

MAKE IN JAPAN TO MADE IN JAPAN: INDIGENISATION LESSONS FROM THE IMPERIAL JAPANESE NAVY 1880- 1941

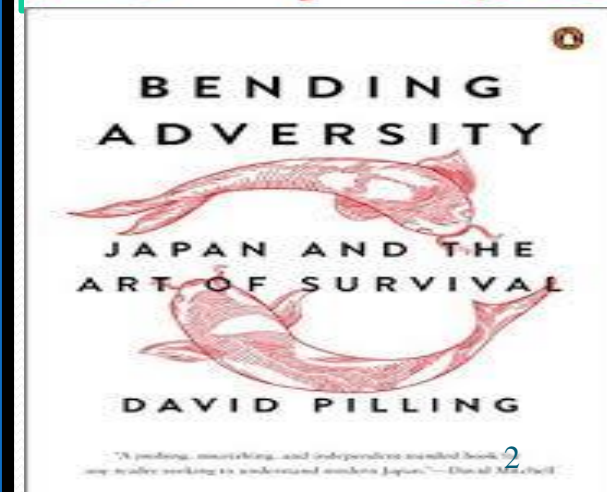
(Rear Admiral Sudarshan Shrikhande, IN)

- Meiji Restoration 1868
- 1870s “Make in Japan” for IJN starts
- Victory in Sino- Japan war 1894-95
- Imperial consolidation/ expansion
- Russo- Japanese war 1904- 05
- Tsushima Strait victory, May 1905



MAKE IN JAPAN TO MADE IN JAPAN: INDIGENISATION LESSONS FROM THE IMPERIAL JAPANESE NAVY 1880- 1941

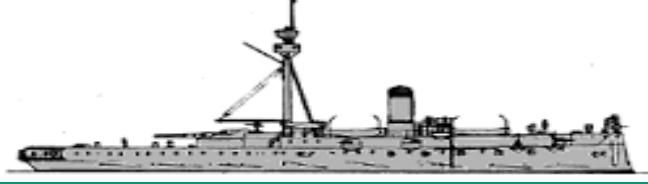
- Meiji Japan v/s Colonial India 1890s?
- “*Fukoku Kyohei*”: Rich Country, Strong Army
- “*Jiritsu*” Self Reliance/ “Made in Japan”
- “Bending Adversity” Always
- “*Their determination to learn from the west was wholly practical. Japan must learn how to make trains, guns and floating battleships...because they were tools to stand up to western aggression...*”



BEGINNINGS OF FOREIGN COLLABORATION & MAKE IN JAPAN

- IJN/ *Kaigun*'s Problematic Childhood
- France & Britain as Partners
- No Choice but *"Skill Japan"*
- Build a Navy: **Float+ Move+Fight: JDDM!!**
- Naval Aviation: **Fly +Move+Fight :JDDM!!**
- Lack of Jointness

·Matsushima 1888

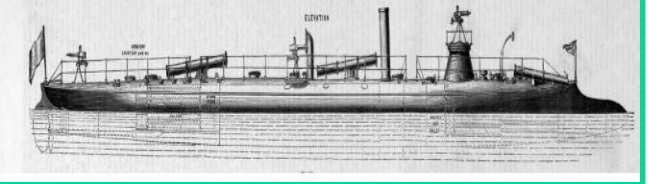


TORPEDO BOAT FOR THE JAPANESE GOVERNMENT.

KENJI YAMAMOTO AND CO., YOKOHAMA, JAPAN.

(See description on page 21.)

ELEVENTH



Nakajima: Pioneer Aviator



SY SHRIKHANDE





MARITIME INDIA SUMMIT 2016
Anchored for Growth



Saigo, Navy Minister, 1885-1898



YAMAMOTO GOMBEI



- **1885:** *Kaikoku Nippon*: **Maritime Japan**
- **1872:** Navy Ministry
- **Orgn & Personnel Reforms in IJN**
- **1896:** “Sukosha” Naval Association
- **1896 Onwards:** Naval Plans

Forging a Nation: Leveraging Technology Imports, R & D

- **Whole of Nation Approach to Tech:**
- *“Competitive advantage is not God-given. Japan’s shipbuilders assimilated and in some time surpassed foreign best-practice technology, and became a major world force in the industry. **But this process took time and involved industrial firms, academic and financial institutions, as well as government policies.** It was different from assumptions of strategic trade theory, that govts can create a competitive advantage by giving firms a quick pre-emptive nudge down the learning curve”*
- (Dr Fukasaku (Mitsubishi Nagasaki Shipyard 1884- 1934))



Forging a Nation: Leveraging Technology Imports, R & D

- **Tech Imports & Development of Indigenous Tech Concurrent & Complimentary**
- *“Reluctance for TOT is a supply side problem, recipient countries can remain passive victims” ...but MNS and Japan chose not to be victims...*
- **Learning by doing not enough; MNS started own R & D early**
- **Invest in Knowledge Acquisition; Integrate with Institutions**
- **Technology Learning v/s Technology Creation (ITLC & ITTC)**
- **Ministry of Munitions (now MITI!) Controlled Tech Flow. Applied Research, not Fundamental Research**
- **Japan Developed Steel: “The Food of Industry”**
- **Industrial Policies: Fire in the Belly for All: 1918: Machine Tools were 50% “Swadeshi”**
- **Labs, Universities, Military R & D Linkages; “Jikkenba”**

Skill Japan: Yards' Role in Tech Imports & Training

- **Employment Conditions for Foreigners:** “*ungenerous in sharing their knowledge and essential construction works were done secretly*”
- **Send More for Training; Bring Fewer in to Work**
- **Drive Hard Bargains into License Agreements; Use Every Leverage (eg Parsons turbines)**
- **Professional, Society memberships, libraries, etc**
- **Company & National Vocational Trg**

- **Fire in the Belly: Idealism, Patriotism, Nationalism & Profits too:** “*the development of shipbuilding industry affects not only the profit of the firm, but also national strength...most urgent (to train) technicians ...to develop their knowledge in application of engg to form the basis for development of the industry which in turn will serve the public interest of the nation*”
- **Infusion of naval officers into Mitsubishi and others: user inputs, end- awareness**
- **Mazagon Docks: Leander Frigate Pgme & Later. Austerity in Pennies, Profligacy in Pounds?**

FORGING THE *NIHON TEIKOKU KAIGUN* (IJN)

- 1896-1906: 90 % of 2,34,000 tons= 70% of IJN built overseas
- **Public & Private Yards start Make in Japan for Float, Move, Fight**
- **Yamanouchi QF gun;Makimura torp;Kimura R/T;Shimose expl**
- **1912 Parsons turbine goes to sea**

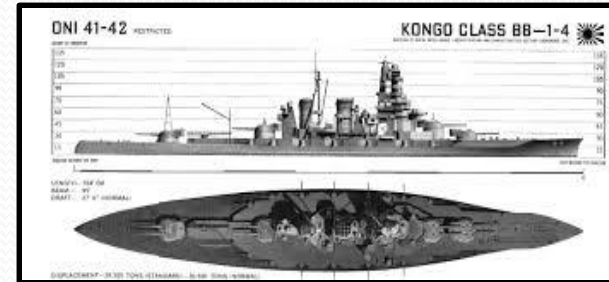
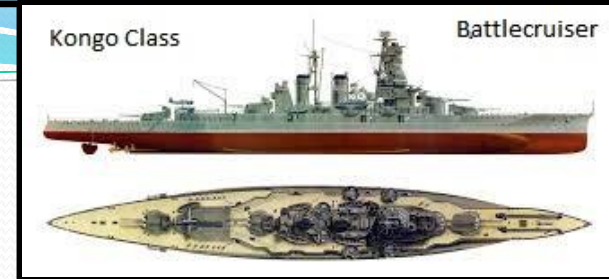
• **Push- Pull**



Capacity/ Profits

THE KONGO TEMPLATE?

- **Buy One, Make Three!! : in Japan**
- **Rapidity of Design Change in UK & Execution in Yards (1 IJN; 2 Private)**
- **Benefits of Building Method**
- **Modernisation Refits: CB to BB! “While they could & did construct new classes, cheaper to refit & reconstruct existing units”**
- **Conversions of merchant ships into escort carriers; of submarines; re-gunning; re-engining; stability, etc**
- **Long term benefits**
- **WW II IJN: “Made in Japan”**



SUBMARINE CONSTRUCTION

- Initial help from Britain: Trg; S/M School
- Studied 7 German U-boats 1920
- 'K' Class: 20,000 mile range
- German clones; harnessing people
- KD and J classes; Move & Fight also
- Innovation in designs: "JDDM!!"
- Long- lasting DNA?



WORK DISTRIBUTION

IJN Yards

41%

Yokosuka

Kure

Sasebo

Maizuru

Battleships (BB), Fleet Carriers (CV), Heavy Cruisers (CA), Submarines (SS)

BB, CA, SS

Light Cruisers (CL), Destroyers (DD), SS

DD, SS

Types

Private Yards

59%

Mitsubishi (Nagasaki)

Mitsubishi (Kobe)

Mitsubishi (Yokohama)

Kawasaki

Ishikawajima

Uraga

Fujinagata

Mitsui

Types

BB, CA/ CL

SS

Special ships

CV, CA/CL, SS

DD, Smaller craft

DD, Smaller craft

DD, Smaller craft

SS, Smaller craft



OTHER FACTORS & SOME LESSONS

- **Corruption: Kongo & the “Siemens Affair” 1913-14**
- **Deferred Profits: “Growth Now, Profits Later”**
- **Globalisation for Trade; *Jiritsu* for Defence**
- **Too Many Classes**
- **Too Little Jointmanship**
- **Accidents Happen, But Need not Always**
- **Build an Effective force; Not a “Comforting” one**



Kawasaki Ki-61 Hien



Kawasaki Ki-61-KA1c of the 3rd Chutai, 19th Sentai, Okinawa, 1944-5



CONCLUSIONS: “JIRITSU” & “SWAVALAMBAN”

- Fukoku Kyohei: Over-Arching “Fire in the Belly”
- Self- Reliance: the Key to National Security: *Jiritsu & Swalamban. “JDDM and now IDDM in DPP 2016*
- Robustly Leverage Engagement with Foreign Partners
- Technology Denial Regimes Always Existed & Will Exist
- TOT More Dependent on Will of the Recipient than Willingness of the Supplier
- Absorption & Adaptation of Technology Important: Skill Development; R & D

CONCLUSIONS: “JIRITSU” & “SWAVALAMBAN”

- Don't Exaggerate BTP as TOT
- Correctly Measure Indigenisation
- Composite Approach: Float/ Fly + Move + Fight
- PPP; But Public Sector Important; Growth Now, Profits Later?
- Protection of Defence Trade a Reality; Protection of India a Necessity

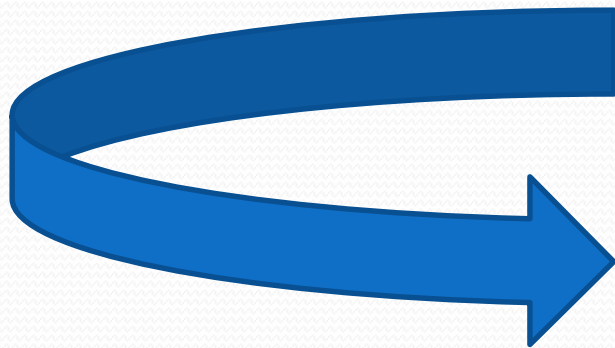
JIRITSU TO SWAVALAMBAN



JAPAN'S TEMPLATE



IDDM



स्वावलम्बन