INDUSTRIAL MOBILIZATION

LESSONS FROM THE LAST GREAT POWER WARS

1913The Federal Reserve

16th Amendment (Income Tax)

1916 – DEFENSE PREPARATION ACT

- **President can call up National Guard**
- **No volunteer units (Rough Riders)**
- **$17 million for 375 planes**

NOT A WORD ON INDUSTRIAL MOBILIZATION

1917

War Industries Board

War Labor Board

THE WAR ENDED BEFORE AMERICA COULD DELIVER A SINGLE PLANE OR ARTILLERY PIECE

THE GREAT DISRUPTION – 1870 - 1900

Telephones	Sound recordings	Lightbulbs
Practical typewriters	Chemical pulp	Reinforced Concrete
Electric generating plants	Electric motors	Transformers
Steam turbines	Popular photography	Internal combustion engines
Motorcycles	Cars	Aluminum production
Crude oil tankers	Air filled rubber tires	Steel skeleton skyscrapers
Prestressed concrete	X-rays	Liquification of air
Wireless telegraph	Radioactivity discovered	Aspirin

THE GREAT DISRUPTION – AFTER 1900

MASS PRODUCED CARS

RADIO BROADCASTS

AIRPLANES

VACUM DIODES

STAINLESS STEEL

TRACTORS

TUNGSTEN LIGHTBULBS

THE GREAT DISRUPTION – 1870 - 1913

The US Navy was asked to sponsor heavier than air flights in 1901 – the request was denied

Admiral George W. Melville stopped progress in its tracks when he declared:

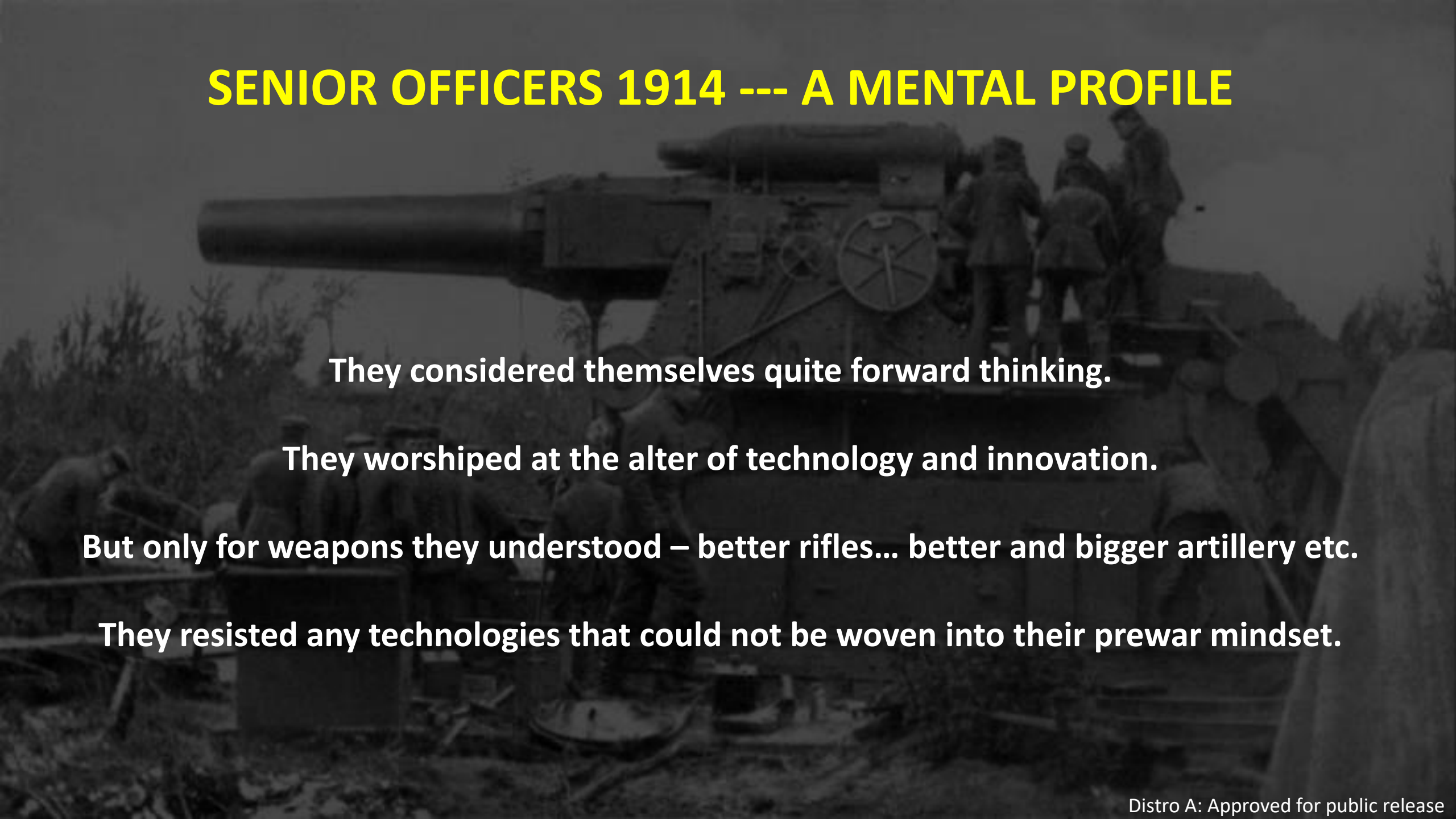
"Outside of the proven impossible, there could be found no better example of the speculative tendency carrying man to the verge of the chimerical then in his attempts to imitate the birds."

TWO YEARS LATER MAN IS FLYING

But the first flight was a mere 12 seconds

"Adler's aeroplanes, all that stuff is very pretty, very enjoyable, and sporty, but for the army it is zero!"
Marshal Ferdinand Foch (1910)

SENIOR OFFICERS 1914 --- A MENTAL PROFILE



They considered themselves quite forward thinking.

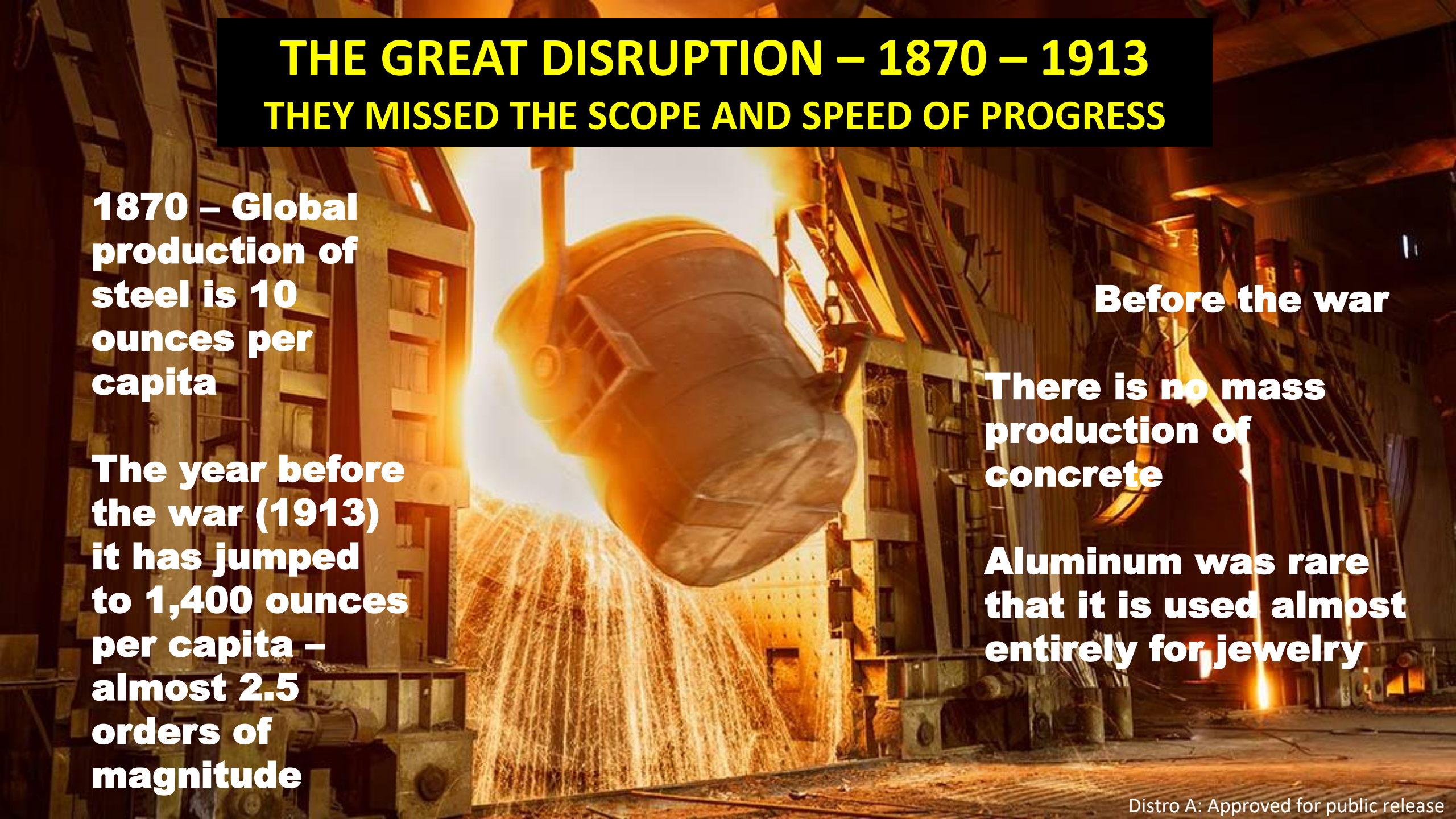
They worshiped at the alter of technology and innovation.

But only for weapons they understood – better rifles… better and bigger artillery etc.

They resisted any technologies that could not be woven into their prewar mindset.

THE GREAT DISRUPTION – 1870 – 1913

THEY MISSED THE SCOPE AND SPEED OF PROGRESS



1870 – Global production of steel is 10 ounces per capita

The year before the war (1913) it has jumped to 1,400 ounces per capita – almost 2.5 orders of magnitude

Before the war

There is no mass production of concrete

Aluminum was rare that it is used almost entirely for jewelry

THE GREAT DISRUPTION – 1870 – 1913

THEY MISSED THE SCOPE AND SPEED OF PROGRESS

1883 - Thomas Edison had one plant serving 10,000 lights.

1893 – he had 1,300 plants operating in the United States, serving over 3 million lights.

1893 – At the Chicago Fair, firms were demonstrating industrial applications for electricity, including furnaces, lathes, signaling equipment, and presses.

Thomas Edison once asked Henry Ford to give up on the fruitless task of working on the internal combustion engine and to come work for him.

IF EDISON COULD NOT SEE THE NEAR FUTURE…. WHAT HOPE DID GENERALS AND THEY STAFFS HAVE?

1895 - There were only 300 cars in the United States
1900 – There 8,000
1905 – There are 78,000 –

Conditions are set for a production explosion

1913 – Ford can produce 1,000 cars a year
1914 – Ford can produce 1,000 cars a day

1914 – 200,000 cars produced
1915 - 1.5 million cars produced

1916 – 1918 – The US produced 230,000 trucks for the army –– ten times the number in existence at the start of the war.

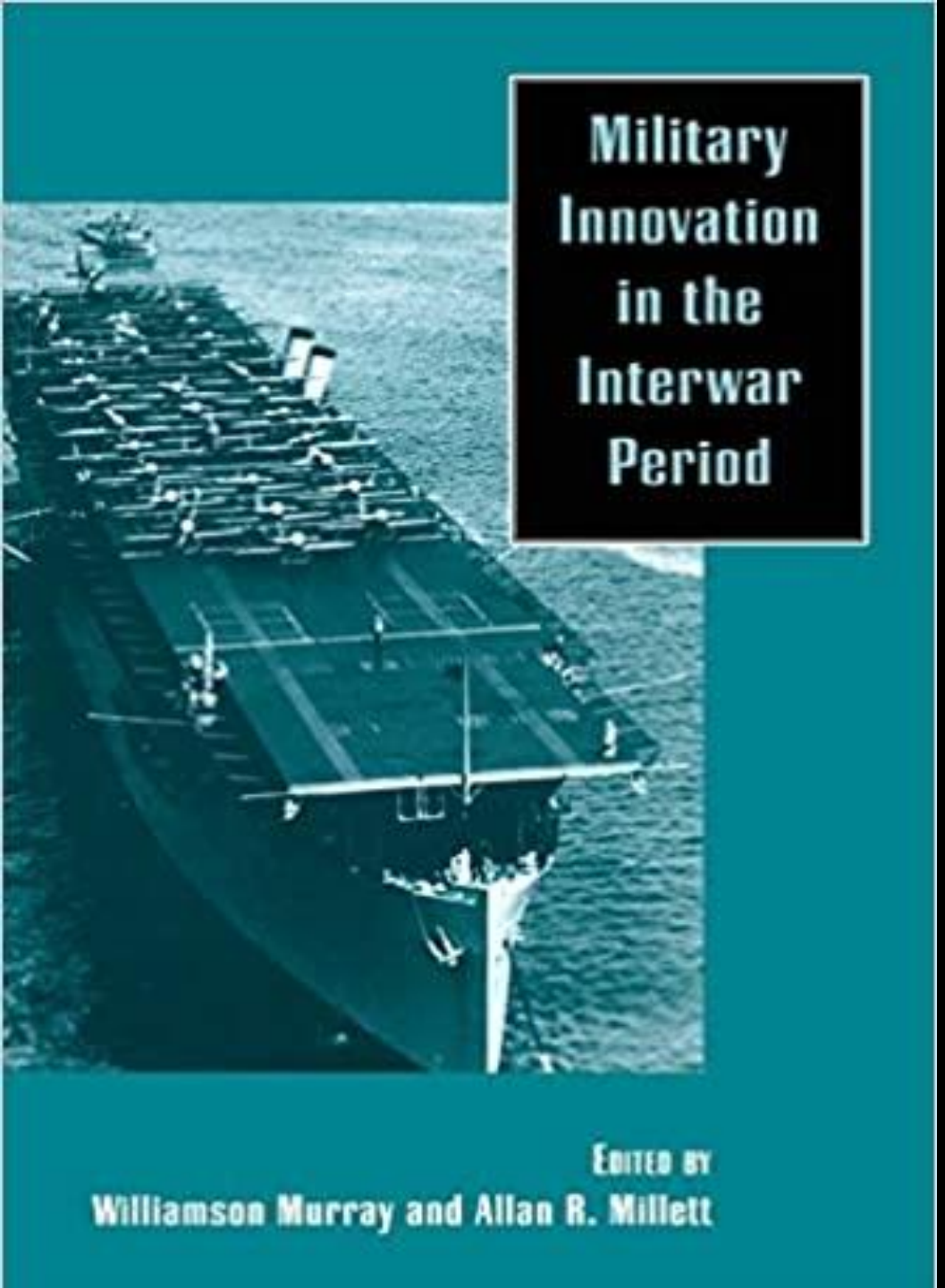
PREWAR --- NO ONE GAVE ANY CONSIDERATION TO HOW THE SPEED OF INFORMATION MADE MODERN WAR POSSIBLE

TECHNOLOGY DEVELOPMENTS WERE NOT INVISIBLE TO THE GREAT POWER MILITARIES

Every military had experimental organizations for things like aircraft, submarines and machineguns,

The crucial problem was that no one could peer into the future to develop concepts or doctrine for their use

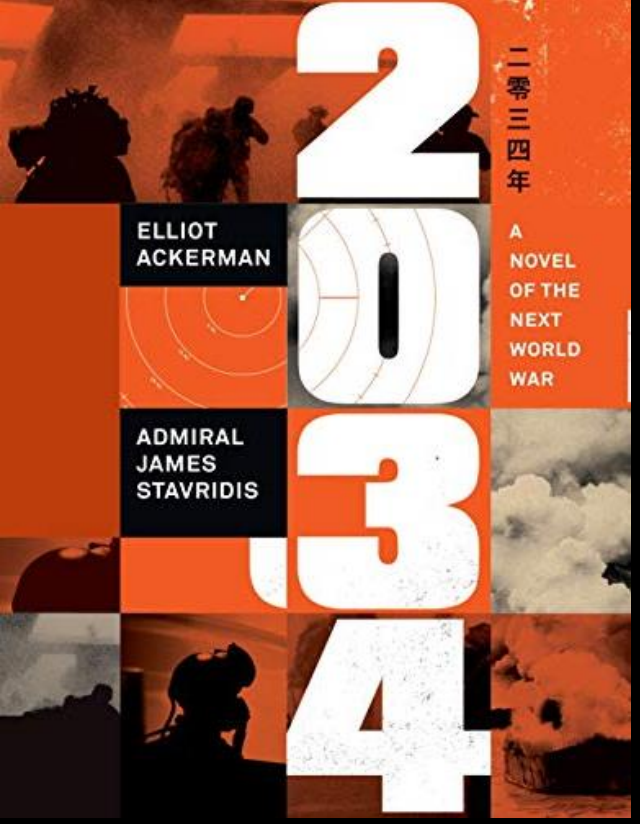
SOME THINGS WERE INVISIBLE BUT SHOULD NOTHAVE BEEN… TANKS, POISON GAS

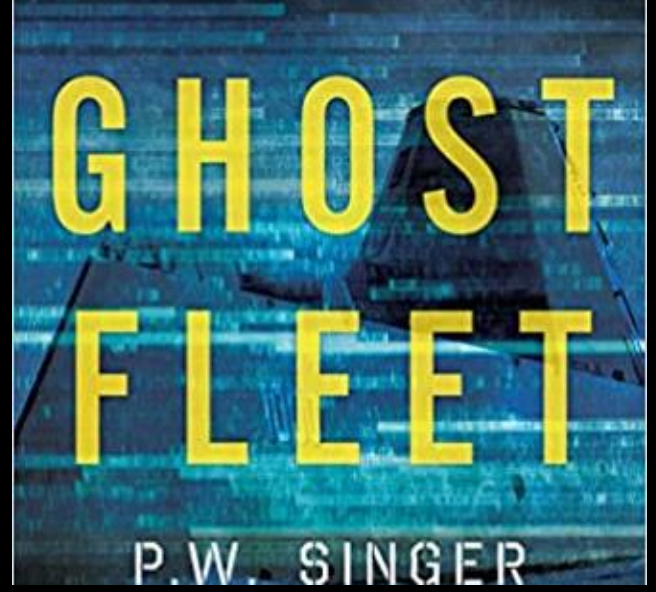


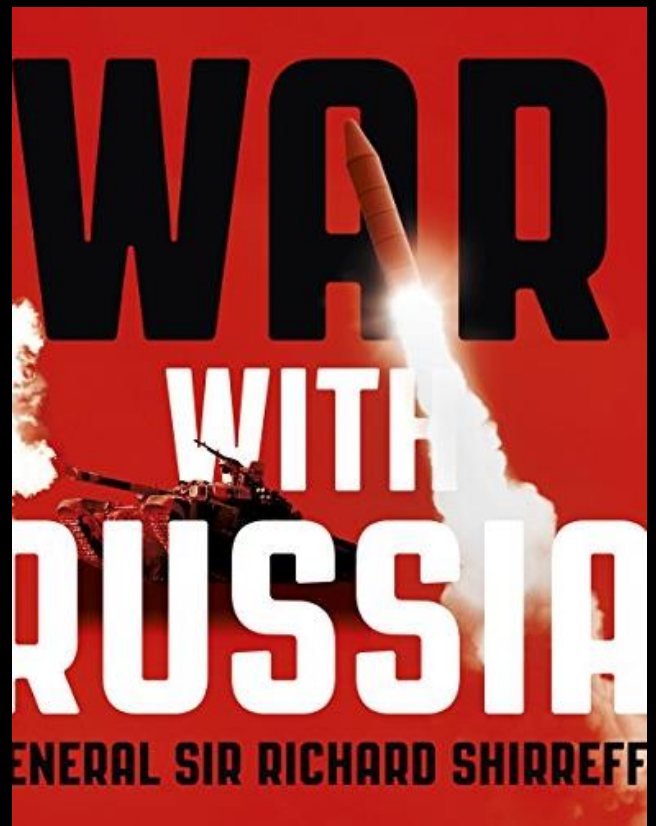
INNOVATION WITHOUT DISRUPTION

THE ENTIRE INTERWAR PERIOD WAS SPENT EXPERIMENTING WITH CONCEPTS AND DEVELOPING DOCTRINE FOR WEAPONS AND SYSTEMS FIRST SEEN IN THE LAST WAR

ONLY NUKES… POSSIBLY EARLY COMPUTERS… WERE KNEW







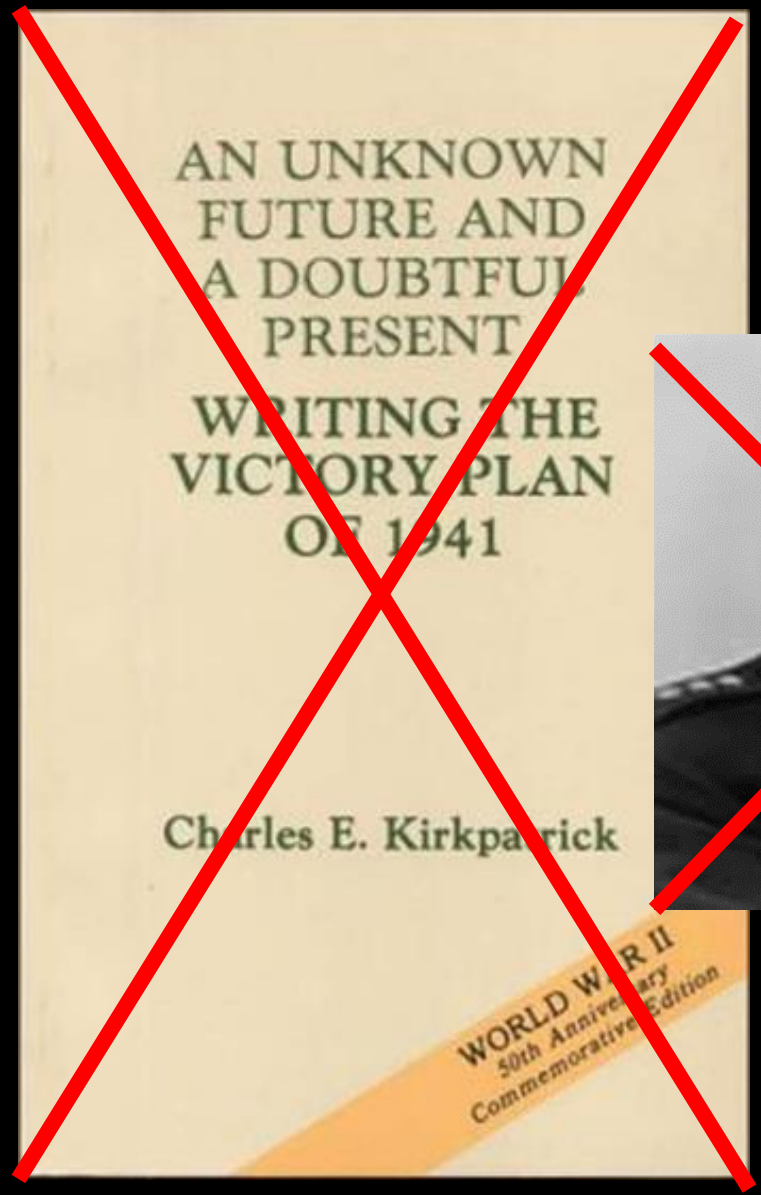
THE SECOND GREAT DIRUPTION

- Cyber War
- Drone Swarms
- Crisper and Beyond (Biologicals and Genetech)
- Internet (Array) of Things
- Autonomous Vehicles and Weapons
- Data Analytics – AI - GO – Human/AI Teaming
- Hypersonics (SS6… Kinjal)
- Nukes – Burevstnik (Storm Petrel)
- Quantum Computers and Communications
- Directed Energy – Lasers – AI Teamed
- Space – Anti-Sat warfare
- 5G Wifi (And beyond)
- 4th Industrial Revolution
- Artificial and Mixed Reality

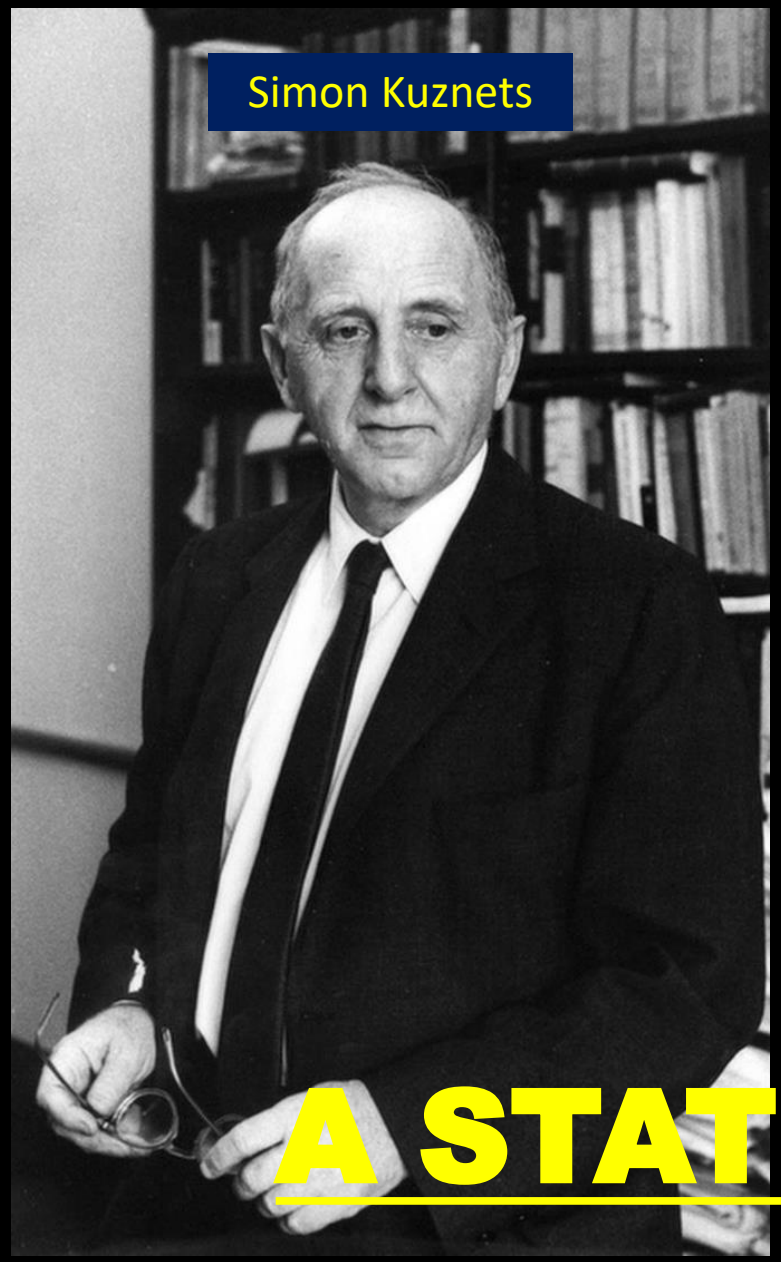
Precision… Range… Mass… Speed… weapons that learn… new domains

PITY THE CONCEPT DEVELOPERS!!!

THE REAL VICTORY PROGRAM



STACY MAY's CONSOLIDATED BALANCE SHEET

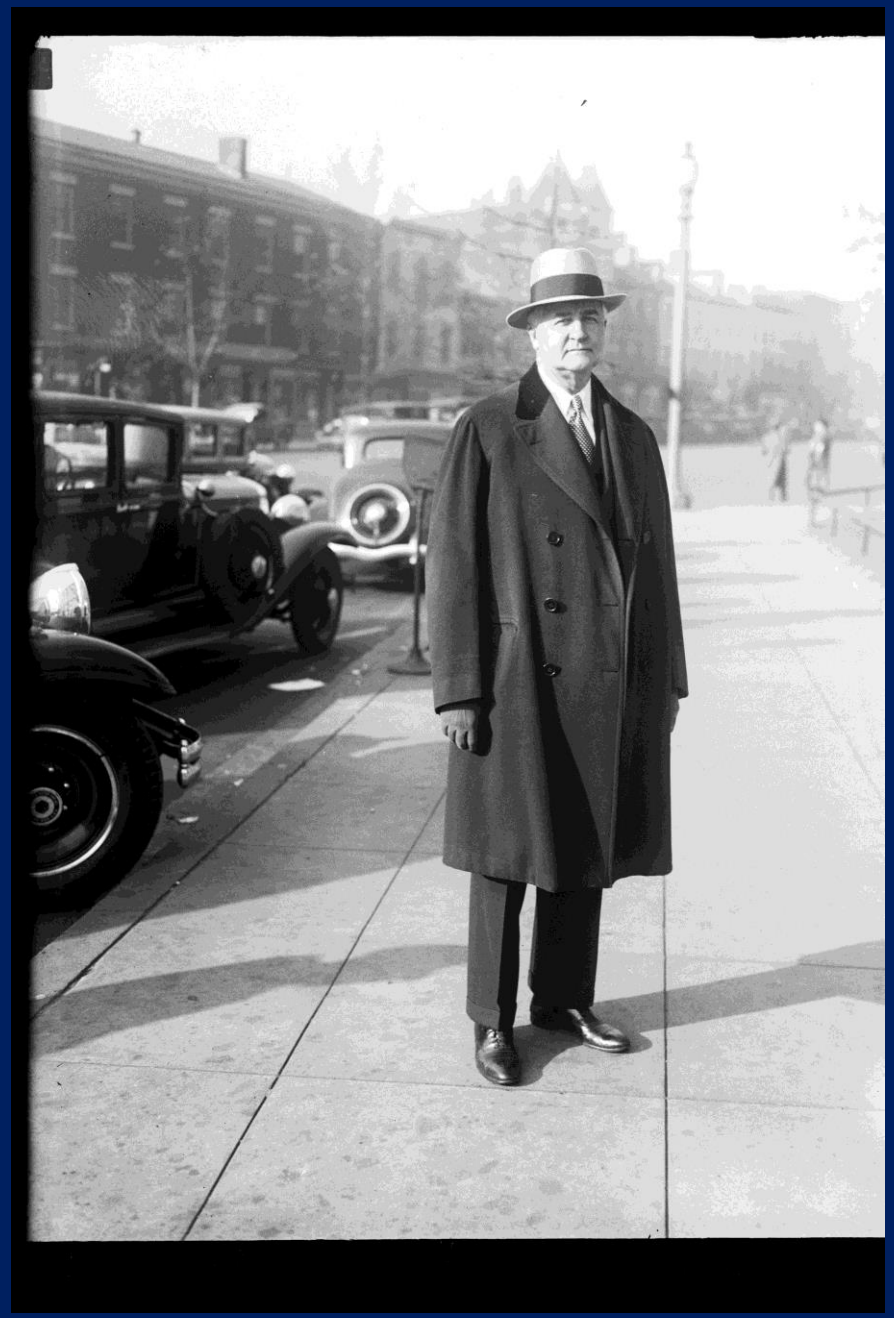


A STATISTICAL REVOLUTION

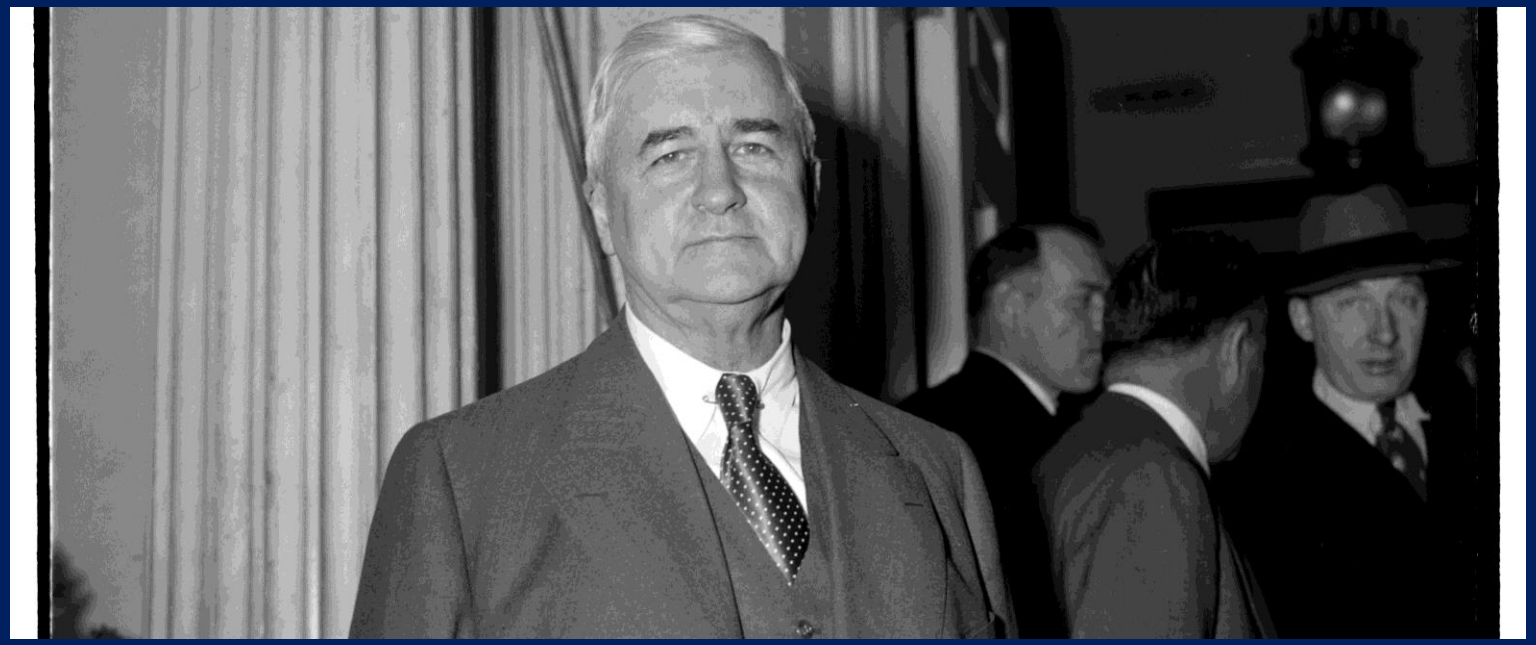
FINANCIAL REVOLUTION

ENDLESS STREAMS OF MONEY

Started in England – 1694
World War I – The Spandau Gold
The Complete Revolution – WW II



Jesse Jones



FINANCING MODERN WAR

Huge expansion of dollar reserves by the fed

Treasury debt issued in unprecedented amounts (QE on a massive scale)

Fixed rates on all US debt

Forced savings plans for all Americans

Unlimited swap lines to our allies (and many others)

The US Treasury becomes the insurer of last resort… particularly for maritime assets

Unlimited underwriting of financial assets… starting with money market funds and trade financing.

Low (no) cost loans to our allies

Targeted defaults of all debt owned by our enemies

All of our enemies are thrown off SWIFT

Fed wire closed to all enemies

New tax code implemented within weeks, includes stuff such as 100% depreciation of new plant assets within 12-18 months… excess profit tax (reasonable)

Anti-inflation plan --- price controls

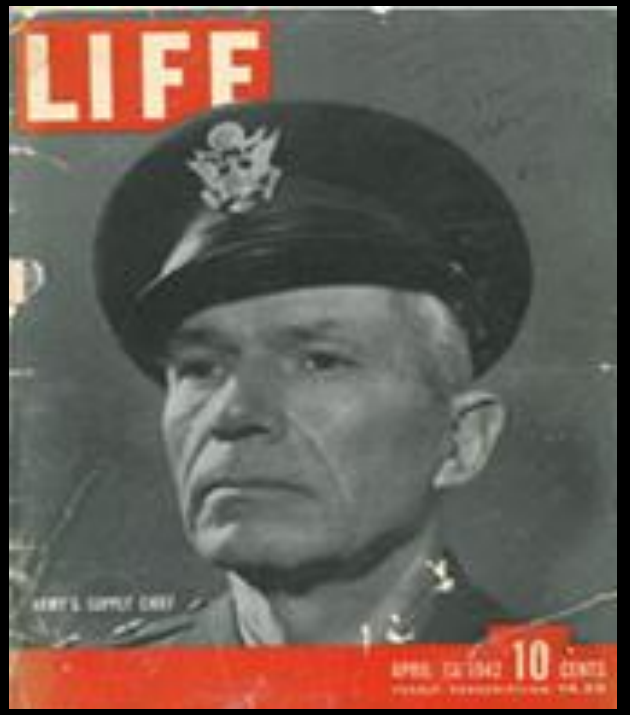
Business loan plan – 100% of new plant costs on unbelievably generous terms

Etc. etc. etc.

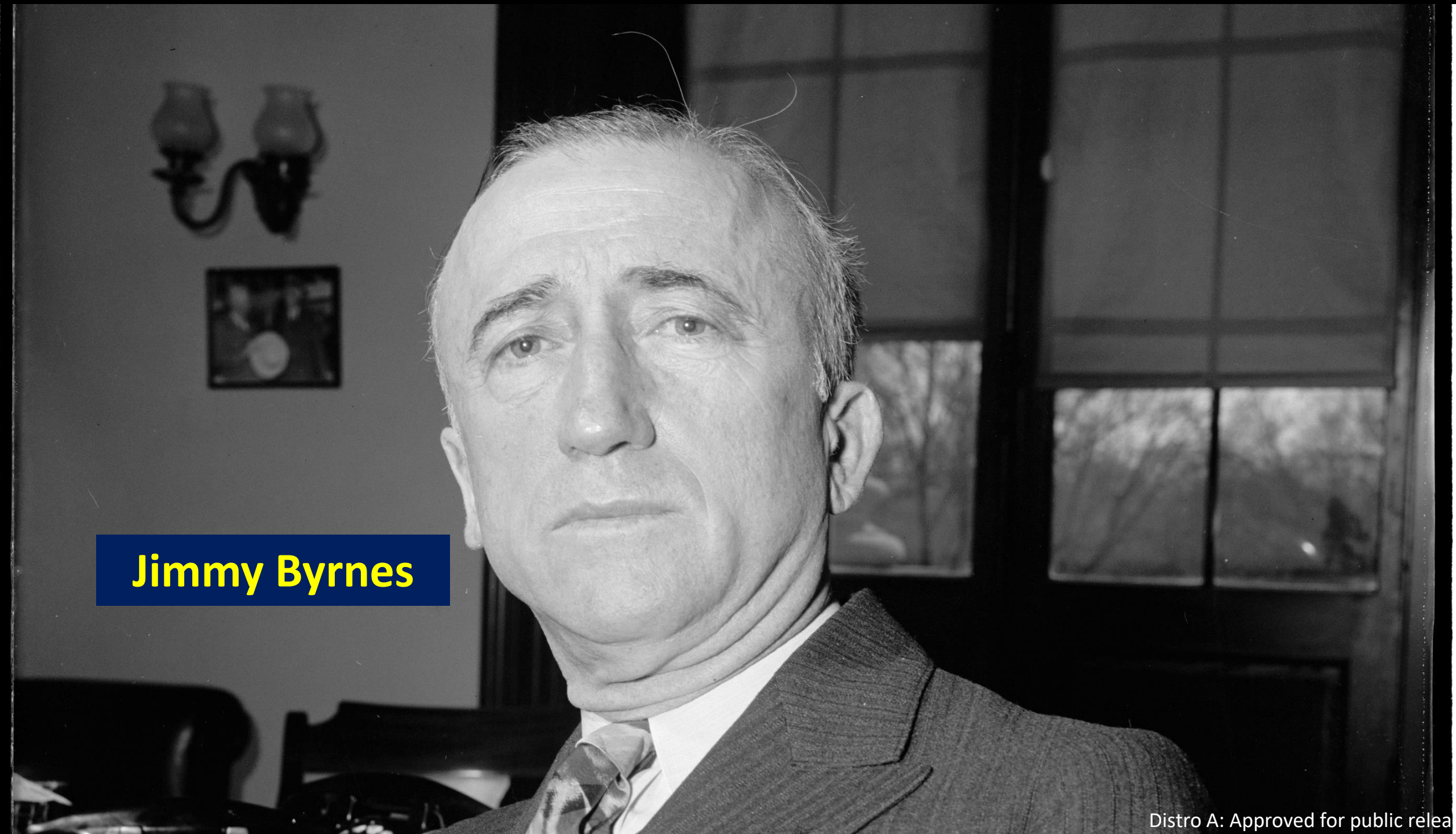
AS FAR AS I CAN TELL ABSOULTELY NO ONE IS THINKING ABOUT THIS --- IT IS AMAZING HOW IGNORATN STRATEGISTS AND POLICYMAKERS ARE ABOUT MODERN FINANCE

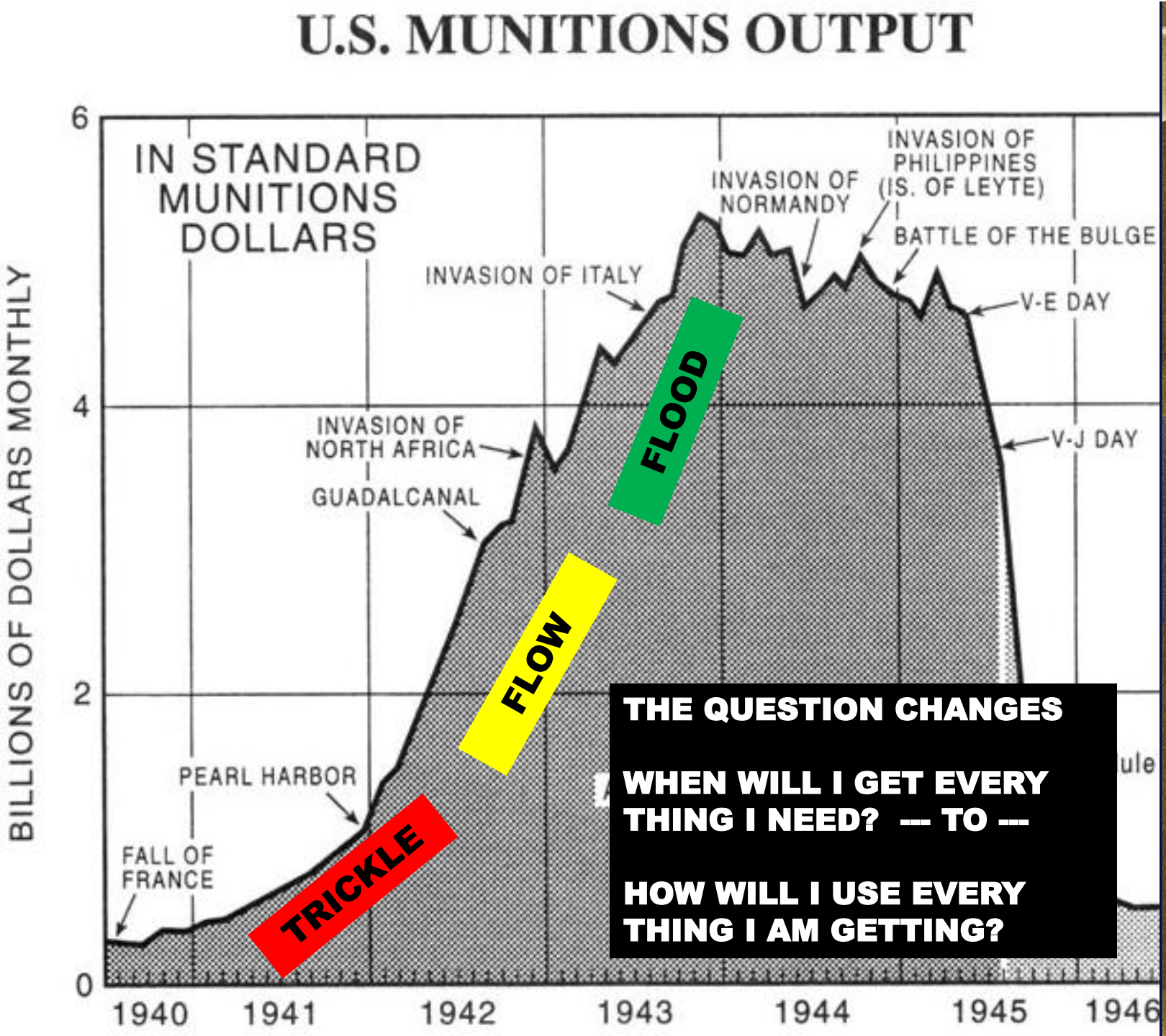
Donald Nelson

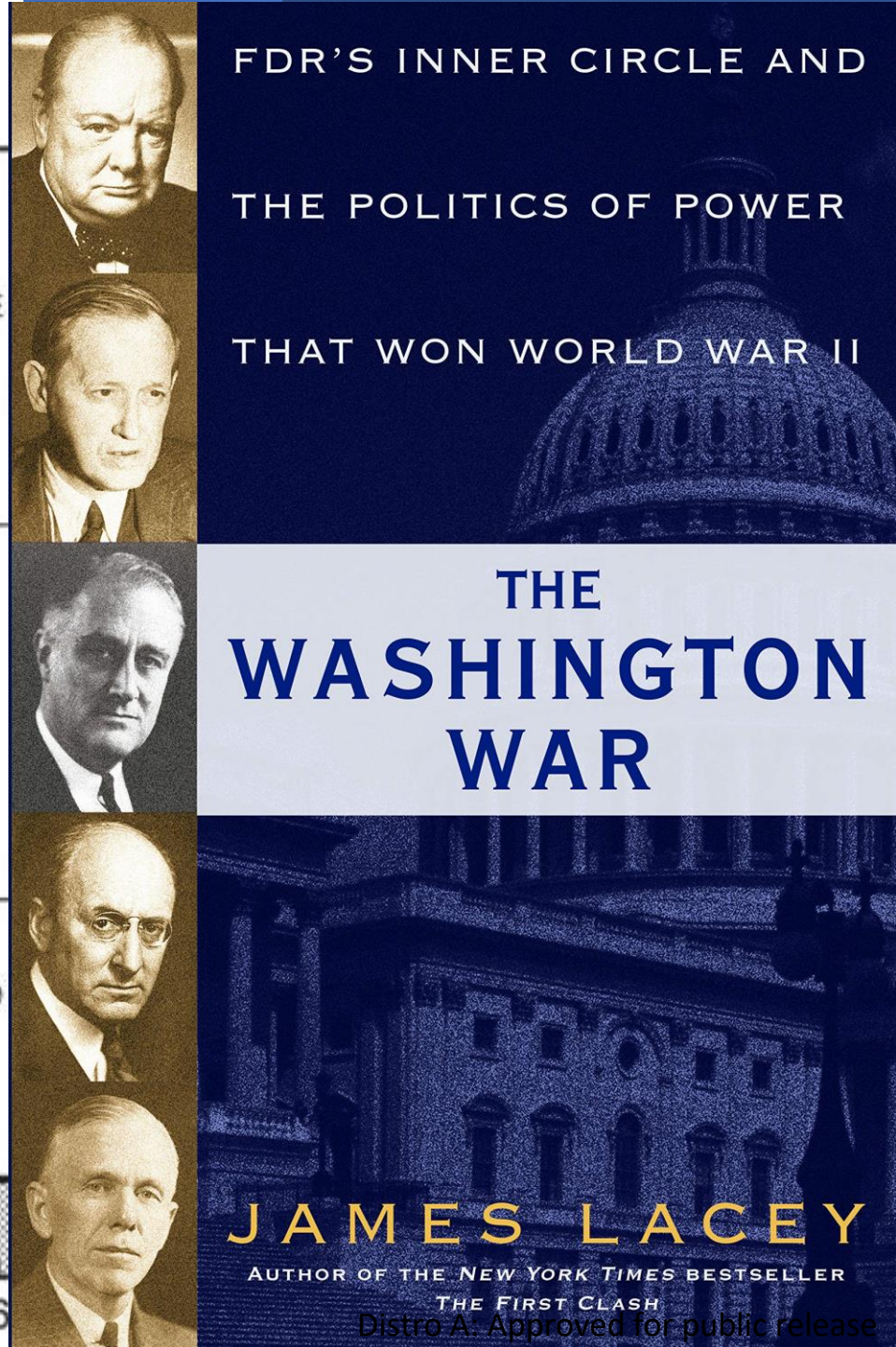
THE FEASIBILITY DISPUTE

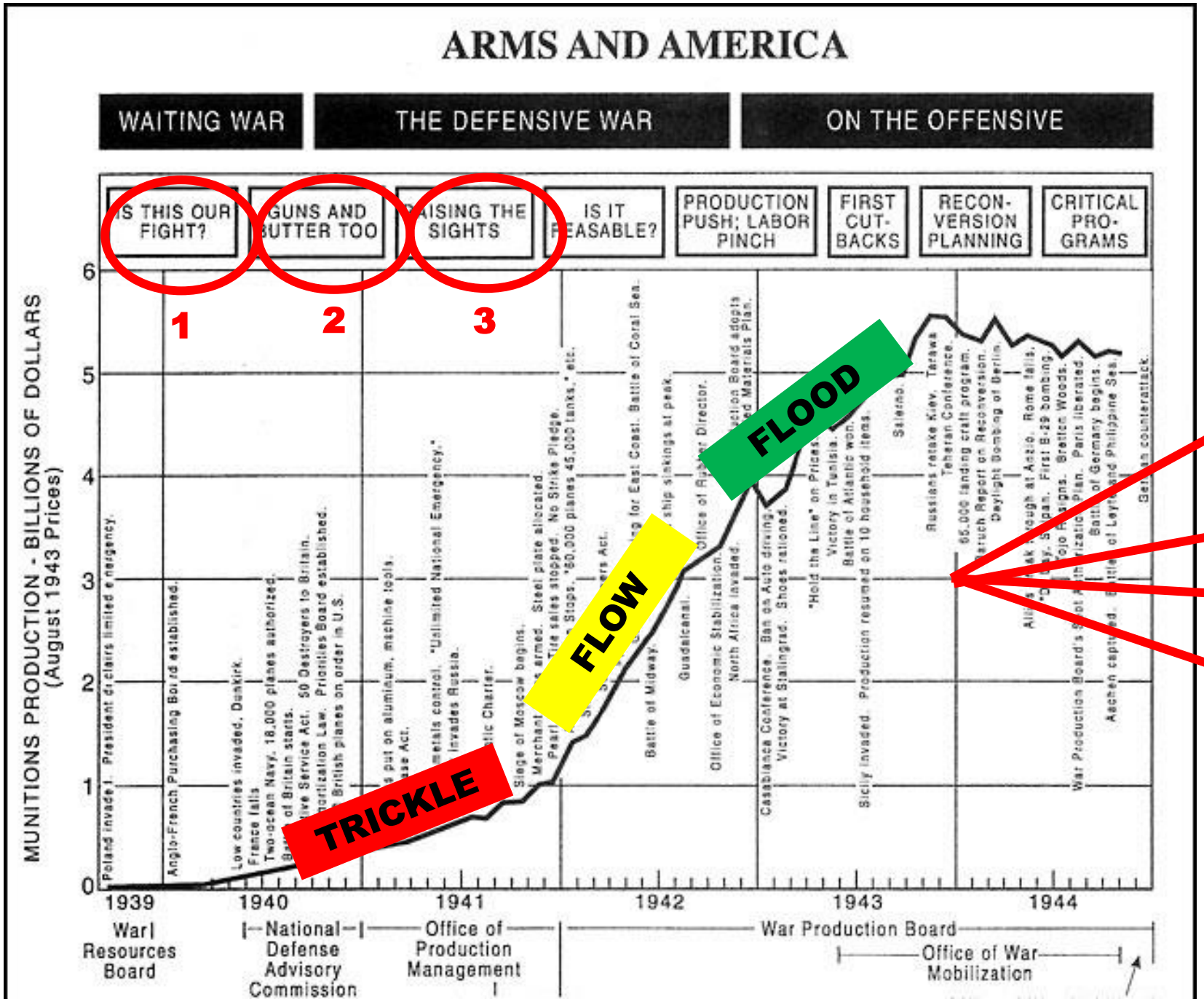


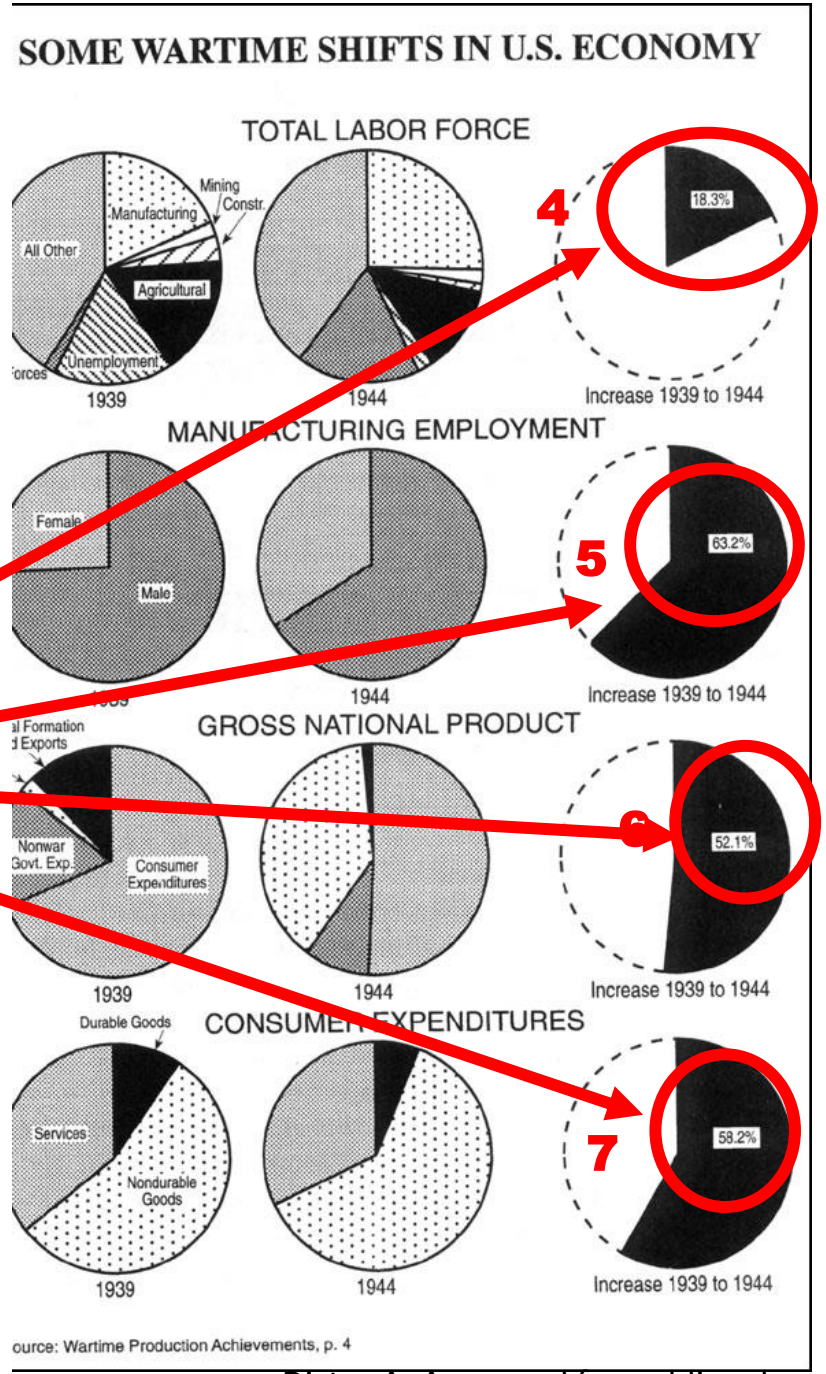
Charles Wilson

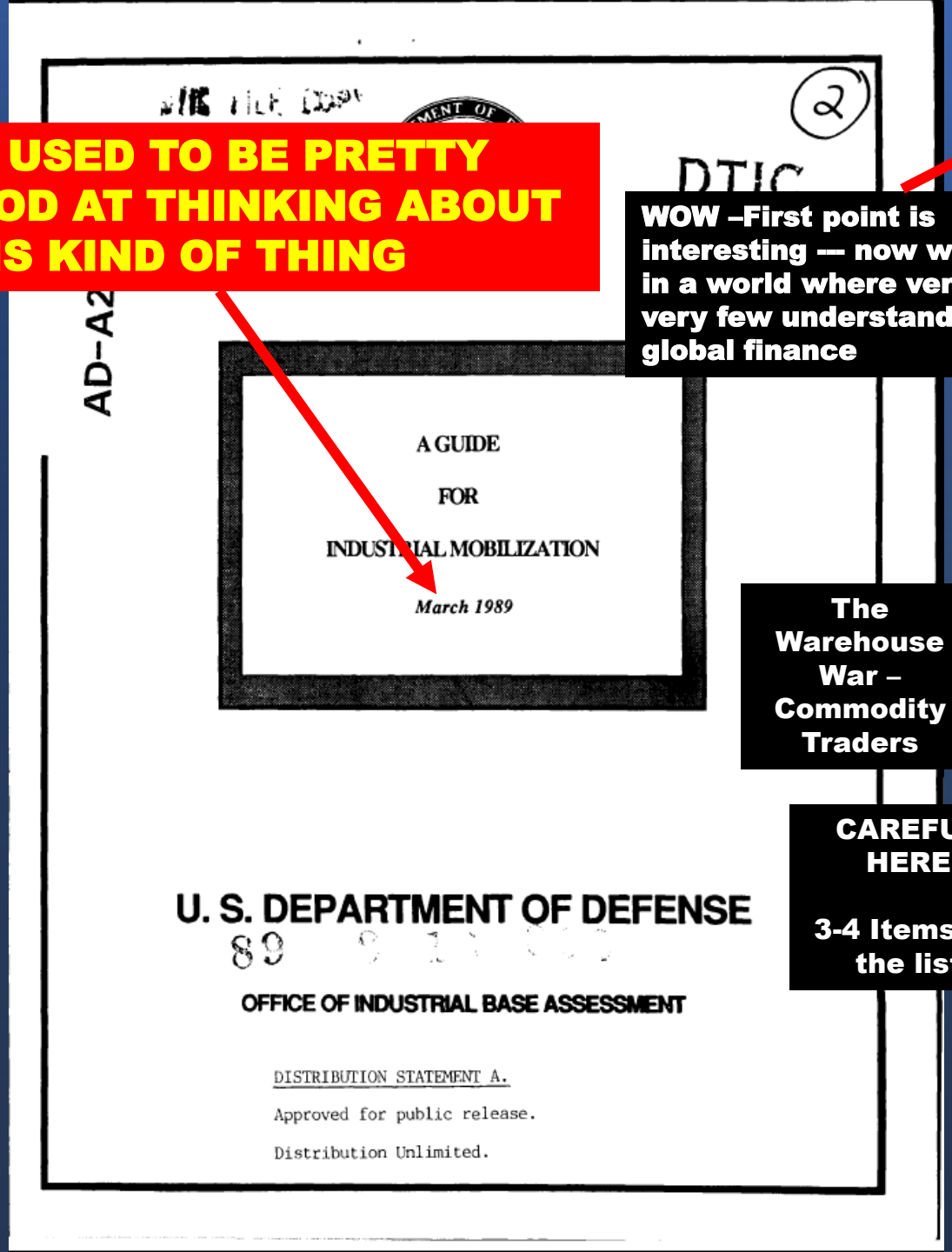












WE USED TO BE PRETTY GOOD AT THINKING ABOUT THIS KIND OF THING

WOW –First point is interesting –– now we live in a world where very very few understand global finance

The Warehouse War – Commodity Traders

CAREFUL HERE

3-4 Items on the list

THIS IS FANTASY WORLD

PRE-CRISIS INDUSTRIAL PREPAREDNESS PLANNING

- Develop and maintain a comprehensive national financial plan.
- Develop and maintain a plan to prioritize the fill of critical skills to meet multiple demands from defense and civil sectors.
- Identify individuals in the ready reserve that have critical industrial skills and defer them from callup obligations.
- Assess the impact of mobilization on transportation assets.
- Identify generic production capacity and requirements.
- Improve plant by plant planning.
- Develop and fund IPMs and DPA Title III projects.
- Negotiate surge options or other contingent contracts.

Managers

INCREASE PREPARATORY ACTIONS, PRE-CRISIS

- Finalize draft legislation.
- Review IPPL/MUL.
- Review adequacy of RPEP/KAL.
- Establish standby and voluntary agreements.
- Prepare surge reprogramming/supplementary budget requests.
- Prepare guidelines for ASPPO allocation of multiservice production de
- Brief administration and congressional leaders on their expected role.
- Approve additional DPA Title III projects.
- Review national and agency financial plans.
- Upgrade the stockpile/increase critical material imports.
- Upgrade PEPs and increase maintenance of laidaway facilities.
- Accelerate production of critical long lead time components.
- Increase procurement of WRM/spares.
- Increase funding of IPMs.
- Expedite contracting process.
- Provide educational orders for non-[illegible]ent producers.
- Identify commercial substitutes.
- Prepare to reactivate controlled materials setasi[illegible]

4th Industrial Revolution eases this considerably

SURGE

- Surge selected items.
- Re-evaluate the MUL.
- PEP/MTTOP releases.
- Undertake pre-emptive buys.
- Increase controlled materials seta[illegible]e.
- Activate voluntary agreements.
- Evaluate physical security plans.
- Identify essential civilian requirements & conv[illegible]sion candidates.
- Activate laidaway plants and equipment, if requir[illegible]

Move the cash quickly – in WW II they had a Great Depression mechanism to employ

INDUSTRIAL MOBILIZATION

- Re-evaluate the MUL.
- Execute mobilization plans.
- Stockpile release.
- Institute physical security.
- Institute direct economic controls.
- Broaden materials and production controls
- Curtail non-essential production.
- Convert new producers.

SURGES DON'T JUST HAPPEN

Distro A: Approved for public release

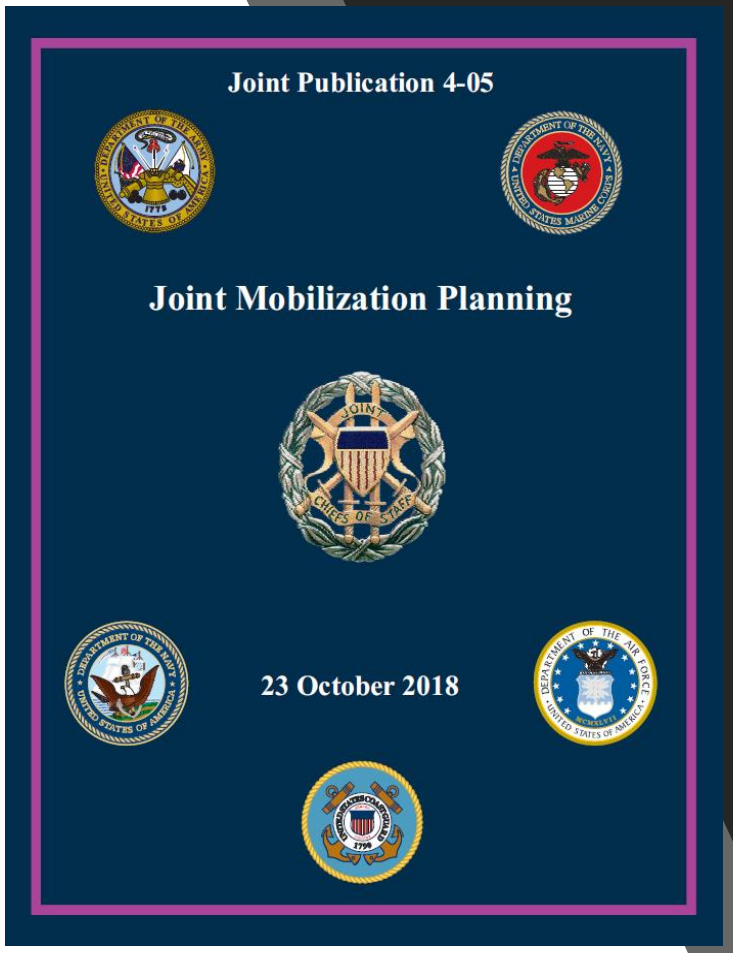
GOOD NEWS

THERE IS DOCTRINE

BAD NEWS

ONLY TWO PAGES ON INDUSTRIAL MOBILIZATION

HIGHLIGHTS



We will need to increase procurement from foreign sources. If foreign producers are unreliable it could have a negative impact on war production

Surge production will require additional skilled manpower

Materiel and equipment production could be negatively impacted if raw materials are short

We may need to ask Congress for new legal authorities

Health and safety regulations may need to be eased

Substantial new funding is required to increase production

The Defense Production Act --- Military goes first and gets priority on everything

TIDBITS

- 80 percent of USMC and Army vehicle production is done by a single manufacturer on a single assembly line
- Building sophisticated weapons take time. It took 3-years to deliver 4,000 B-29 bombers. F-35 Development began in 1995… so far 440 have been delivered.
- A Ford Class Carrier takes four times as long to build as WW II Essex Class carrier.
- The F-35 has 300,000 unique parts… finding new suppliers for the 1,000 parts made in Turkey took 3-years (pushed out over S-400)
- At WW II tank attrition rates the US would be down to 158 tanks by month-10 of a conflict (two BCTs)
- In 1990 40 percent of all microchips were made in the United States. Today is 11 percent… China will dominate global production by 2030
- A new fab facility cost $10-30 billion – without a public-private partnership few, if any will be built in the US.
- Fab plants that still exist in the US are several technology generations behind those in Taiwan and South Korea
- Boeing stopping construction of new 737s is bankrupting over 100 crucial suppliers… who also supply DoD.
- There are 290,000 small-to-mid-size manufacturers in the US… over 98 percent of them are considered highly vulnerable to a cyber attack – 35 percent of all cyber attacks are aimed at manufacturers

	Current Inventory	Current Production Rate (ships/yr)	Surge Production Rate (ships/yr)	Time to Replace Inventory at Current Production Rate (yrs)	Time to Replace Inventory at Surge Production Rate (yrs)	Delivery Time (Contract to Delivery) (yrs)	Time to Replace Inventory at Surge Production Rate w/ Delivery Time (yrs)
Aircraft Carriers	11.0	0.2	0.25	55	44	10	54
Large Surface Combatant	96.0	1.6	3.0	60	32	7.7	39.7
Small Surface Combatant	31.0	1.8	3.0	17	10	5.3	15.3
Submarines	71.0	2.2	3.0	32	11	8.6	19.6
Amphibious Ships	33.0	0.8	2.0	41	17	6.7	23.7
Combat Logistics Ships	30.0	2.4	4.0	12.4	8.0	3.25	11.25

	1941	1943	Wartime Total
Artillery Pieces	10,918	98,387	173,675
Combat Aircraft	8,531	52,443	197,760
Merchant Tonnage (million tons)	794	7,191	20,903
Munitions–Artillery (million rounds)	2,748	111,180	266,000
Naval Ship Launched	53	414	1,202
Radar Sets	800	11,500	53,967
Tanks	4,052	29,497	88,410
Servicemembers	1,801,998	9,045,102	12,123,373