

Future Disarmament Challenges for Chemical & Biological Weapons

Dr Jean Pascal Zanders

The Trench

Lecture in the cycle 'Arms Control and Proliferation'

University of Antwerp, 28 April 2014

What is chemical warfare?

Intentional application for hostile purposes of toxic substances against humans and their environment

- *Blood agents*: prevention of oxygen transfer to tissues (e.g., phosgene)
- *Choking agents*: interfere with breathing (e.g., chlorine)
- *Nerve agents*: attack the central nervous system (e.g., sarin)
- *Vesicants*: produce blisters (e.g., mustard agents)

- *Incapacitating agents*: induce temporary physical disability or mental disorientation (e.g., LSD, BZ)
- *Irritating agents*: induce temporary irritation (e.g., tear gas)
- *Anti-plant agents*: herbicides, growth inhibitors, etc.

Chemical warfare



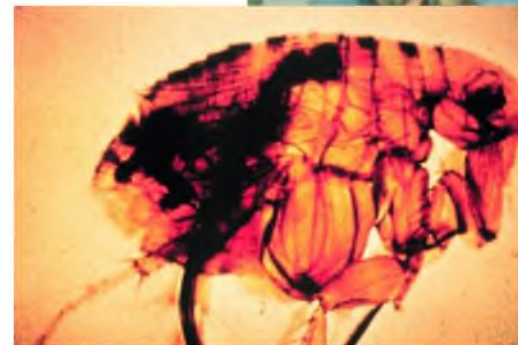
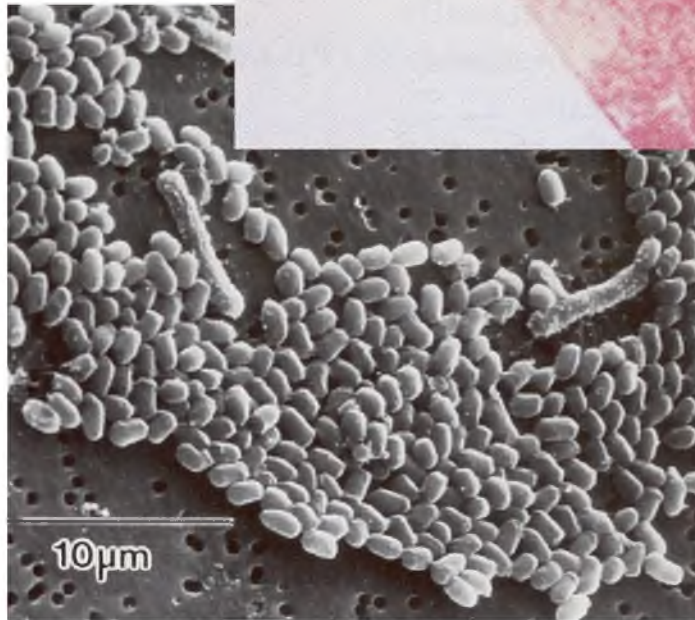
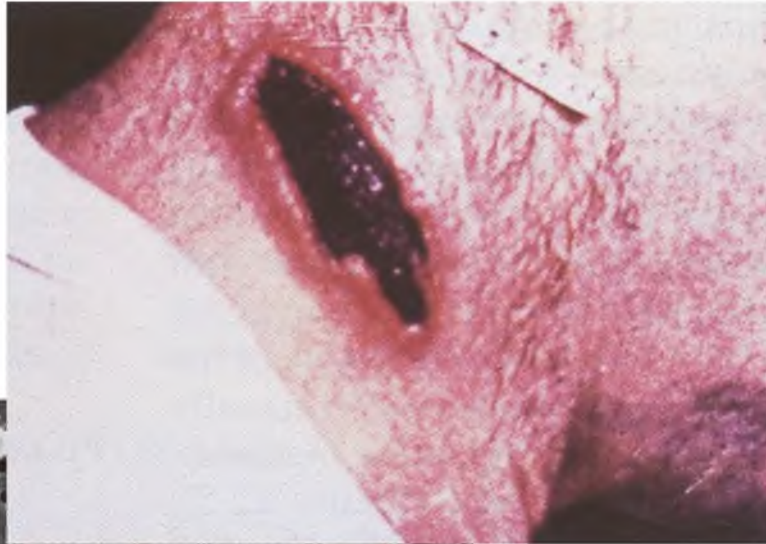
What is biological warfare?

Intentional application against humans, animals or plants for hostile purposes of

- *Disease-causing micro-organisms* (e.g., bacteria);
- *Other entities that can replicate themselves* (e.g., viruses, infectious nucleic acids and prions)
- *Toxins*, poisonous substances produced by living organisms (and their synthetically manufactured counterparts), including
 - micro-organisms (e.g., botulinum toxin),
 - plants (e.g., ricin derived from castor beans), and
 - animals (e.g., snake venom)

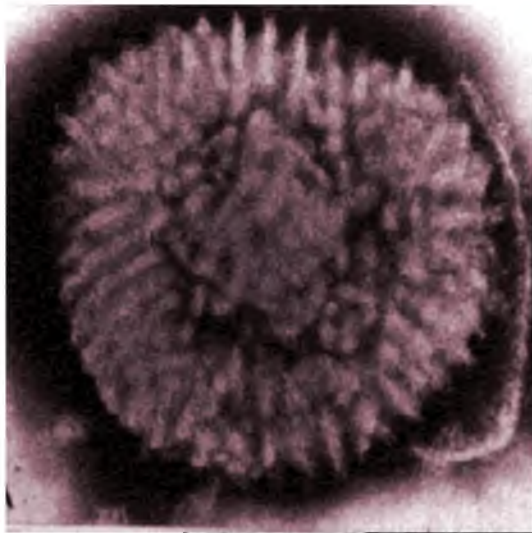
Visions of Biological Warfare

Anthrax



Plague

Visions of Biological Warfare – 2



Smallpox

The CBW threat spectrum

- War scenarios
- Terrorism
- Criminal acts

- Each will consider and have the availability of different CB agents, with different degrees of pathogenicity or toxicity
 - Depends on *intent*
 - Depends on availability
 - Depends on technical skills and structure of the organization

Alternative use of CB agents

- **Against humans**

- Potential for mass casualties exists, but not necessarily most likely scenario as agents difficult to acquire
- Incapacitation
 - Wider range of agents available
 - Easier to collect from nature and cultivate
 - Delivery uncomplicated
 - Lower requirements for skills and functional specialization

- **Against animals and plants**

- Economic impact
- Agents easier to acquire; less of a risk to perpetrator
- Easy to deploy
 - Many vulnerabilities in the food chain

- **Economic and societal disruption**

- Goal is to disrupt functioning of utilities, commercial enterprises, public agencies
- Wider range of CB agents available
 - Several can be commercially obtained
- Exploitation of fear and lack of adequate preparations
- Effectiveness of hoaxes

Main prohibitions against CBW

- **1925 Geneva Protocol**
 - Prohibits the use in war of CBW
- **1972 Biological and Toxin Weapons Convention (BTWC)**
 - Comprehensive ban on development, production and possession of BW
 - Ban on BW use in Geneva Protocol + Final Declaration of 4th Review Conference (1996)
- **1993 Chemical Weapons Convention (CWC)**
 - Comprehensive ban on development, production, possession, and use of CW

Different legal status of NBC weapons

Prohibition	BW	CW	NW
on Use			
on Possession			 

Why arms control; why disarmament?

- **Legitimacy of use of a weapon in war**
 - CBW: basically delegitimized in 1925 (Geneva Protocol)
 - Nuclear weapons:
 - 5 possessor states
 - Advisory opinion of the International Court of Justice (1996)
 - Conventional weapons
 - ‘Inhumane weapons’
- **Humanitarian arguments**
 - Macro versus micro-level of appraisal
- **Emergence of non-proliferation approach**
 - Different perceptions of proliferation before and after World War 2
 - Relevance in areas where there is no total prohibition on weapons
- **Impact of perception of technology**
 - Value neutral → ‘**use**’ of technology, rather than ‘technology itself’ needs to be controlled
 - Having impact on society → ‘**technology itself**’ is viewed as problematic

Armament versus proliferation

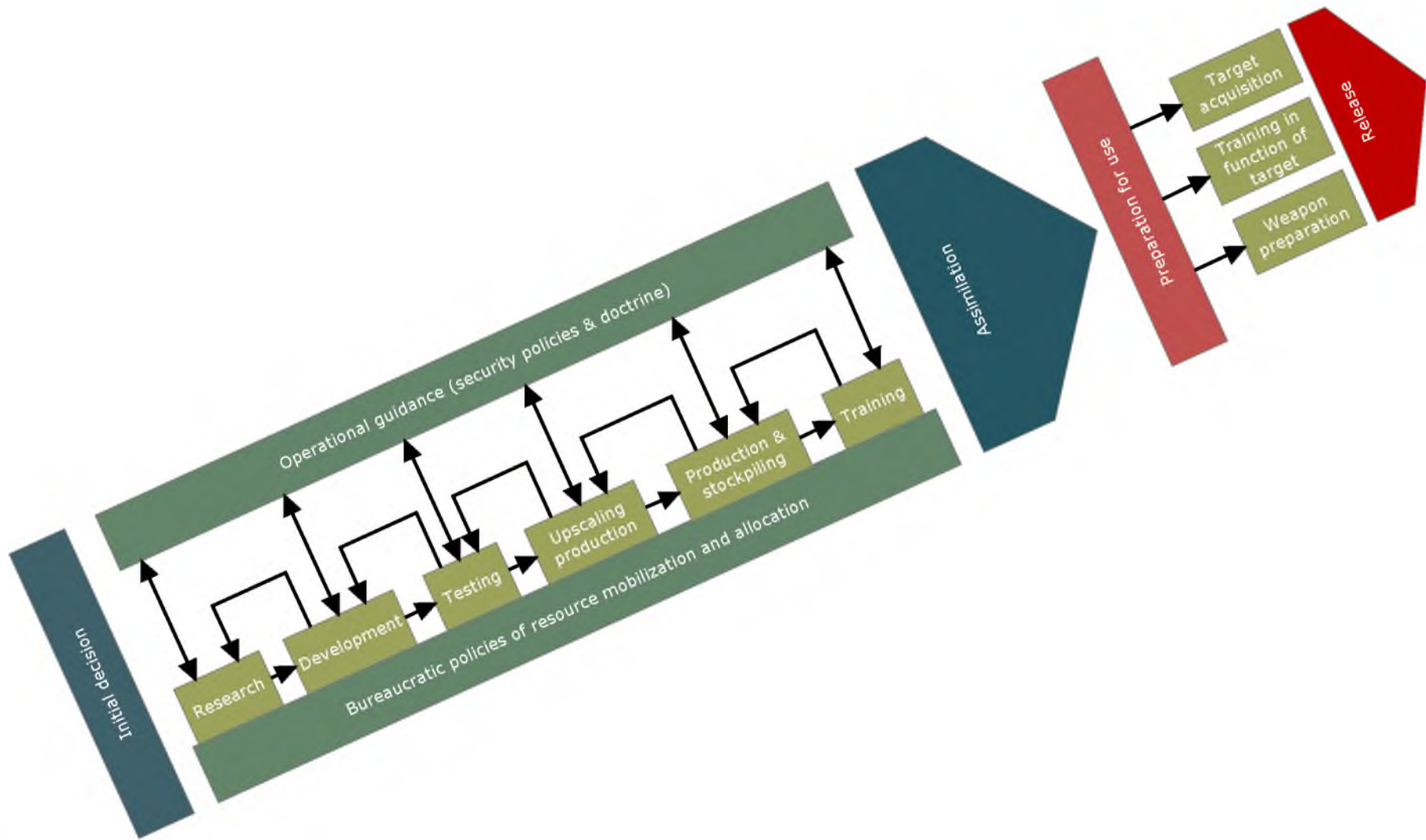
- **Armament:**

- Quantitative or qualitative enhancement of military capacity
- Essentially a domestic process
- Analysis focusses on the '*demand side*'

- **Proliferation:**

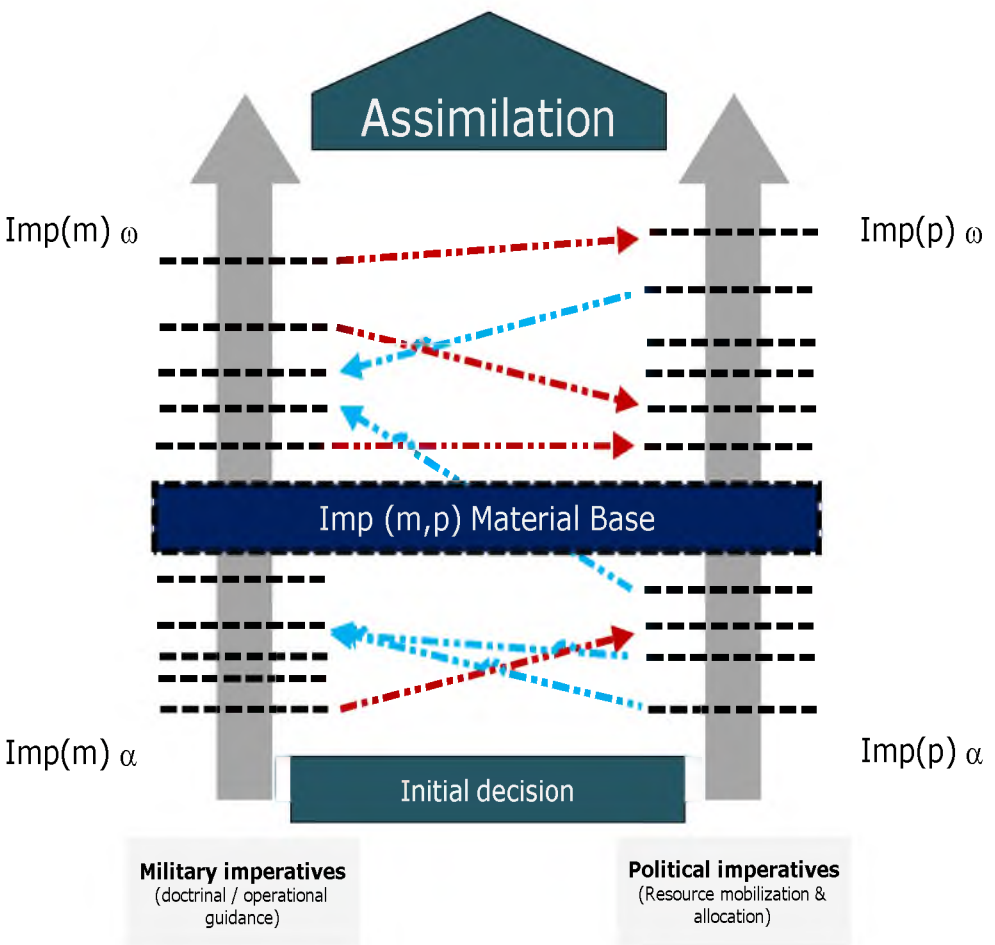
- Transfer of technology from a possessor to a non-possessor
 - 'Horizontal proliferation': lateral spread
 - 'Vertical proliferation': weapon acquisition and improvement (= armament?)
- Analysis focusses on the '*supply side*'

Steps in the armament dynamic



Assimilation

Assimilation is the *process* by which for a particular type of weaponry *military and political imperatives*, as constrained by the political entity's *material base*, become *reconciled* with each other so that the weaponry becomes an integral part of *current mainstream military doctrine*.



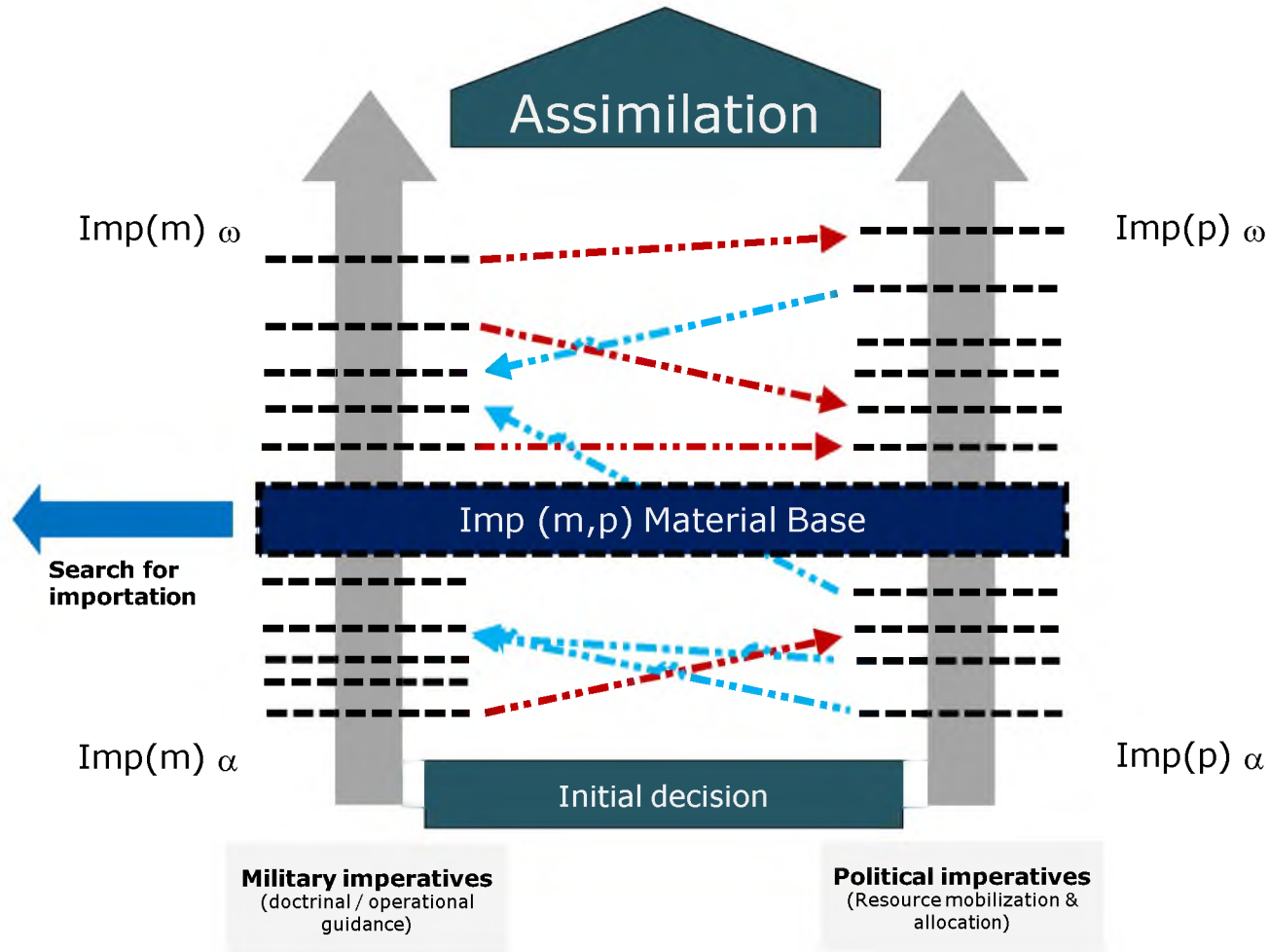
Demand-side perspective

- **Focus on internal decision-making processes in the armament dynamic**
 - **Problem:** often little known about these processes (e.g., inside a dictatorship; terrorist entity)
- **Appreciation of the complexity of the decision-making process (opportunity costs)**
 - Failures
 - Reversals of decisions
 - Importance of the material base
- ***Progression* analysis of the armament dynamic is required**
 - *i.e.*, starting with initial decision and ending with weapon deployment
 - Important to understand decision choices at junctures and their opportunity costs
- **Disarmament: affects the initial decision to acquire weaponry**

Supply-side perspective

- **Is the traditional focus of proliferation analysis**
 - Visible in the constraints on supply in non-proliferation policies (e.g., export controls)
- **Focus traditionally on artefacts (e.g., weapons, equipment)**
 - The fact that the objects exist defines an important part of the threat
 - However, now expanded to 'intangible technologies' (e.g., knowledge, expertise)
 - Comprehensiveness via the 'catch-all' principle
- **Influence of *regressive* analysis of armament dynamic**
 - Possession or determination to possess weapon is assumed
 - 'Rogueness' is presumed and proliferation assumption confirms 'rogueness'
 - All other elements are interpreted in function of the certainty of the final goal
 - Explains the 'regressive' characteristic of analysis

Proliferation in the armament dynamic



Value judgement

- ***Proliferation* includes judgment about desirability**
 - Origin from cell biology: ‘rapid & repeated production’ (often with negative connotation, as in cancer)
 - Security policy:
 - Negative connotation reinforced from the nuclear field
 - Use of term limited to non-conventional weaponry
 - Compare with the more neutral ‘arms trade’
- ***Technology diffusion, however, is a natural process***
 - Archaeological evidence from Palaeolithic; Antiquity, ...
 - Possibility of multiple original sources for same technology
 - Today:
 - Globalisation of technology flows
 - Banalisation of technology

Contexts for 'dual-use' debate

- **Dual-use issues** arise when the attempts to control a particular technology confront the non-military commercial and scientific interests in such technology
- **Disarmament**
 - Total ban on **development, production and possession** of a weapon and **preparations** for its use in warfare (BTWC, CWC)
 - 'Dual-use' issue emerges when
 - Civilian facilities and installations need to be verified
 - Need to prevent the (inadvertent) assistance to development of banned weapon by another state or non-state entity
 - Ban of weapon (= single-use technology) is central; control of dual-use technology supports that central goal
- **Non-proliferation**
 - Control of access to technologies that may contribute to undesired weapon development in another state or non-state entity
 - Primary policy tool for weapon categories whose use in war or possession has not been wholly delegitimised (e.g., nuclear weapons, ballistic missiles)

Disarmament / Non-proliferation paradigm shift after 1990

- **Paradigm shift from disarmament to non-proliferation**
 - Focus shift from weapon elimination to prevention of capability building
 - Technology rather than the weapon itself becomes central concern
 - Potential possessor rather than the weapon becomes the issue
 - Impact on BTWC (Protocol) and CWC
 - Objective vs. subjective goals
 - Disarmament: goals specified in treaty and apply equally to all parties
 - Non-proliferation: Different approaches to different countries based on subjective judgment of intent
 - Non-proliferation: CBW threat can never disappear
 - Resolution of one proliferation threat does not affect other ones
 - Even if all resolved today, there is tomorrow's threat
- **Consequences:**
 - Framing of the threat is in function of the dominant power
 - Limited consensus on nature and size of threat
 - Threat appreciation differs according to
 - view of state as global, regional, or local power
 - Acceptance of security dependency (e.g., participation in security alliances)
 - Different perceptions of urgency to take measures and nature of those measures
 - 'Traditional' verification mechanisms no longer seen as adequate

Entrance of the *post-proliferation era*?

- **Biological:**

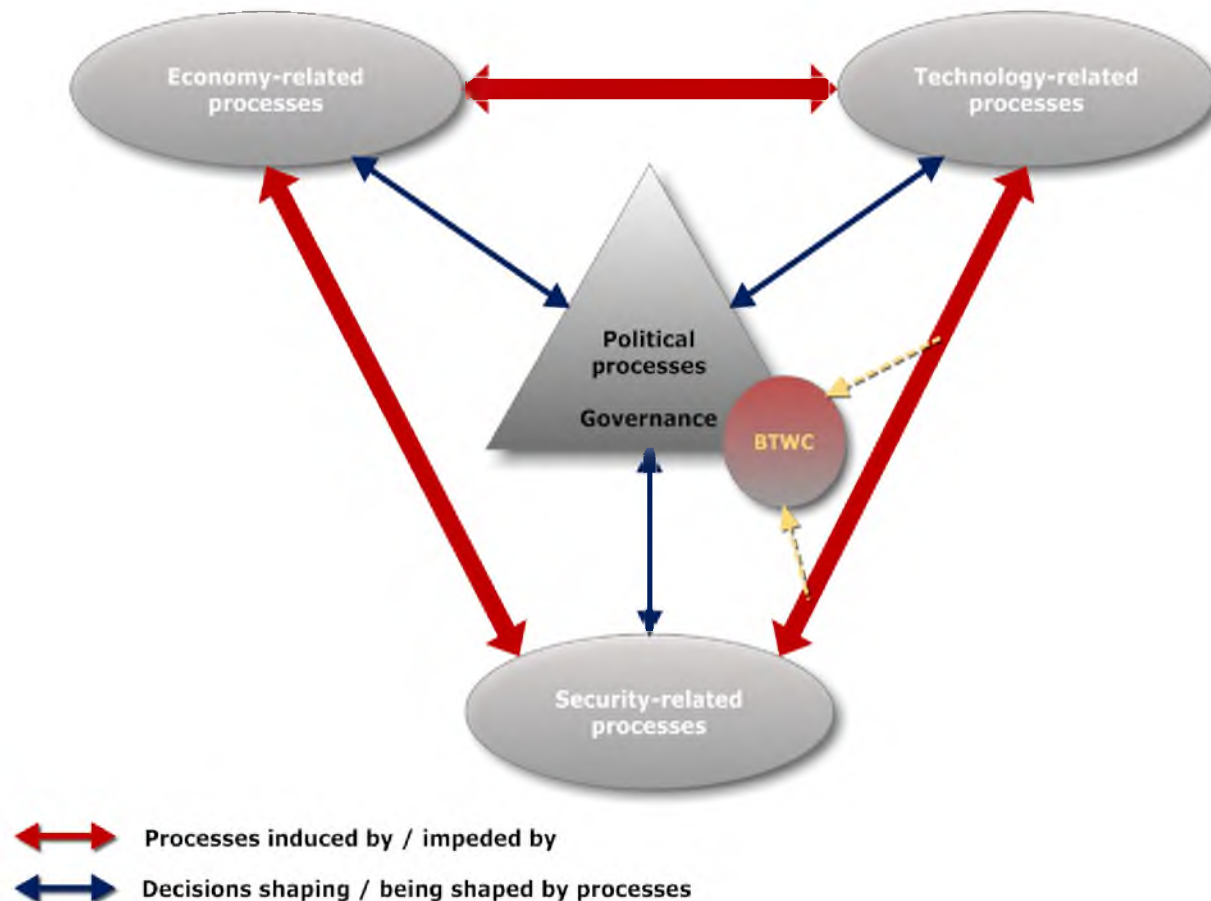
- Biology and biotechnology critical to development & health
- Many developing countries conduct leading-edge research
- Education expanding everywhere: spread of knowledge to manipulate pathogens, including genetics
- Biotechnology is essentially information: no physical goods to cross borders
- Corporate acquisition and sell-offs

- **Chemical:**

- Similar to biological
- Many production facilities with potential for CW manufacture now located in developing world

Future challenges for disarmament

The polycentric moment



- No unified model for governance of weapon control anymore
- Declining role of states in shaping developments
- New stakeholders and security actors
- Increased role of non-state national & transnational actors
- Shifting relative balances of powers (economy, politics, military) and multiple power centres
- Geographical decentralisation of business and industry activities
- South-South trade patterns and impact on technology diffusion



THE TRENCH

Recalling where science, industry and military art converged
Challenging entrenched positions

www.the-trench.org

E-mail

jpzanders@the-trench.org