

Sanctions, Weapon Development, and Their Implications

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Part 1

ARMAMENT AND A COUNTRY'S MATERIAL BASE
NEED FOR TECHNOLOGY IMPORTATION

Basic elements of arms acquisition

- Initial decision to acquire a particular type of weaponry
- Parallel dual-track progression:
 - Political decision-making: Mobilisation of resources
 - Military decision-making: Doctrine / operational guidance formulation
- Basic stages:

Own development

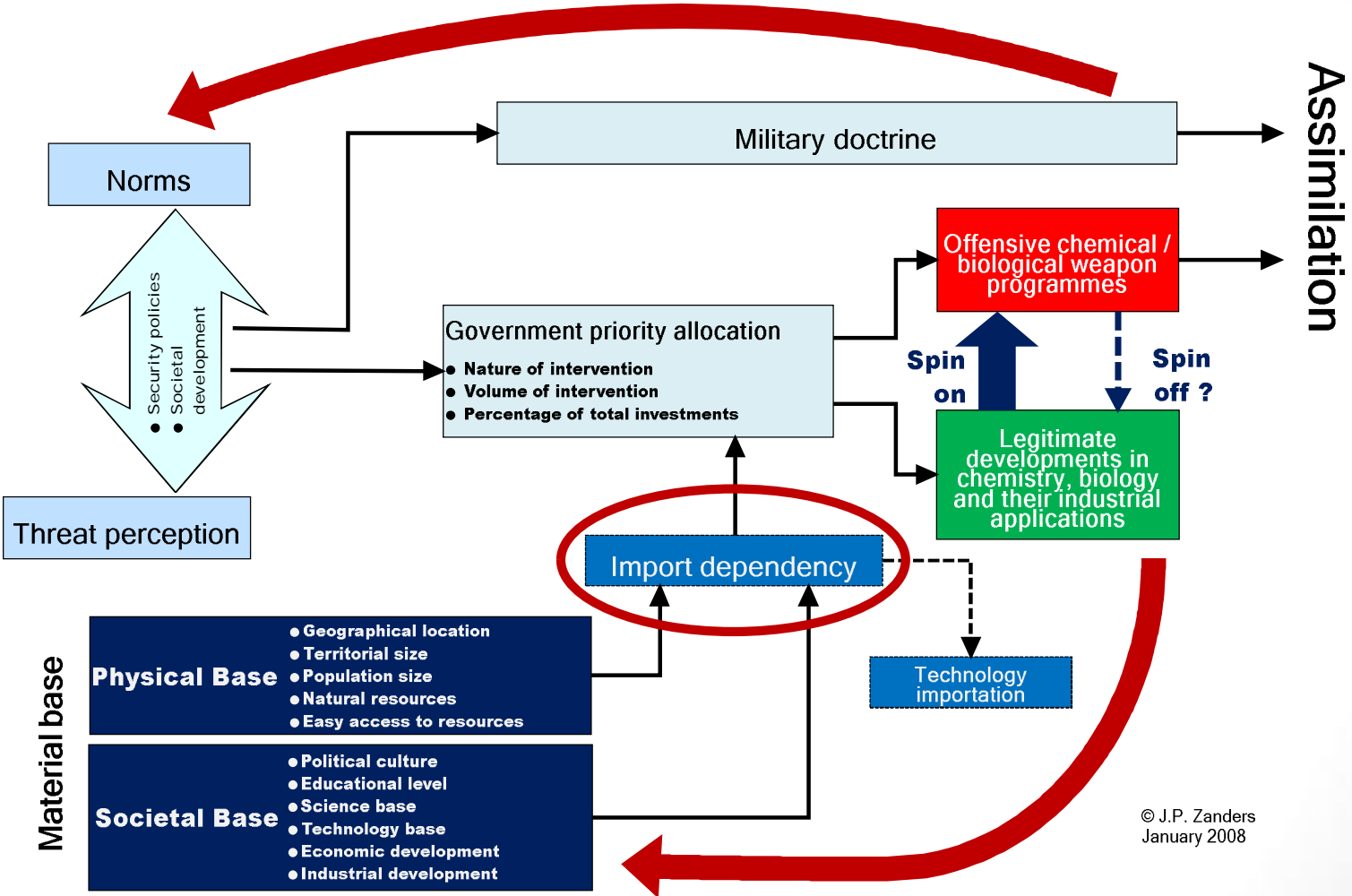
- Weapon design
- Weapon development
- Weapon testing
- Upscaling production
- Production and stockpiling
- Training

Acquisition

- Purchase full weapon (system)
- or*
- Purchase underlying technology
 - Importation equipment, knowledge & expertise
- Testing
- Production and stockpiling
- Training

- Assimilation:
 - Weapon must meet demands formulated on both political and military decision-making tracks
- Preparation of use, including deployment

The armament dynamic



Characteristics of the material base

- Two major components
 - *Physical base* (essentially unchangeable variables)
 - Geographical location; territorial size
 - Population size
 - Presence of natural resources; easy access to natural resources
 - *Societal base* (variables that can be changed over a long period, but armament @ urgency)
 - Political culture
 - Level of education
 - Scientific and technological base
 - Industrial development and economic strength
- Particularly important independent variable as it cuts through both the political and military imperatives tracks

Role of the material base

- Scarcities of certain resources
 - Certain natural resources
 - Insufficiently advanced educational base; technical skills
 - Insufficient R&D and industrial base
- Two basic options:
 - Develop the missing ingredients indigenously
 - Will change the makeup of the material base over time, thereby reducing dependency on imports
 - Seek the missing ingredients abroad
 - **Legally** (arms trade, technology transfers, education abroad, etc.), or
 - **Illegally** (smuggling, espionage, stealing, crime, other proliferation dynamics, etc.)
- However, what about the physical base; time constraints?
 - Impact globalisation
 - Reliance on foreign suppliers and supply chains for economic benefits rather than scarcity
 - Foreign dependency may create serious shortages during international crises (e.g. COVID-19 pandemic)
 - Rigidity of supply chains prevents absorption of shocks (no resilience; no redundancy)
 - Has increased import dependency for most states

Part 2

IMPACT OF SANCTIONS

Sanctions may be varied

- **Sanction targets**

- Countries
- Institutions within a country
- Companies and financial institutions
- Officials and other individuals (usually with ties to the government in power)
- Diplomatic representatives based in other countries
- Representation in international organisation
 - Expulsion
 - Temporary suspension of membership
 - Temporary suspension of certain membership rights

- **Sanction tools**

- Denial of strategic goods (tangible and intangible)
- Denial of financial services; seizure of assets
- Suspension of commerce
- Expulsions
- Travel limitations
- Penalties on sanction breakers
- Etc.

- **Source of sanctions**

- International organisations
- Regional organisations or associations
- National decision-making

- **Reasons for sanctions**

- War, support for terrorism
- Violations of international standards of behaviour
- Weapon proliferation concerns
- Human rights abuses
- Crime
- Compellence (coercing another state to behave in a certain way, e.g. in support of a UN Security Council resolution)
- Reprisals (e.g. against sanctions)
- Etc.

Implications for the armament dynamic

- Immediate impact of import dependency concerning
 - Raw materials
 - Semimanufactures
 - Associated technologies
 - Munitions (if manufactured abroad)
 - Specialised equipment
 - Spare parts for maintenance; replacement parts and tools
 - Suspension of associated services, evacuation of foreign staff and personnel
- Severity of the impact will depend on
 - Ability to find alternative sources of key resources and technologies
 - Size of strategic reserves and stocks of replacement equipment
 - Ability to mobilise alternative resources (e.g. conversion of production plants)
 - Etc.

Immediate impacts from import dependency

- **Examples from the Ukraine war**
 - Uralvagonzavod at Nizhniy Tagil (UKR sources):
 - Temporary cessation production of T-37B3 tank for lack of parts
 - Chelyabinsk Tractor Plant (UKR source):
 - Ran out of foreign-made parts
 - Many reports of breakdown of and inability to repair deployed weapon systems
 - May have contributed to the failure to seize Kyiv and other cities in the north
- **EU, UK and US sanctions target so-called 'dual-use goods', e.g.**
 - Sensors, lasers, electronics, optical machinery, precision machine tools, GPS-related technologies for weapons, aircraft and space programmes
 - Constraining of Russian exports and arms trade
 - Impact on revenues and ability to seek alternative sources of technologies
 - Constraining the energy sector
 - Impact on (right types of) fuel supplies for weapon systems

Longer-term impacts: Historical examples

- **Naval blockade of Germany (World War 1)**
 - Blockades were physical barriers:
 - Raw materials and technologies were then essentially all tangible
 - Economic blockage was principal tool of British Empire for war prevention
 - Great Britain dominated the seas
 - It controlled countries possessing key resources on many continents
 - Its naval forces controlled access routes to other places with key resources
 - Germany was then scientifically and industrially the most advanced country
 - However, access to the open sea was limited (Kattegat, Skagerrak, North Sea)
 - Highly dependent on Chili for nitrates (fertilisers, explosives, etc.) before the war
 - Allied blockade caused severe famine in Germany and led to munition shortages
 - German search for substitutes:
 - Production of nitrates and synthetic ammonia via Haber process and Haber-Bosch manufacturing method
- **Limited access to natural oil for Nazi Germany (World War 2)**
 - Development and large-scale production of synthetic fuel for planes and tanks
 - Synthetic oil, rubber, methanol, etc.
- **Major transformations in the material base**
 - Scientific development, large-scale production capacity, etc. were achieved **in relatively short time**

Part 3

CONCLUSIONS: GLOBALISATION DISRUPTED?

Effects of sanctions with evolve

- Immediate efforts to reduce or alter import dependency
 - A sanctioned state will search for alternatives
 - It will seek to reconfigure its material base
 - For many elements in the armament dynamic, securing a cost-effective solution in terms of budget, feasibility and time frames (degree of urgency) was key
 - Sanctions may change a targeted country's *cost-benefit analysis*, thereby allowing for solutions that were previously politically or economically not viable
- Most states of the world have no immediate interest in a given war or conflict
 - They will not follow the lead to boycott the offending state politically or economically
 - E.g. see the voting patterns in the OPCW to sanction Syria's chemical weapon use
 - They create opportunities for the targeted state for alternative sources of resources and technologies
 - May come with its own problems: lower or uncertain quality, limited compatibility, etc.

Effects beyond sanctions

- **Reconfiguration of the material base**
 - Even after the conflict, the **sanctioned state** will still reconfigure its material base to reduce import dependency and sanctions vulnerability (in preparation of next phase of the conflict?)
 - **States aiding Ukraine** will assess constraints in their supply chains and likely reduce their import dependence
 - E.g. Swiss (re-)export restrictions on munition for the German *Gepard* anti-aircraft system
 - **States in other conflict areas** will evaluate the impact of the current sanctions strategy and move to reduce import dependency and vulnerabilities
- **Globalisation after the war in Ukraine and COVID-19 pandemic**
 - More attention will be paid to **resilience and redundancy** in supply chains
 - Search for 'trusted trading partners'
 - **Domestic production** of many resources and technologies will be considered by many countries despite higher prices
 - Food production, energy independence, arms acquisition strategies, etc.
 - May have significant impact on Ukraine's economy and exports after the war



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