EMERGING TECHNOLOGIES AND THE LAWS OF WAR

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“Laws of War”

- Categories of Laws of War
  - *Jus ad bellum:* when is it just to start a war (traditional)
    - Usually requires attack or threat of attack
  - *Jus in bello:* how is it just to fight a war (traditional)
  - *Jus post bellum:* what is a just resolution after war

“Laws of War”

- *Jus ad bellum*
  - Just cause (self-defense, or other-defense)
  - Right intention (St. Augustine)
  - Public declaration by proper authority
  - Last resort
  - Probability of success
  - Proportionality

“Laws of War”

- *Jus in bello*
  - Military necessity/military objective
  - Discrimination (or distinction) between legitimate and non-legitimate targets
  - Targeting of non-combatants prohibited; you can kill them as collateral damage, but you can’t target them with non-lethal weapons to save them
  - Doctrine of Double Effect: where collateral effects will occur, combat action may still be taken provided that it is otherwise permissible
  - Proportionality - only proportionate force employed, and only against legitimate targets

“Laws of War”

- Principle of unnecessary suffering or humanity: weapons that cause unnecessary suffering, or means that are *mala in se* (evil in themselves, such as mass rape as weapon) are prohibited
- Supreme emergency exemption (country that is victim of aggression, if on verge of defeat and humanitarian disaster at hands of aggressor, may set aside *jus in bello:* e.g., WWII UK prepared to use poison gas on Nazi invaders, and initiated bombing of German cities to avoid invasion) (nowhere written into international law)

DRIVERS OF TECHNOLOGICAL EVOLUTION

- **Project power, but with no casualties**
  - **Separate the soldier from point of combat**
    - **Cyberwar**
    - **Computer brain interfaces directly to weapon system**
    - **Lethal Autonomous Robots (LAR)**
- **Need for greater efficiency - less labor available (long term trend: substitute capital for labor):**
  - **Demographics**
  - **Competition with private firms when boomers retire**
  - **Autonomous robotic and weapon systems become critical operational technologies**

DRIVERS OF TECHNOLOGICAL EVOLUTION

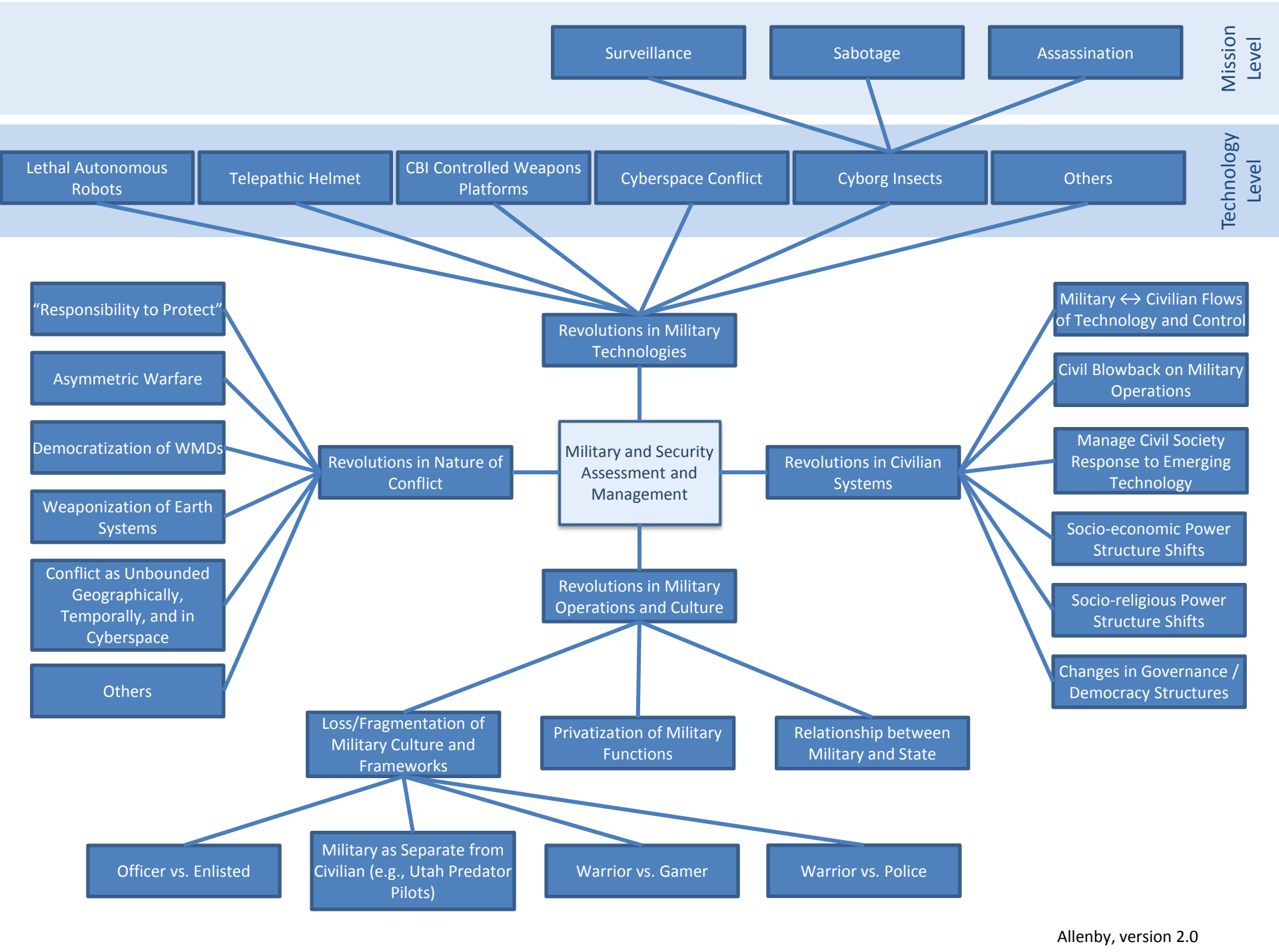
- **Complexity and radical contingency of military and security domains**
  - **You don't know *a priori* which weapons and technologies are critical, SO . . .**
  - **You have to prepare defensively against all potential threats**
- **Cultural domination through technological competition**
- **Human consciousness is the low bandwidth component of increasingly complex and information dense systems**
  - **GM autonomous car, augmented cognition ("Augcog") in combat**

DRIVERS OF TECHNOLOGICAL EVOLUTION

- Norms and Laws of Armed Conflict (LOAC) undermined by accelerating technological, institutional, cultural, and geopolitical change
  - "Combatant" versus "non-combatant"
  - Where is the battlefield (drones operated from Nevada, and amorphous global terrorist networks)
  - What is an attack? Stuxnet versus death of a thousand cuts ("unrestricted warfare")
  - What rules apply where? Military versus intel versus private contractor drone operations; police versus combat versus COIN environments; global networked non-state agents

Interconnected Domains

- Revolutions in military technologies
- Revolutions in civilian systems
- Revolutions in nature of conflict
- Revolutions in military operations and culture



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Non-Lethal Weapons

- **Mission critical because of changing missions: from combat to policing in counterinsurgency environment**

- **Not easily handled under existing Laws of War (e.g., cannot target civilians even to save them)**

Augmented Cognition

- **Military purpose: overcome information glut of modern battlefield; enable more intelligent conflict (e.g., minimize collateral damage in counterinsurgency)**
- **Mirrors developments on civilian side (e.g., self-driving automobiles)**
- **Major cognitive implications, as it involves explicit shift of cognition to technology networks**

Human Enhancement, Military Operations, and National Security

- **Examples of human enhancement**
  - **Direct CBI to weapons system**
  - **Drugs to reduce empathy, reduce risk of PTSD**
  - **Screening that determines who would be good Special Ops, who might be susceptible to PTSD, etc.**
  - **Mechanisms to control memory**
  - **Mechanisms to control moral judgment (e.g., transcranial magnetic stimulation)**
  - **Genetic and surgical creation of "supersoldiers" (e.g., genetic UV/IR vision)**

OBSERVATIONS

- Civil society and military operation costs and benefits often differ significantly
  - Military cost/benefit must be positive to drive technology development and deployment
  - Civil society implications not considered as part of develop and buy decision, and in any event are unpredictable and uncertain
- "Just say no!" fails

IMPLICATIONS

- **Powerful long term trends favor continued acceleration of emerging technologies with military and security implications**
- **Institutions to manage technology – such as the Laws of War – are not entirely obsolete, but they are already partial and incomplete.**

“He, only, merits freedom and existence
Who wins them every day anew.”

(Goethe, 1833, *Faust*, lines 11,575-76)