vessel



*“In the 1860s it was calculated that **400,000 acres of timber** were needed to build the **annual British output** [of merchant and naval ships to serve the Empire]”*

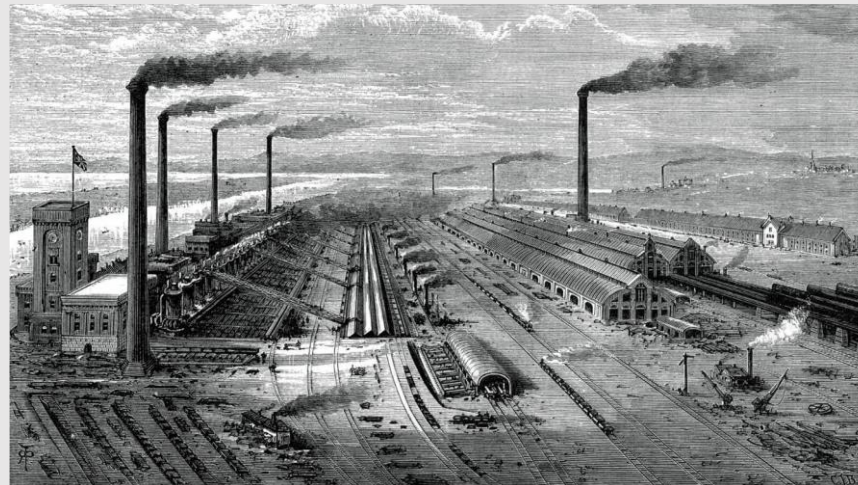


The shipwright's view of an oak tree

You didn't get many bits of ship out of a single tree

How did we achieve 82%?

The industrial revolution came to the rescue, with UK developing a technical supremacy in **iron / steel shipbuilding and steam propulsion**



How did we achieve 82%?

- Our dominance came as a matter of **economic necessity**, coupled to a significant **technological lead**
- The Government also recognised that shipyards were 'critical infrastructure' to keep the Empire and the economy going, and provided **support for shipbuilding**

We would eventually lose all these factors.

We can learn much by considering two key questions:

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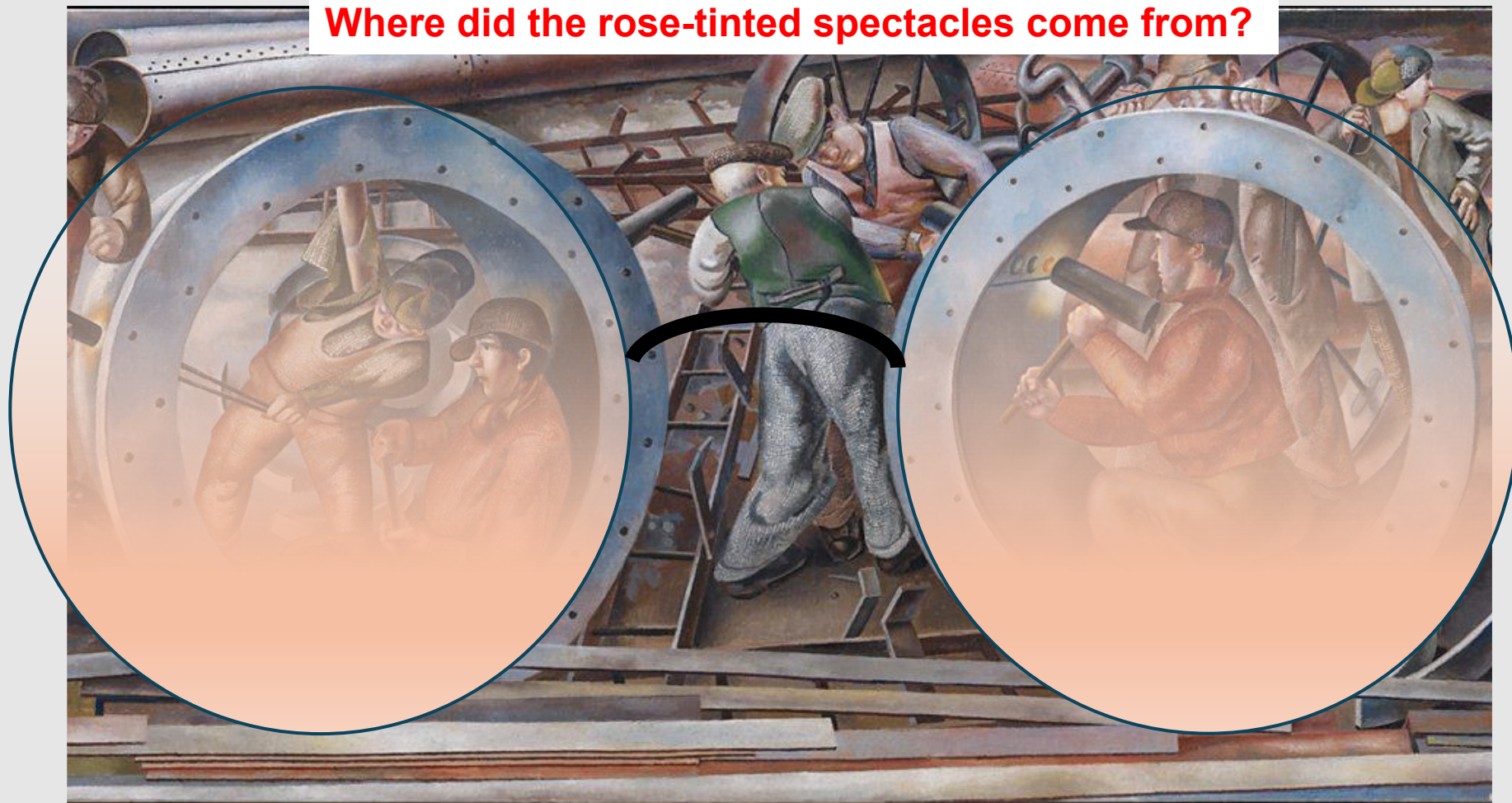
What were the root causes?

Why the nostalgia for shipbuilding?



Why the nostalgia for shipbuilding?

Where did the rose-tinted spectacles come from?



Shipbuilding up to WWII was hard

- 1. It was dangerous**
- 2. There was no job security**

How dangerous was it?

During construction of RMS Titanic:

- **8 fatalities**
- **28 severe injuries**
- **218 'slight' accidents**

(source: Management records from Harland and Wolff shipyard, Belfast).

How dangerous was it?

For Olympic and Titanic together there were:

- **17 fatalities**
- **450 accidents**

(source: Management records from Harland and Wolff shipyard, Belfast).

How dangerous was it?

- Probably not as dangerous as mining but..
- It was not unheard of to kill around 8 persons per ship and to maim around 30 others!
- And then there were the chronic and debilitating industrial illnesses...

Mesothelioma

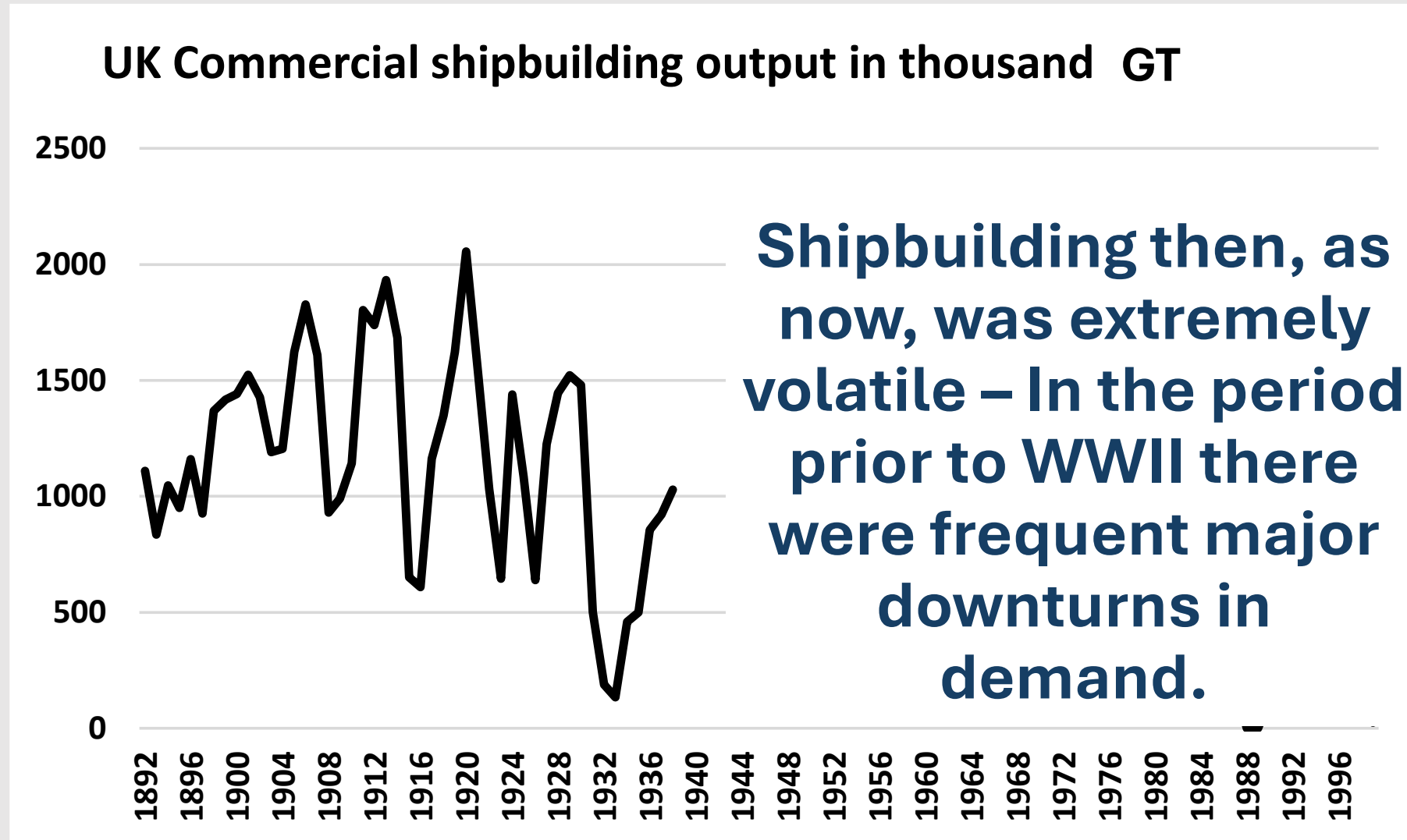
Deafness

RSI....

How secure was employment?

- Without social security prior to the introduction of the welfare state, accidents could be personally catastrophic
- On top of this, there was no security of employment

How secure was employment?



Shipbuilding capacity:



The fixed capital was absolutely dependent on the skilled labour.

The skilled labour was irrelevant without the fixed capital.

Human capital:

The skilled workforce had to invest in themselves through apprenticeship and developing their skills.....

Put another way, the workforce carried the business risk, alongside the capital providers.

For which they were rewarded by being given the mother and father of all **zero hours contracts!**

How secure was employment?



g output in thousand GT

**Over 80% of
Tyneside's shipyard
workers unemployed
in 1936**



It was dangerous and insecure work



It should be no surprise, given the precarious nature of the employment, that a mighty labour organisation developed – **The Boilermakers Society**



Demarcated trades included:

- Riveters
- Caulker Burners
- Platers
- Shipwrights
- Drillers
- Blacksmiths
- Sheet metal workers
- Riggers
- Joiners
- Electricians
- Mechanic / fitters
- Plumbers
- Drivers
-etc

This structure is going to lead to **friction** when the shipbuilding world changes radically following WWII

So, why the nostalgia for shipbuilding given that it was dangerous and insecure work?

1. It gave the regions global economic presence – we were globally important.
2. It generated very strong social structures.

So, why the nostalgia for shipbuilding given that it was dangerous and



1929 NE Coast Exhibition

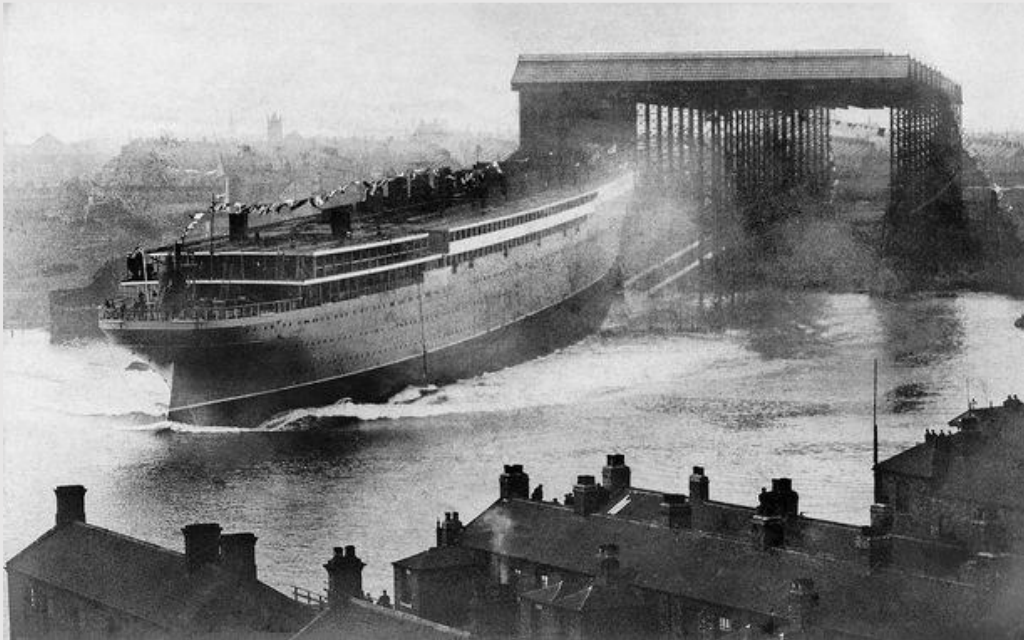
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So, why the nostalgia for shipbuilding given that it was dangerous and insecure work?



So, How did we get from:



Launch of Mauretania

to



Segudunum museum

An early scare came in 1925:



Built in 1923 for Furness Withy at Furness Shipyard (Teeside), originally named *London Merchant*.

An early scare came in 1925:



Grounded on Eriskay on Feb 5th 1941, from Liverpool en route to New Orleans and Jamaica, carrying (inter-alia) 260,000 bottles of scotch whisky and £145,000 in 10 shilling notes.

An early scare came in 1925:



SS Pacific Grove

**Just 2 years later, the
unthinkable happened**

**Ordered in 1925 for Furness Withy at
Deutsche Werft AG, Kiel, **Germany!****

An early scare came in 1925:

An inquiry was undertaken to find out what had happened:

TOR – to arrive at “definite conclusions as to the best means which could be taken to re-establish the industry and enable it to retain its pre-eminent position in world shipbuilding”

Joint committee report, 1926, Shipbuilders Employers’ Federation and Shipyard Trade Unions

Root cause #1:

Others caught up with our **technical lead** and developed their own **strong home markets** (much of which was related to empire building in early 20th C.)

Continental shipbuilders overtook us through investment in shipyards and ship design.

Root cause #2:

The Battle of the Atlantic and **disruptive technology** developed in the United States in WWII



30,248 Merchant seafarers
lost their lives in WWII

2,200 merchant ship sunk

13 million tons needed to be
replaced

The 'Liberty Ships'

United States emergency shipyards built 2,468 standard 'liberty ships' and 533 standard 'T2' tankers between 1941 and 1945 to replace allied tonnage lost to enemy action.



The 'Liberty Ships'

To achieve the rate of production needed, the US shipyards had to adopt mass production techniques, including **WELDING**.

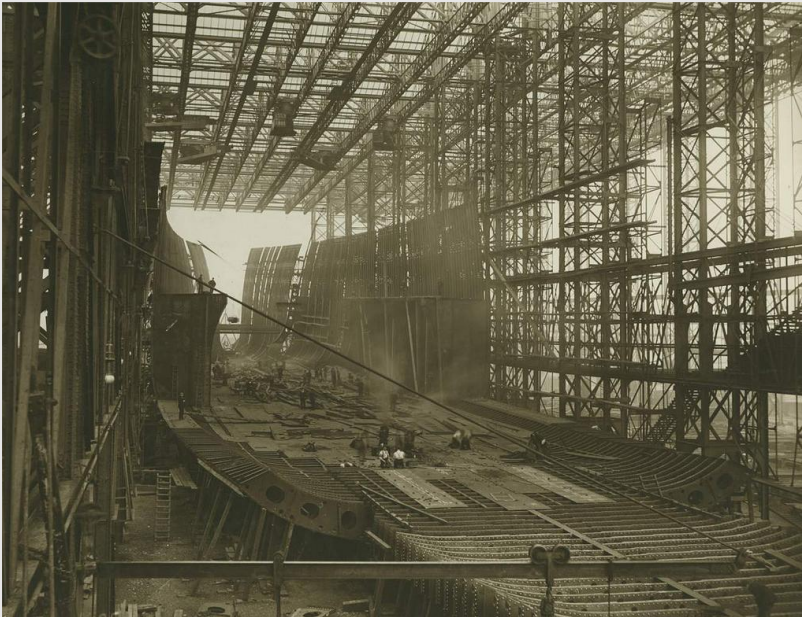


Welding is faster and easier than riveting.

Welding also allows pre-fabrication of blocks to be undertaken – a radical shift in shipbuilding strategy.

The 'Liberty Ships'

The disruptive technology (**welding**) enabled the industry to progress from:

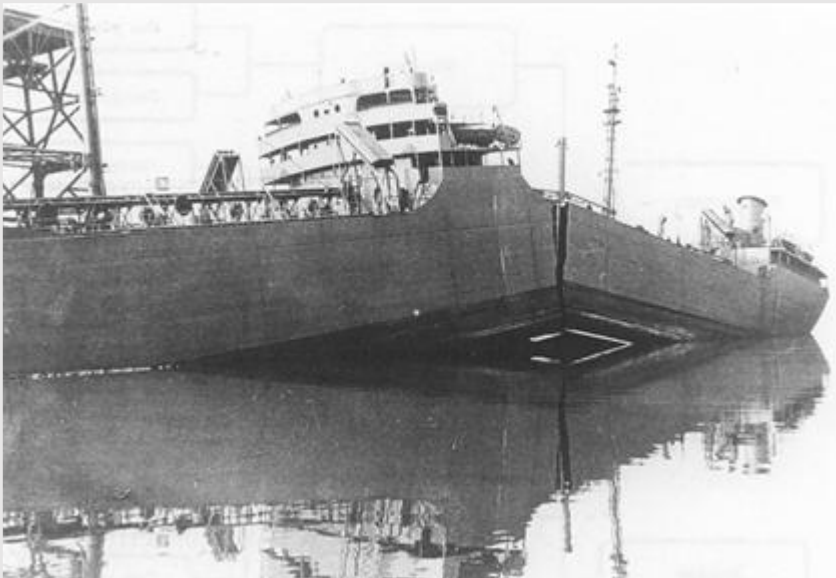


To.....



The UK industry was reluctant to adopt welding

Before this time, **welding had been strongly resisted** by the British Industry and its customers. By 1943, the Admiralty was forced to adopt welding in ship construction



SS Shenectady, Kaiser Shipyard, Portland Or, 16th January 1943

Low temperature brittle cracking

Solved by Prof. Constance Tipper at Cambridge University

The UK industry was reluctant to adopt welding

Before this time, **welding had been strongly resisted** by the British Industry and its customers. By 1943, the Admiralty was forced to adopt welding in ship construction

*“That policy has to a very large extent been dictated by the same considerations which operated in America—namely, the insufficiency of proficient labor, and the necessity for the rapid training of **dilutees**, including women” (Lords Commissioners of the Admiralty 1943,).*

The UK industry was reluctant to adopt welding

The rather pejorative term **dilutees** in this context was not coined by the admiralty.

Referring to the army of female labour recruited into the armaments factories in WWI (21,000 were taken on by Armstrongs alone in Newcastle), there was friction with women seen as taking on male roles:

“These ‘**Munitionettes**’ were resented by some men, and the trade unions dubbed them ‘**dilutees**’ and ensured they weren’t paid men’s wages”.

Rosie the riveter and Wendy the welder



Far from being the problem envisaged by the Admiralty, the use of '**dilutees**' led to a step change that revolutionised what the industry could achieve.

The roots of industrial unrest



But what were we going to do with the riveters, the holder-uppers, the heaters, the throwers and the catchers?

The roots of industrial unrest



Friction



The new build strategy also paved the way for investment in de-skilling and automation to improve efficiency.

The roots of industrial unrest



The **British** industry spent the next forty years trying to ‘shoe-horn’ the old demarcations and labour paradigms into the new world order.

Newly establishing industries (for example in **Japan**) had no old world order and greater efficiency was inevitable.

Root Causes:

1. Others caught up.
2. Production methods changed radically in WWII and our labour paradigms were incompatible with the new world order.

Root Causes #3



Japan's post-war economic miracle.

Shipbuilding was chosen as one of the industries to resurrect Japan's decimated economy following WWII.

Shipbuilding was developed using **US capital, technology and expertise** and the size and shape of shipyards radically changed in a very short space of time.

Our existing investment was the wrong shape

The new technology required a radically new shape of investment



Mitsubishi Kawasaki – market leader in 1976

There was not the **appetite for investment** in new shipyards in UK (with some exceptions).

For the most part the industry tried to shoe-horn the new technology into the old investment paradigm.

But, critically.....

Even where the investment was made elsewhere in Europe, it was very difficult to compete with the newcomers.

Kockums Malmo – the “greatest shipyard ever built”



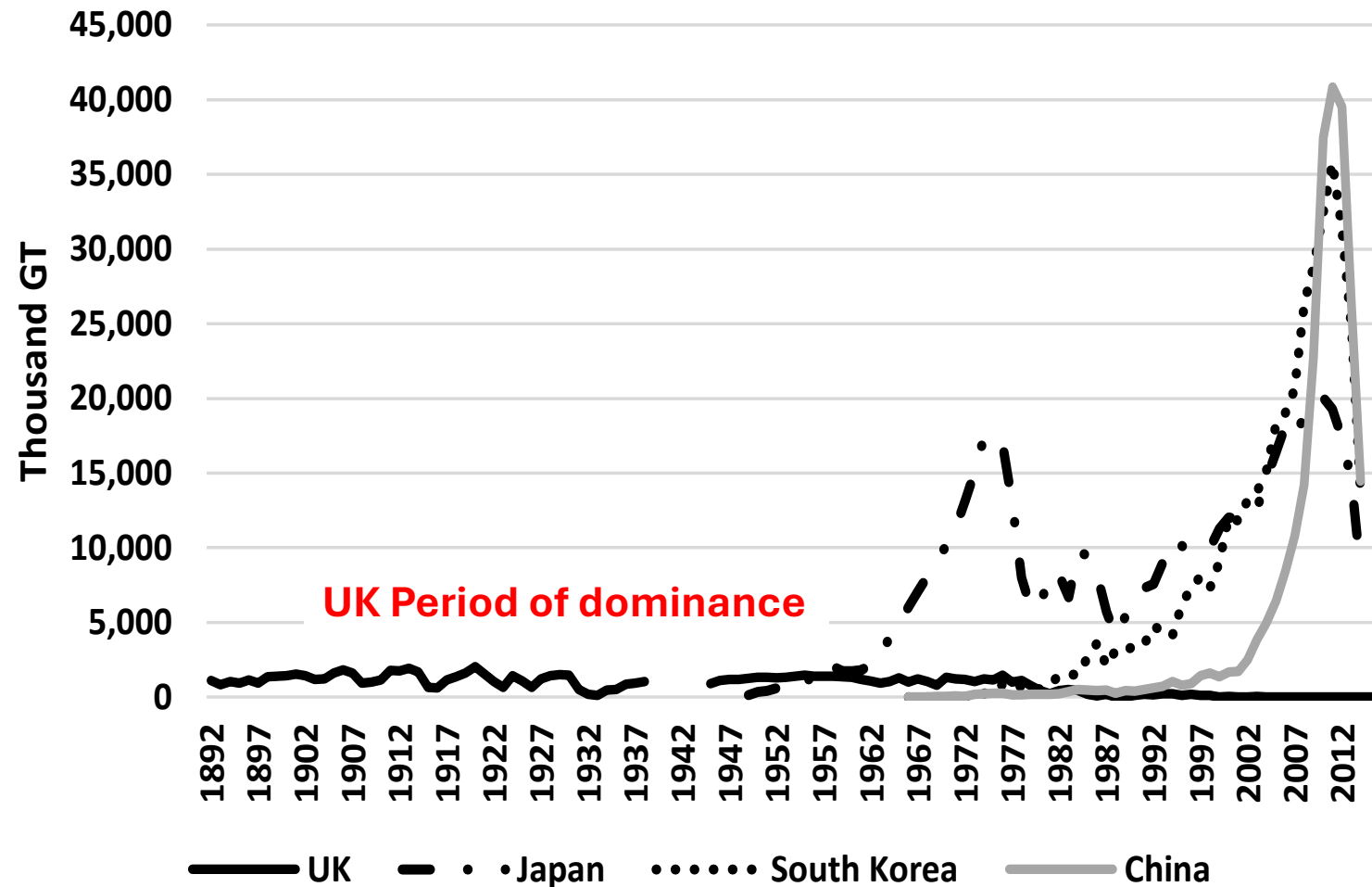
Constructed
1974 – closed
for commercial
shipbuilding
within 10 years.

Our existing investment was the wrong shape

New yards in the Far East (Japan and then South Korea) invested in **technology and scale in pursuit of efficiency.**

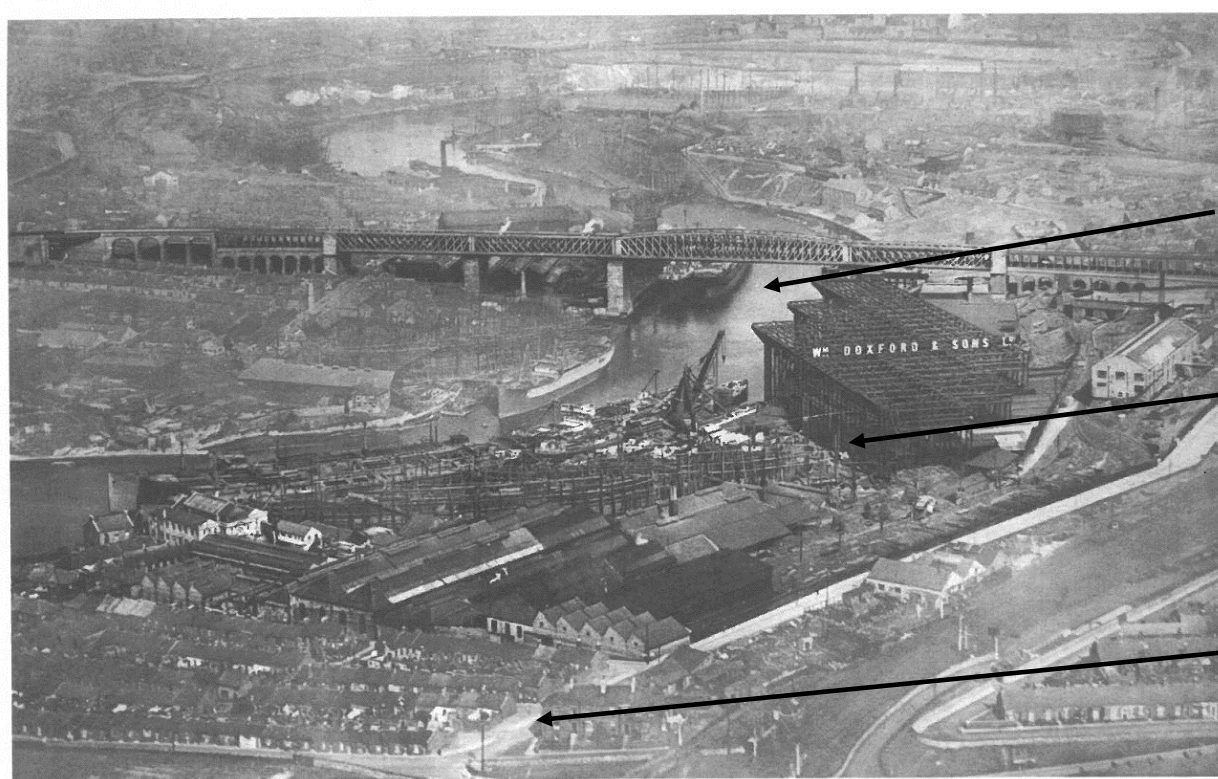
Our river-side shipyard **sites were too small**, even if the appetite for investment had been there.

The shift in scale post-WWII



UK was global dominator of an industry that ceased to exist after WWII.

In most cases our yards were too constrained to expand



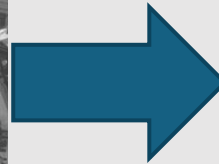
Narrow river to launch into

Wide narrow site suited the old shipbuilding strategy but not the new

Site constrained by workers housing development

Plate 1: The River Wear. The cramped, narrow and tortuous nature of the river is obvious. In some senses it was amazing that the Wear became a major world shipbuilding centre.

Pallion is a good example of where we did try to invest in the new paradigm



Harland and Wolff is another example



But, this is what they were up against:

HHI's largest building dock is #3 – 672m * 92m.



But, this is what they were up against:



We could fit almost 6 Pallion docks into 1 HHI dock!

But, this is what they were up against:

Pallion

HHI # 3

Harland & Wolff Belfast

HHI # 3

Harland and Wolff by contrast was a similar size...

But HHI has **9** of them!

But, this is what they were up against:

HHI's largest building dock is #3 – 672m * 92m.



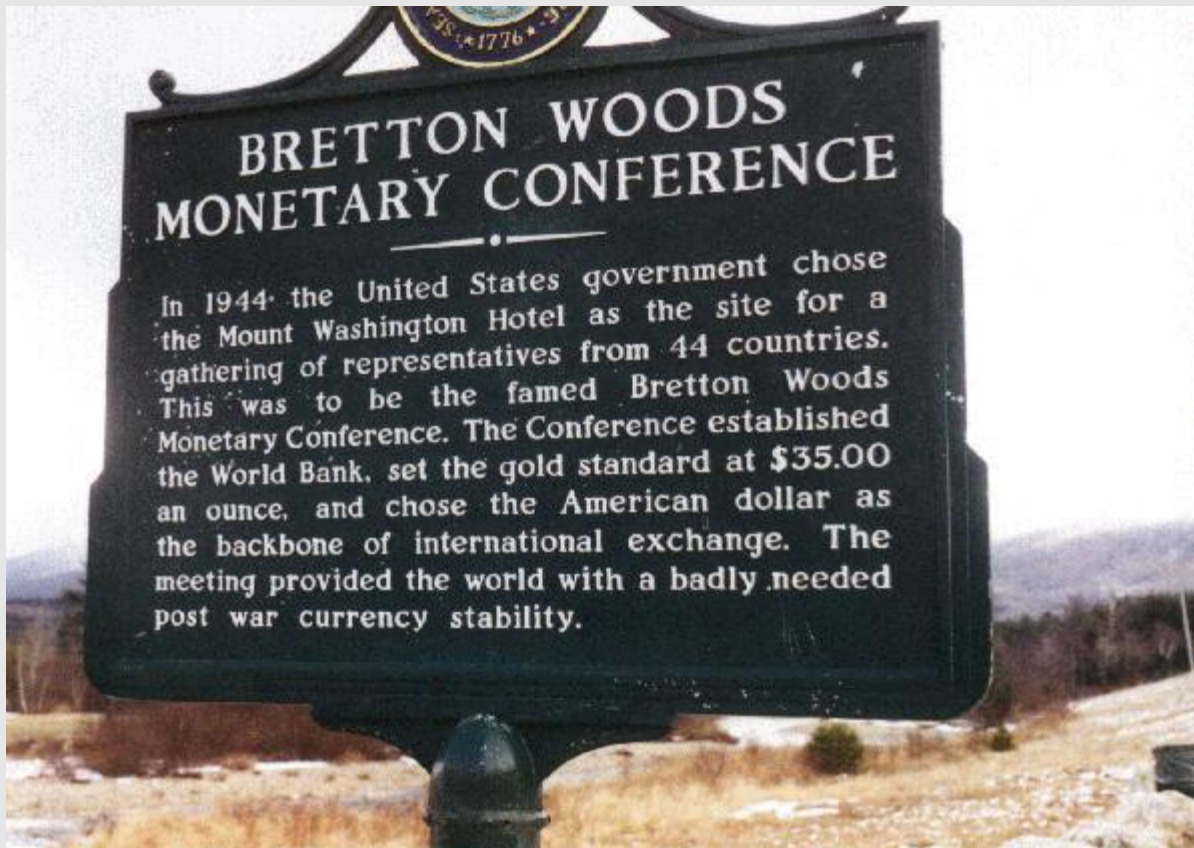
The level of investment needed to keep up was far beyond the risk horizon of British investors.

Root Causes:

- 1. Others caught up.**
- 2. Production methods changed radically in WWII and our labour paradigms were incompatible with the new world order.**
- 3. Our capital investment was insufficient to compete in the new world order.**

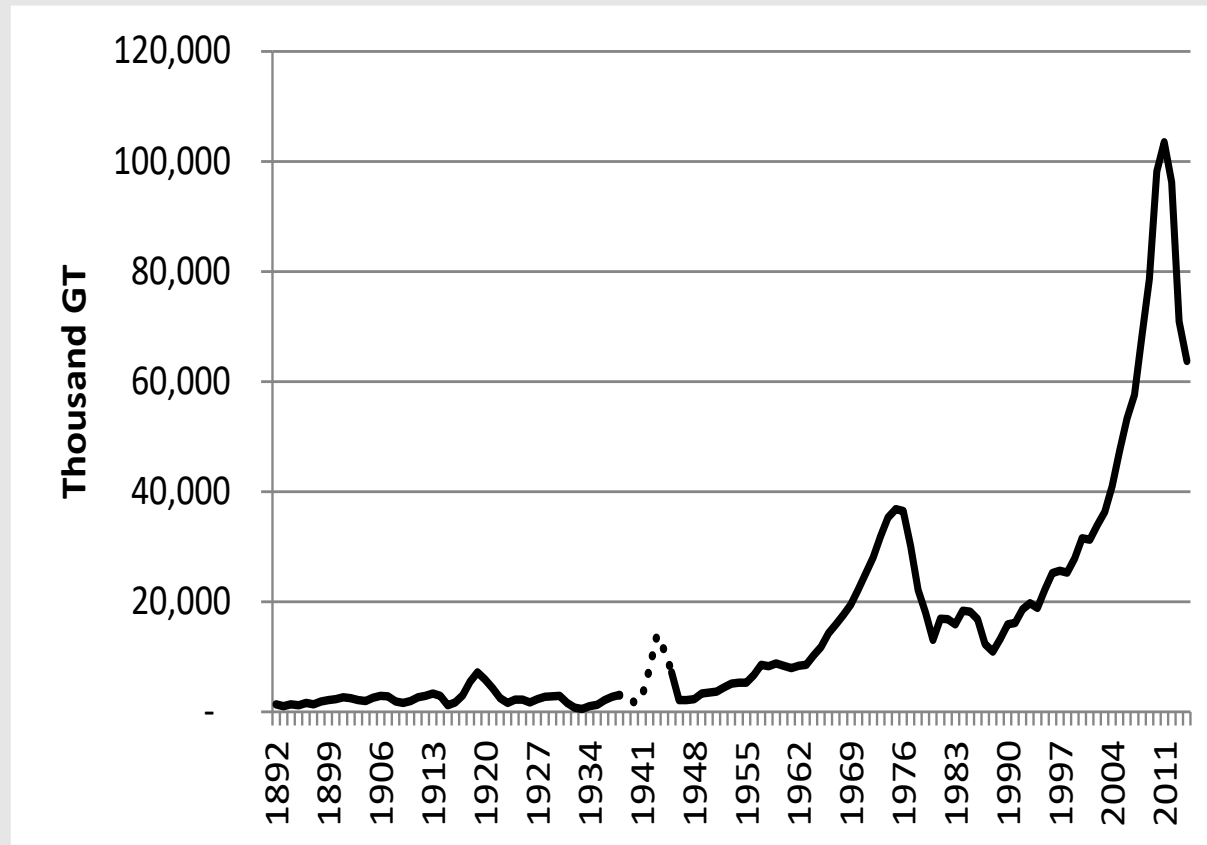
Root cause #4:

End of Empire and the start of globalisation.

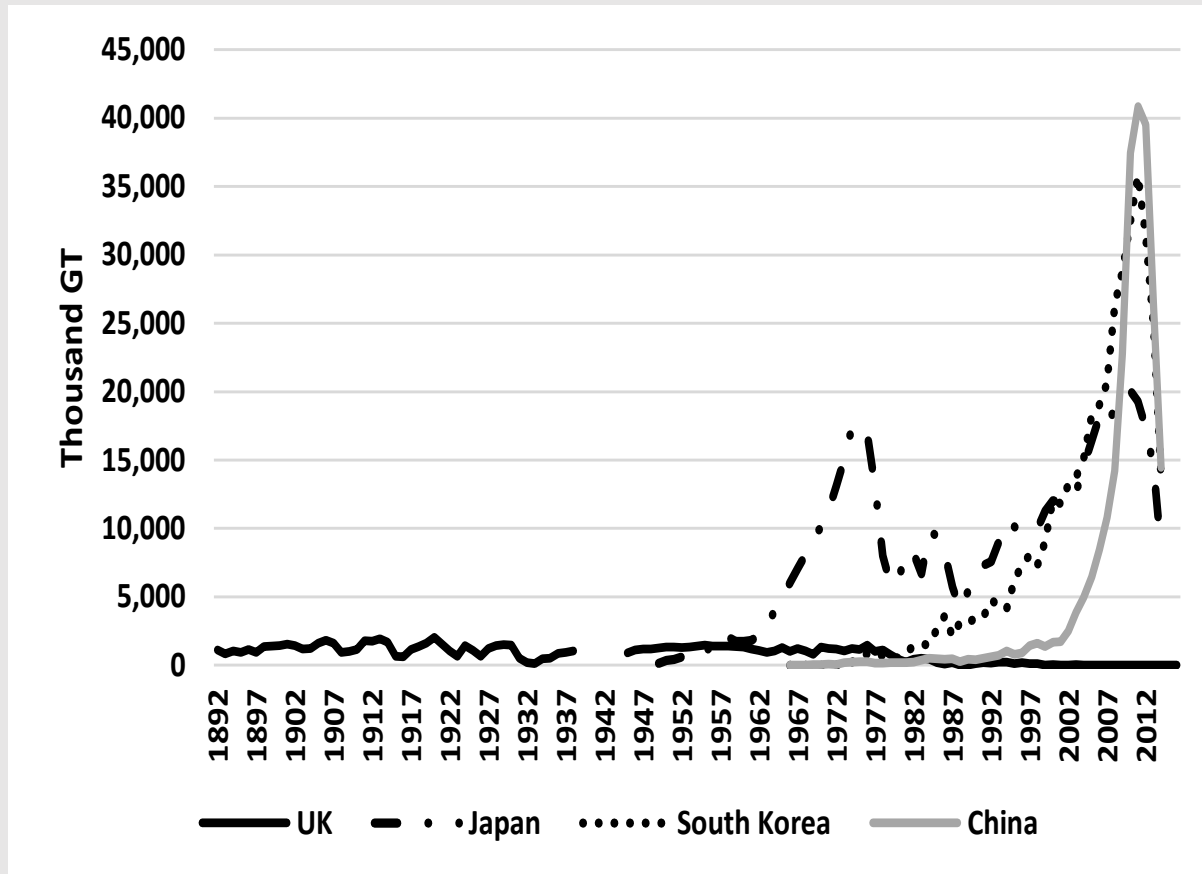


- 1. Ships became bigger**
- 2. Our key home market disappeared**

Globalisation has caused the market to grow exponentially



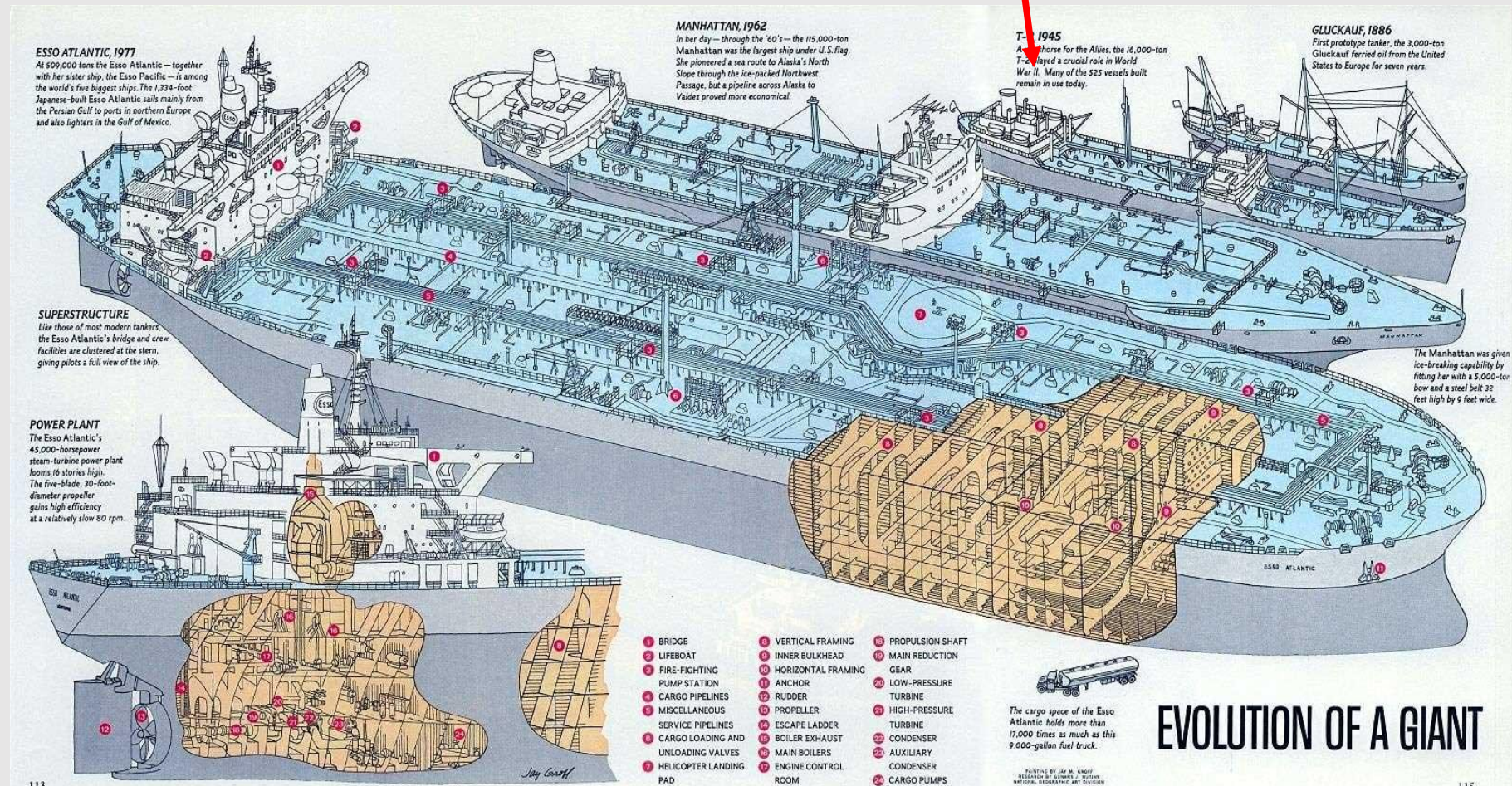
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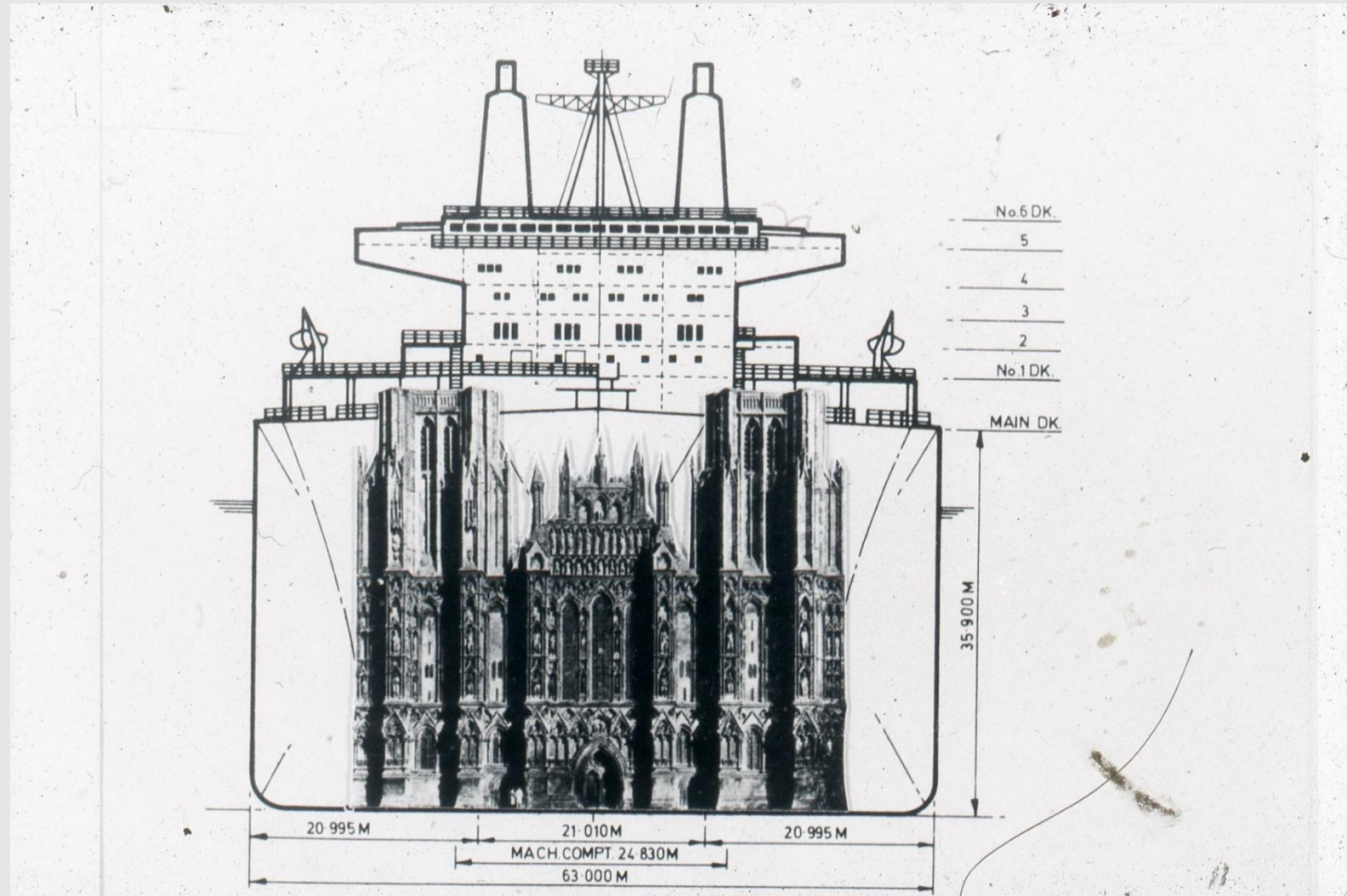
The post-WWII market **dwarfed** what UK had achieved before the war – **by an order of magnitude**

As well as trade, ships became much bigger

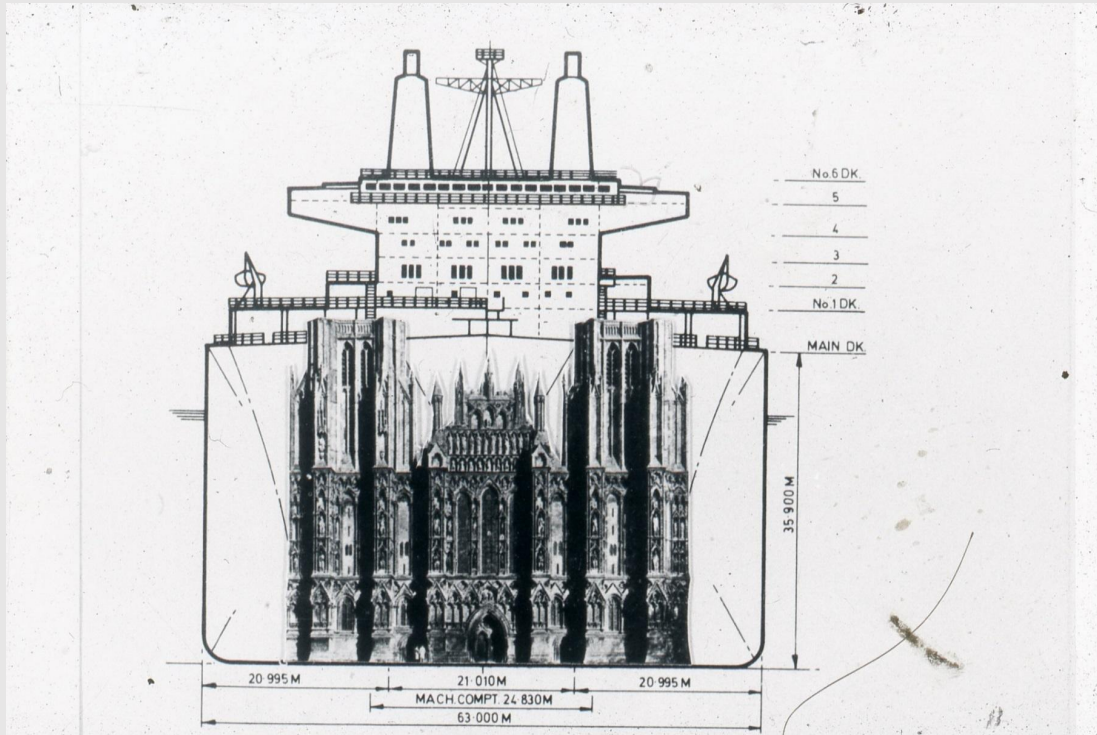
Typical British ship of post - WWII era



As well as trade, ships became much bigger



As well as trade, ships became much bigger



Our river-side investment tended to be wide, narrow and constrained. Both the sites and the rivers were too small for modern large ships.

But it's not that we didn't try to keep up....

As well as trade, ships became much bigger

Largest ships ever launched from a slipway



Our shipyards achieved some **heroic** technical feats in trying to keep up with this change..

As well as trade, ships became much bigger

Trouble was, the technical challenge was a red herring – the economic challenge was what mattered.

It took Swan Hunter up to two years to construct 1 ship –

The market leader, Mitsubishi Kawasaki, was building 12 per year in a purpose-built factory.

No heroism needed!

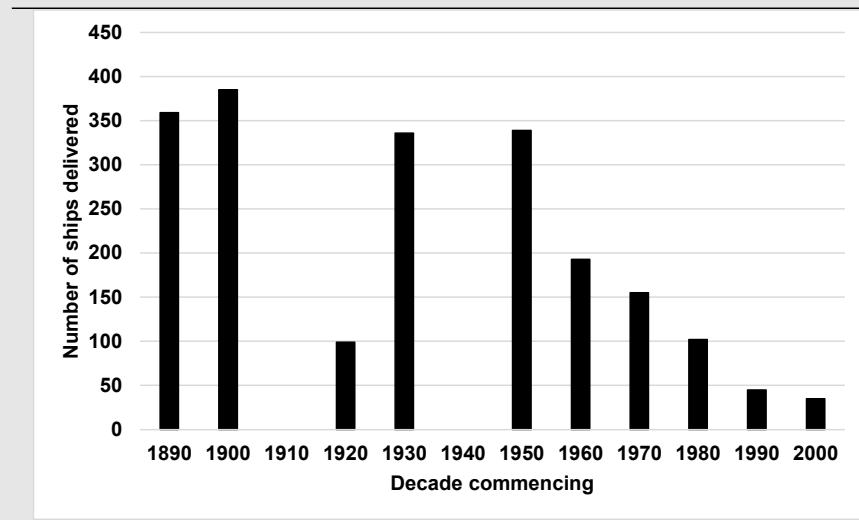
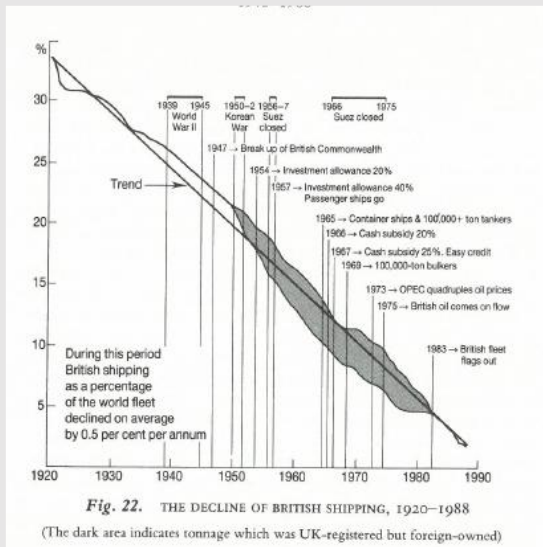
As well as trade, ships became much bigger



This ship is also small by modern standards – around 2/3 the size of a modern large tanker.

Loss of the home market

The end of Empire meant we also lost the home commercial market, and modernisation of the Navy meant that the military market also declined.



Root Causes:

- 1. Others caught up.**
- 2. Production methods changed radically in WWII and our labour paradigms were incompatible with the new world order.**
- 3. Our capital investment was insufficient to compete in the new world order.**
- 4. Globalisation and the introduction of much larger ships – our core market disappeared and our shipyards were too small.**

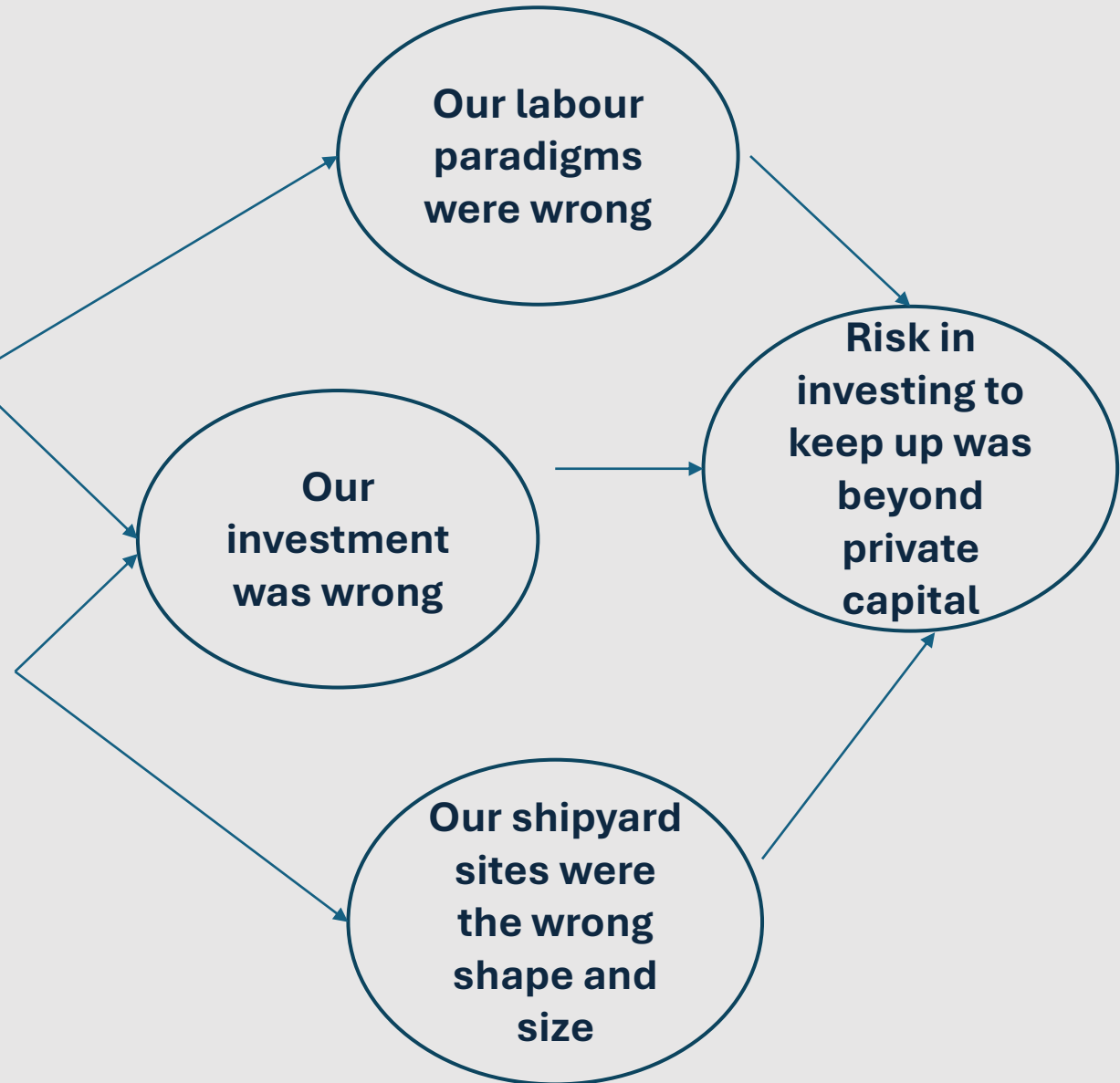
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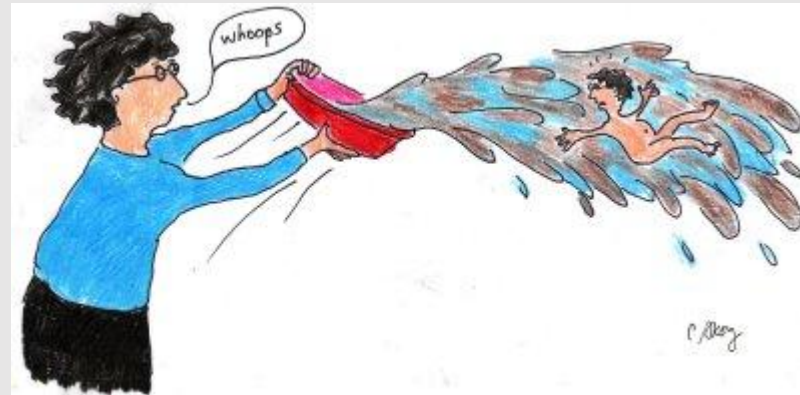
Everything changed

1. Our technological lead was eroded by 1925
2. The technology and processes changed radically following WWII
3. The Product changed radically following WWII
4. Our core markets disappeared



Was there anything we could have done? The broad answer is no but...

But we threw the baby out with the bathwater in closing everything.



Others in Europe have maintained a market presence and take economic benefit – albeit predominantly from relatively small ships

Is there any hope?

In the 1980s we made the mistake of misunderstanding what new opportunities might be.

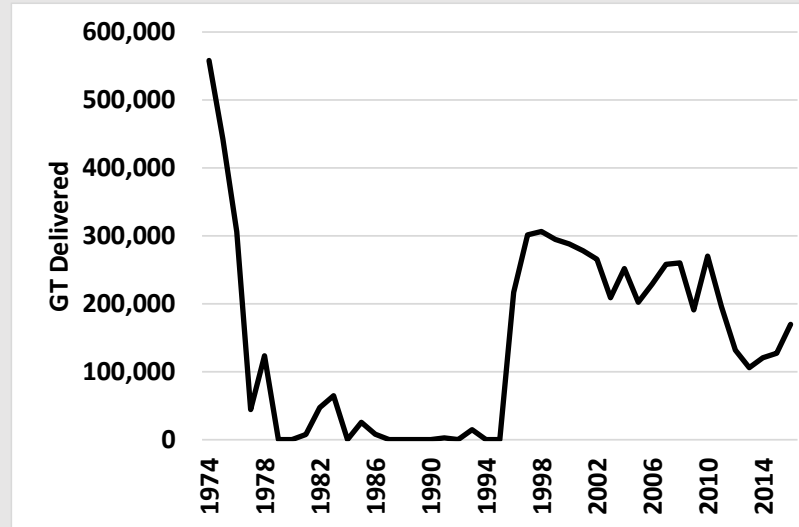
UK persisted in trying to achieve global importance by targeting the main volume sectors – deep sea cargo ships. The actual opportunity lay in small and specialised.

Having once been a global dominator was (is?) **a millstone around our necks** – “*Shipbuilding’s coming home!*”

We were **unable to see the wood for the trees**. Progress can only be made if the opportunity is correctly characterised and defined.

We are no longer a global market leader – but that doesn’t mean we are no longer a shipbuilding nation.

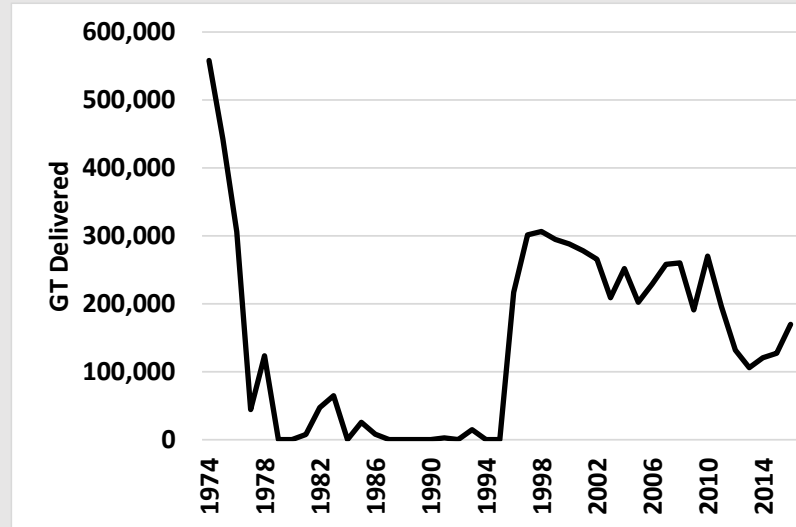
Is there any hope?



Holland managed to get up off the floor in the 1990s. It is a small industry and output is well below what it was prior to 1975 – but that is what has (so far?) been sustainable for the Dutch.

In other words, there is precedent if we can get the government support right, attract capital, invest appropriately and get the strategy right.

Is there any hope?



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