Cyberwar on the Horizon

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About me

- Security Consultant (`www.Kaishakunin.com`) with focus on Social Engineering, Security Awareness, Counter Intelligence and Security Management
- President of the Magdeburg Institute of Security Research and editor of the Journal
- President of the Magdeburg Academic Society of Security Policy Studies

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Introduction

Cyberwar currently is a big hype in

- the media
- IT-Security scene
- military
- politics
- political science

Think of Stuxnet, Georgia, Estonia, South Korea ...
But: Is it really possible to wage a *war* in cyberspace?

theoretical political/military science discussion

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Cyber War

Cyber

- Cyberspace: technical and social dimension
- technical: a lot of Hardware with some Software
- social: a space where people communicate and live together (Communities like 2nd Life, Facebook, Usenet ...)

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Cyber War

War

Definition (Wikipedia)

organized violent conflict of extreme aggression between at least two groups, with mortality

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War

Carl von Clausewitz

- Carl von Clausewitz, born near Magdeburg in 1780
- joined Prussian Army in 1792
- joined Prussian Military Academy in Berlin in 1801
- was aide to Scharnhorst in the reorganisation of Prussian army in 1806
- became General and Director of the Prussian Military Academy
- died of Cholera in 1831
- Â»On WarÂ« published in 1832 by his widow
- dialectical theoretical discussion of war
- with a focus on strategy, tactics and fog of war
- *THE* book on war

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Cyber War

War

Definition (Carl von Clausewitz)

War is nothing but a duel on an extensive scale. [...]
War therefore is an act of violence intended to compel our opponent to fulfil our will.

- War is a mere continuation of policy by other means, it has no purpose by itself
- objectives of war: to either achieve limited aims or to disarm an opponent and render him politically helpless or military impotent

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Strategy and Tactics

- tactics is the theory of the use of military forces in combat
- strategy is the theory of the use of combats for the object of the war
- winning single battles is tactics
- winning a war is strategy
- occupying a country and building a new nation is strategy

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Strategic View

- Cyberwar is a mere continuation of policy by other means, it has no purpose by itself
- Cyberwar must be embedded into a political strategy to render an opponent military impotent
- just doing some hacking can be considered as skirmishing, but not as a strategy or even a war
- IMO: Cyberwar currently is a part of conventional warfare on tactical level

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Cyberwar and military strategy

- Cyberwar might change one fundamental Clausewitzian paradigm
- *it is easier to defend than to attack*
- logistics, knowledge of area, fog of war
- Cyberwar: the defender has to defend all systems and find/patch all vulnerabilites
- the attackers only have to find one vulnerability
- a 14-year old pakistani scriptkiddie might be able to shutdown the US Air Force and start a Cyberwar
- this will have *important* political implications

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public international law

- there is no international treaty available that establishes a legal definition for an act of cyber aggression
- Law of Armed Conflict (aka International Humanitarian Law) applies
- jus ad bellum: justice to war: how to proceed to to a state of war
- jus ad bello: justice in war: how to conduct a war
- different interpretations of current LoAC exist
- generally accepted interpretations say that cyber attacks are not an act of war
- to be an act of war cyber attacks have to be conducted by governmental organizations or at least have to be supported by them

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Nonproliferation

- nonproliferation of cyber weapons is in discussion
- nonproliferation treatys are required to enforce nonproliferation on an international level
- see: nuclear nonproliferation treaty
- but: it is also a technical problem
- How shall nonproliferation be enforced? The Internet can not really be censored and cyberweapons can be smuggled on SD Disks

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NATO

- USA want to change NATO treaty to allow Â»conventionalÂ« military reactions to cyber attacks
- a 14-year old pakistani scriptkiddie might be able to shutdown the US Air Force
- pretending to be chinese
- and provocing a conventional attack of china
- by all NATO members

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Cyberwar ./. Cybercrime

- legal definitions of cyberwar and cybercrime have to be made
- an international cybercrime convention is required
- an international anti cybercrime agency too
- IMO cybercrime is currently more dangerous than cyberwar

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Stuxnet

A strategic view

- Stuxnet was expensive, several good programmers + management
- testbed including industrial computers and controll devices
- well organized group (military?)
- used multiple 0day exploits (expensive to find or buy)
- used multiple intrusion vectors, including USB sticks in very sensitive areas like nuclear research plants
- a well organized, strategically planned act of aggression
- but did it disarm an opponent and render him politically helpless or military impotent?

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Smartmeters

a new attack vector

- EC wants Â»intelligentÂ« electricity meters in all households
- remotemeters measure the detailed amount of power consumption
- intention: to help save electric load and gahter information for powerplants
- industry and powerplants are interested in so called smartmeters
- smartmeter allow powerplants to remotely shutdown a household

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Smartmeters

a new attack vector

- if a lot of households are shutdown at the same time, the cut off current might shutdown the local power plant
- the shutdown of the local power plant produces more cut off current
- which can create a cascading effect to the next power plants
- almost all european power plants are cascaded into one network
- backup systems rely on natural gas
- North Italy was shutdown by an accident and a cascading effect

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Smartmeters

- currently, there is absolutely no IT security involved in the process
- a lot of power companys and industrial companys can make a lot of money
- they are lobbying for the introduction of smart meters
- smart meters are bloated like Emacs to make them expensive
- that process needs to be analyzed by political science

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Outlook

- Network Centric Warfare (Â»data warehousingÂ«) central doctrine of US armed forces
- heavily relies on electronic communication – which can be hacked to render military units unable to act
- robotic warfare/surveillance drones (Â»TerminatorÂ«) heavily rely on electronic communication
- perspective trojans?

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Coda

- the term cyber*war* is IMO exaggerated
- it is currently not possible to render an opponent military impotent
- but we are working towards a society that relies more and more on IT
- an we have absolutely no international strategy on IT security
- we are currently in an experimental phase (Airforce; Panzer)
- read Clausewitz, Weizenbaum and van Crefeld

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Night Talk on *Security Awareness*

Any Questions?

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