6.Vorlesung

Informatik und Gesellschaft 1

homepage
http://cartoon.iguw.tuwien.ac.at/zope/lvas/iug1_ss

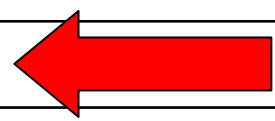
LVNR 187.227, 2-stündig
Sommersemester 2005

Prof. Peter Fleissner (peter.fleissner@igw.tuwien.ac.at)

TutorInnen
Nicole-Stefanie Kraler (nici@xover.htu.tuwien.ac.at)
Florian Cech (loki@xover.htu.tuwien.ac.at)
Bitte [IuG] in subject-Zeile schreiben!

Vorlesungsplan

Datum	Inhalt
09.05.2005, jeweils 16:00 bis 20:00 Uhr	Als Auftakt Prof Dr. iur. Bernd Lutterbeck, TU-Berlin. Im Anschluss Vorlesung zum geschichtlichen Hintergrund des Informationsbegriffs
23.05.2005	Geschichtlicher Hintergrund II: Informations- und Kommunikationssysteme
30.05.2005	Technik und Gesellschaft, Technikfolgenabschätzung
06.06.2005	Vom Fordismus zur Informationsgesellschaft, Grundelemente wirtschaftlichen Handelns
13.06.2005	Digitale Medien
20.06.2005	Informationstechnik und militärische Strategien
27.06.2005	Prüfung (Alle schriftlichen Unterlagen können verwendet werden, aber kein Taschenrechner, Laptop, Palmtop oder mobiles Kommunikationsgerät)



igw

TU WIEN

The Global and the Local in Mobile Communication

Places, Images, People, Connections

Welfare and Warfare

Contrasting scenarios of mobile communication

Peter Fleissner
Vienna University of Technology
Institute of Design and Assessment of Technologies

Conference
Budapest, June 10–12, 2004
Hungarian Academy of Sciences

Outline of the presentation

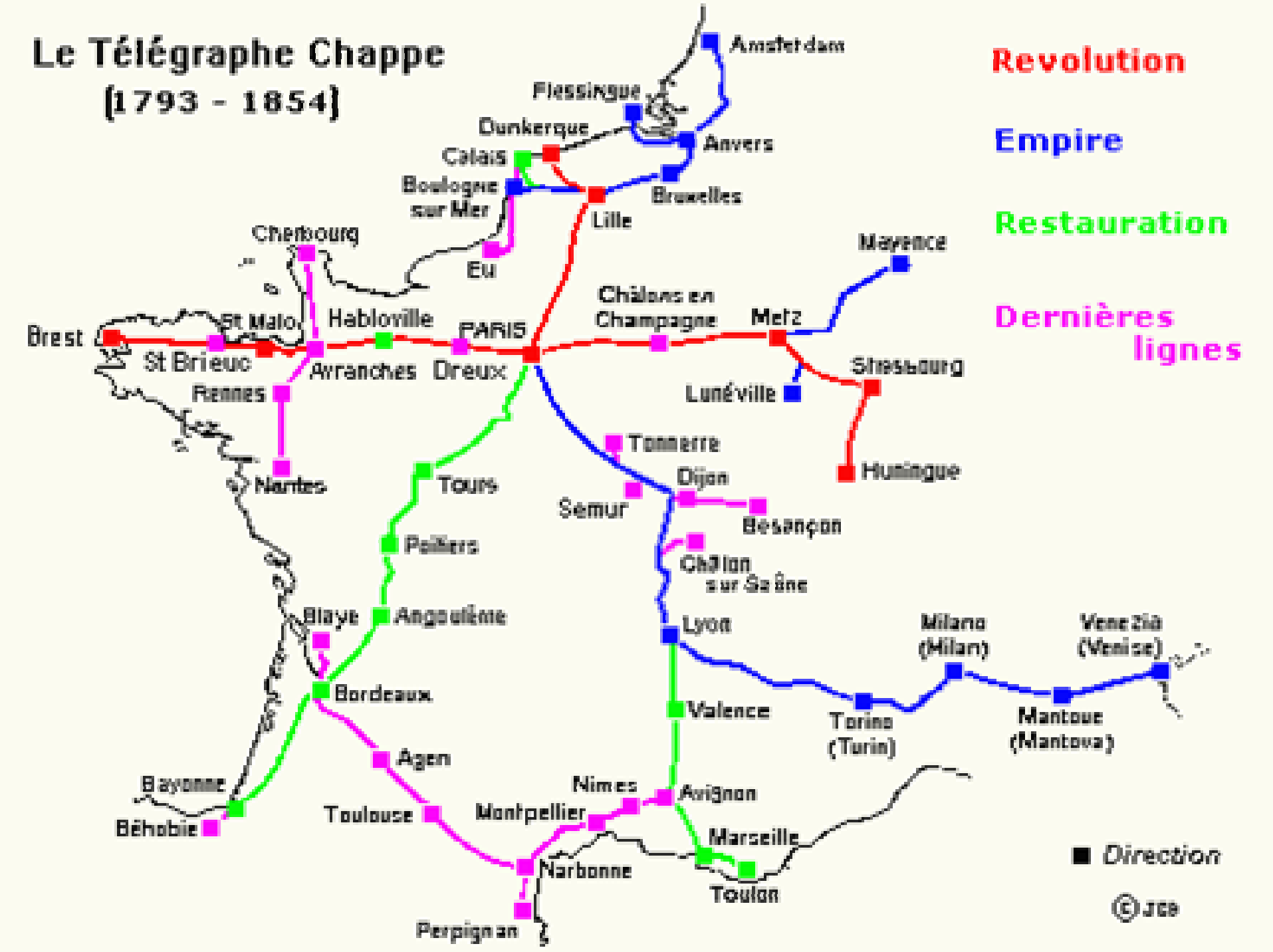
Invitation to a mental journey
Dealing with two essential
    functions of the modern state:
    warfare and welfare
illustration of the potential of
    communications technologies
    for qualitative change.
Part I: Short history of **warfare**
Part II: **welfare** and its future
By changing some aspects of the
    welfare state we will come back
    to the question of war again.

Stages of development

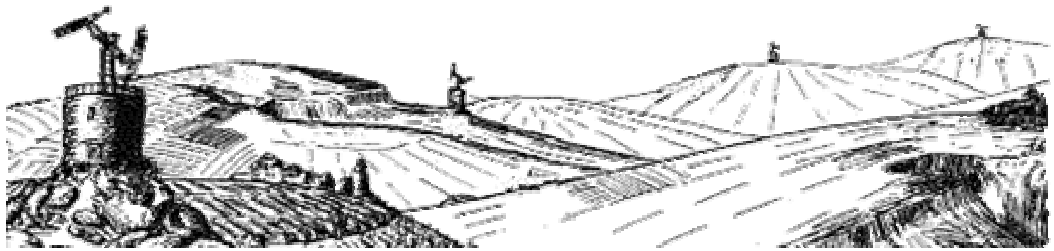
- 1792: Optical telegraph – separation of strategic command and battlefield
- 1870: Electric Telegraph – war by railway
- WW I: Wired telephony – positional war
- 1939: Mobile communication – Blitzkrieg
- 2000+: Ubiquitous communication – swarming
- Global Information Grid

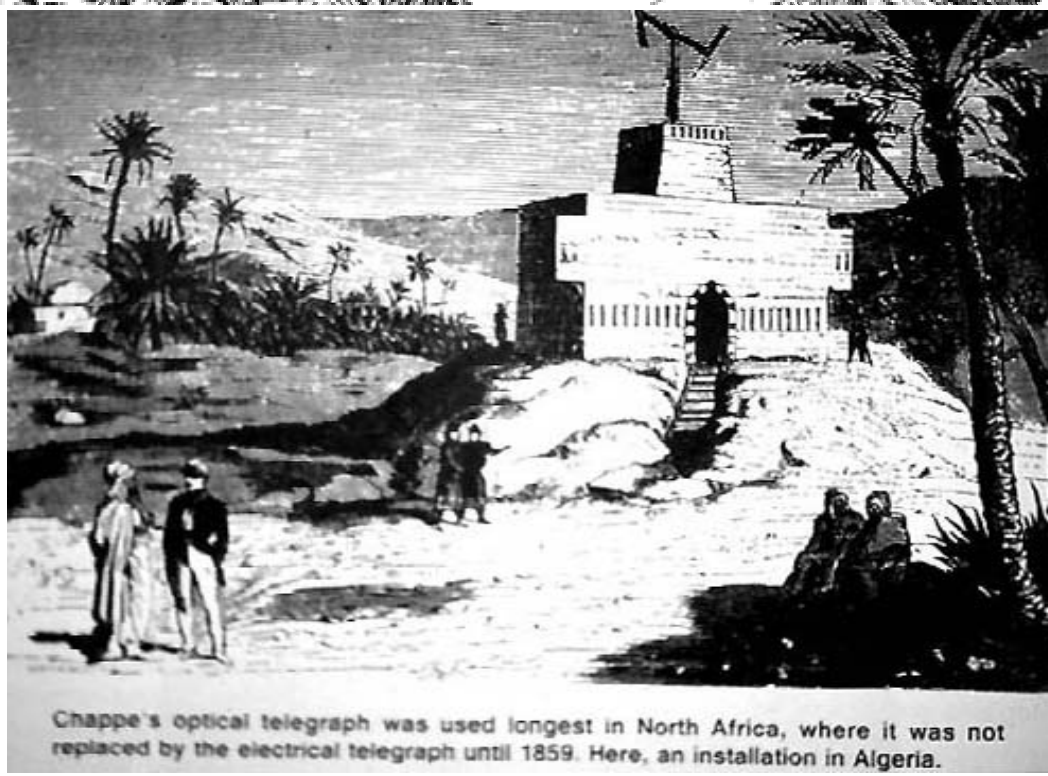
Optical telegraph – separation of strategic command and battlefield

- Invented by Claude Chappe (1763-1805), assisted by his brothers
- 1792 first implementation Paris-Lille
- Stations in visible distance, equipped with semaphore and telescope
- Finally arranged around 5 main lines starting in Paris, not connected in the centre
  - to Lille with an extension to Amsterdam; to Strasbourg via Metz, extension to Mainz; to Brest; to Dijon with an extension to Venice; to Bordeaux.
- Speeded up mobilization, co-ordinated movements of armies, warned about invasion


Le Télégraphe Chappe
(1793 - 1854)
Revolution
Empire
Restauration
Dernières lignes
Amsterdam
Flessingue
Dunkerque
Anvers
Calais
Boulogne sur Mer
Bruxelles
Lille
Cherbourg
Eu
Mayence
Châlons en Champagne
Metz
Brest
St Malo
Hableville
PARIS
St Brieuc
Avranches
Dreux
Strasbourg
Rennes
Lunéville
Tonnerre
Nantes
Tours
Dijon
Semur
Huningue
Besançon
Poitiers
Châlon sur Saône
Blaye
Angoulême
Lyon
Milano (Milan)
Venezia (Venise)
Bordeaux
Valence
Torino (Turin)
Mantoue (Mantova)
Agen
Bayonne
Nimes
Avignon
Toulouse
Montpellier
Marseille
Béhobie
Narbonne
Toulon
Perpignan
Direction
©JCB

Chappe's Optical Telegraph



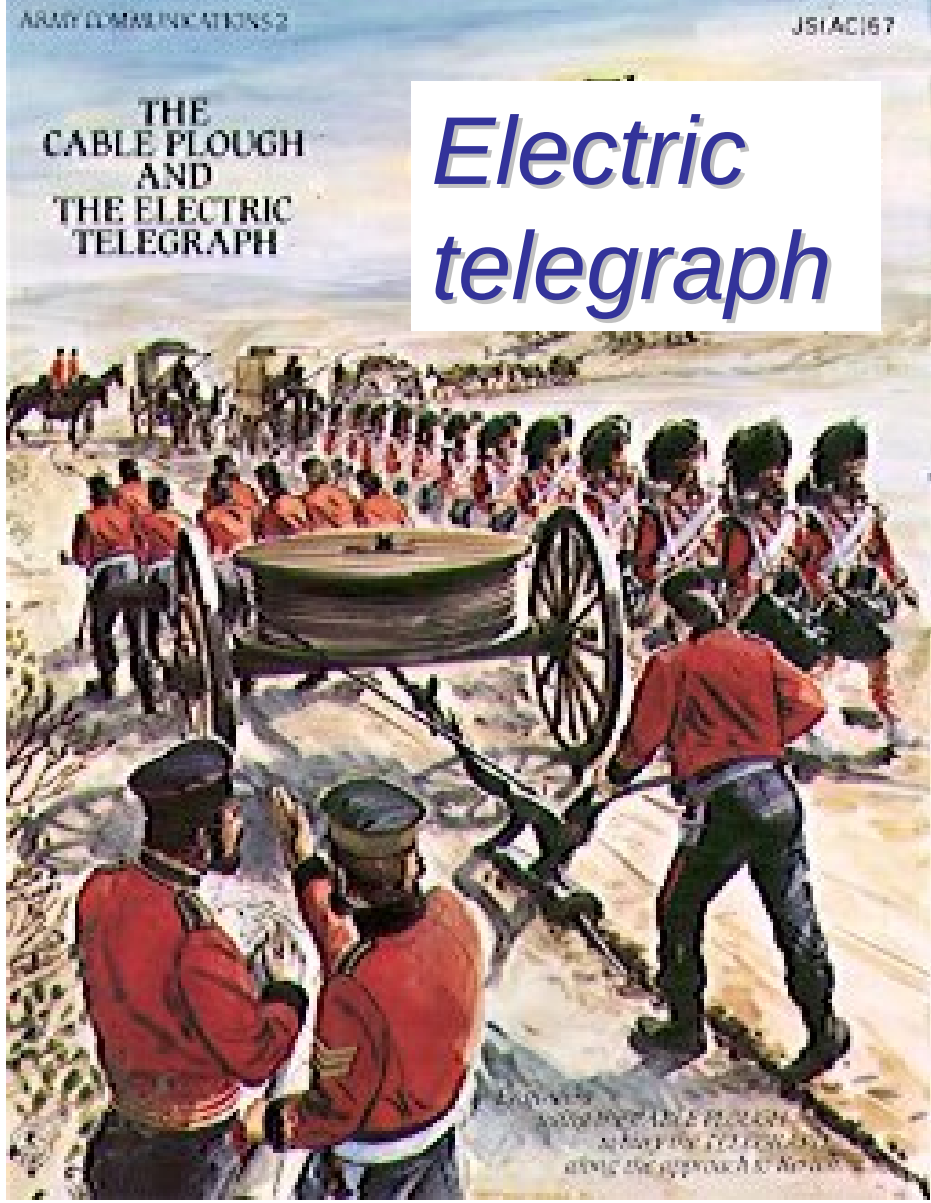


Chappe's optical telegraph was used longest in North Africa, where it was not replaced by the electrical telegraph until 1859. Here, an installation in Algeria.

Source:http://academics.smcvt.edu/journalism/jowebpagesOLD/courses/Global%20Comm/Telegraph%20Positivism/chappe%202%20optical%20tele%20modifications.htm

Electric telegraph – war by railway

- Form Franco-Prussian War (1870-71) to WW I
- Parallel to the building up of rail networks in Europe
- Combination of new means of transport and means of communication allowed
  - precise planning, timing and coordination
  - reduction of frictions in mobilization and deployment,
  - improved stand-by features (armies could wait in longer distance)
  - short term relocation of armies
  - rapid reactions



Electric telegraph

Source www.gordon.army.mil/ocos/rdiv/ForKids/kidhist.asp

TU WIEN

Wired telephony – positional war

- During the positional war of WW I
- In the beginning used like telegraph
- Interactivity was discovered only slowly
- Topology of multiple connections
- Use of telephones in local networks
  - Between artillery and guns
  - Between observers and artillery
  - In air defence systems

Source: www.kommiss.de/ equip_single_kommiss.htm

The wired telephone

Americans in the trenches on the Marne front. The outlook has seen the signal rocket and is telephoning to the artillery trenches instructions to cover the forward line with barrage to protect them across "No Man's Land." Photo shows operator receiving instructions by telephone and crew awaiting orders.

Mobile communication - Blitzkrieg

- Going wireless: a “heavy” start
  - Germany 1914: first mobile station: 1.5 tons
- 1937 Germany: VHF-radio-receivers for each tank, transmitters for each command tank, also used in aircraft
- Strategic advantages
  - The commander back to the battlefield modern version of the cavalry
  - Coordinated action of tanks, aircraft and infantry
  - Direct interaction with High Command from the battlefield

Ongoing Developments

- After the implosion of socialism construction of new enemies of „Western Civilization“
  - Until 2000: „Rogue states“
  - After 2000: „States of concern”:
    North Korea, Cuba, Iran, Iraq, Libya*, Syria, and Sudan
  - After 9/11 2001: „axis of evil“ seen as homelands of terrorism:
    Iraq, Iran, and North Korea

* recently taken off the list

Blitzkrieg - continued

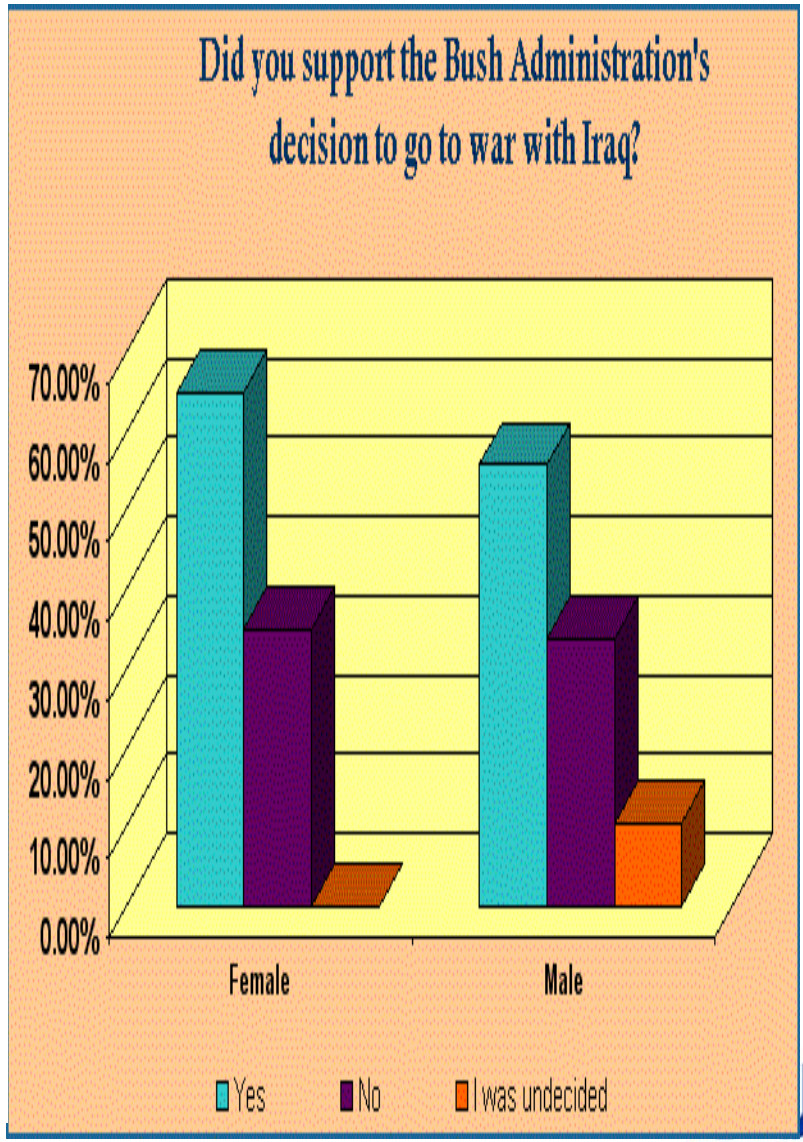
Blitzkrieg strategy copied by other countries:

- Israel against Egypt, Jordan and Syria 1967 (six-day war)
- Gulf War 1991
- United States in Afghanistan (October - December 2001)
- Iraq War 2003 (“Shock and Awe”)

Combination of highest level of arms and computers/ communication technologies

Recent history is teaching us:

It seems possible to win the war, but usually peace is lost.



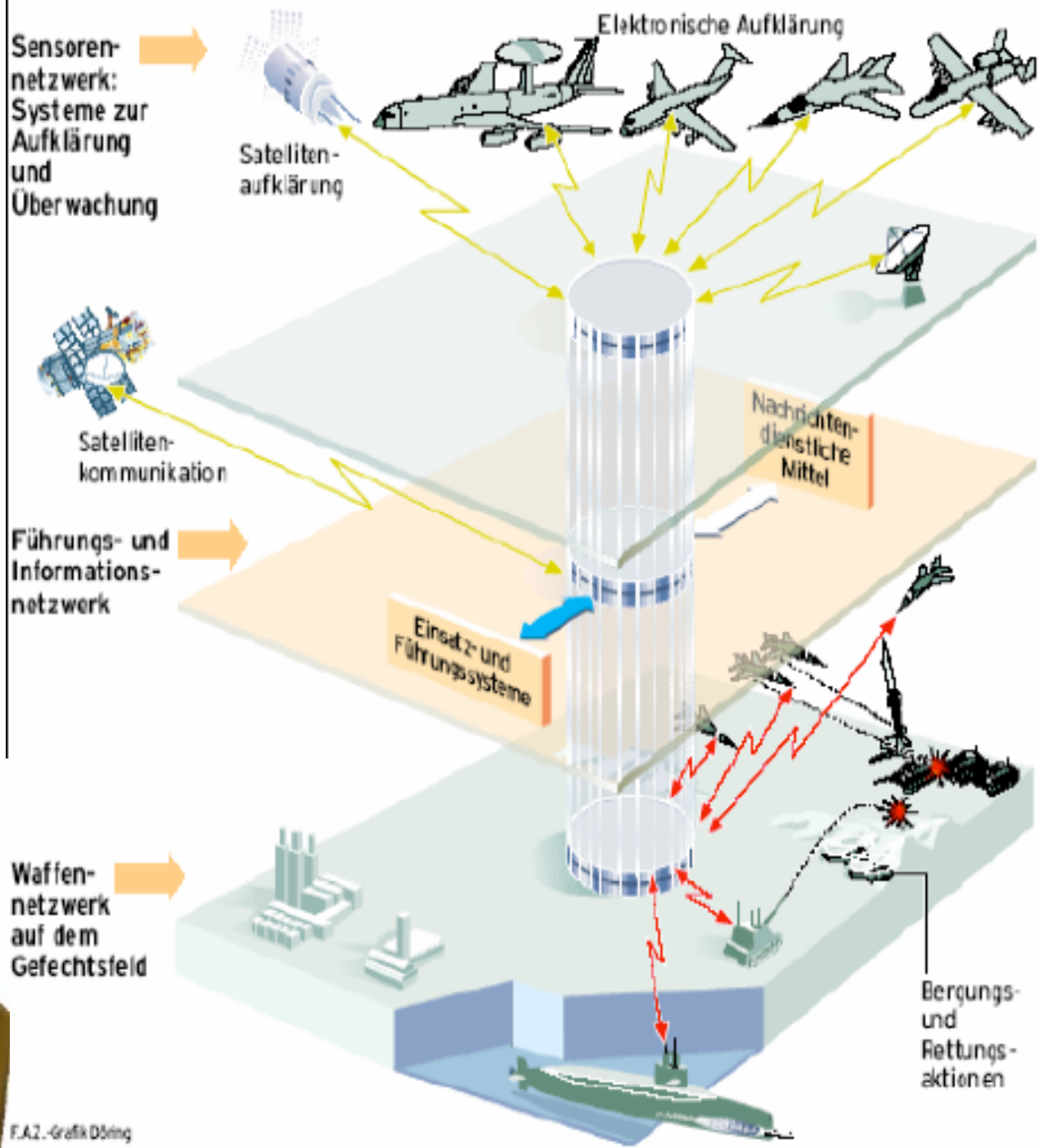
*Mit dem „**G**lobal **I**nformation **G**rid“ zur Network Centric Warfare*

- Das Pentagon verfolgt seit dem Jahr 2000 („Joint Vision 2020“) Konzept der „Information and Decision Superiority“.
- Schritt in Richtung der neuen netzwerkzentrierten Kriegsführung (Network Centric Warfare, NCW)
- Man erhofft sich
  - erhöhte Präzision beim Durchführen von Angriffen, schnelleres Einsetzen der
  - militärischen Schlagkraft und schlussendlich
  - die komplette Beherrschung des Schlachtfeldes zu Lande, zur See, in der Luft und im Weltall.

Network Centric Warfare and Global Information Grid (GIG)

Quelle: Praktikumsarbeit

Alexander Banfield-Mumb



Swarming

Cue taken from nature
Bees do "humming"

- instinctively move in coordinated synchronous behaviour in pursuit of food.

and "blanketing"

- striking at their enemies from all directions.

Ants

- employ swarming in immediate defence of the hive/in extended territorial wars against other ants.

show "sustainable pulsing" of forces

- unlike bees who die after they have stung they can attack repeatedly.


bees….
…and ants
Photo Courtesy of:
Fidelity Exterminating Company
Aberdeen, MD
http://www.unexco.com/gallery/swarmers.jpg

Network Centric Warfare

- derzeit noch in den Kinderschuhen
- In der amerikanischen Vision sollen Truppen, Fahrzeuge, Waffensysteme, Satelliten, Roboter und alle möglichen Sensoren ein tödliches, alles wahrnehmendes und schnell reagierendes Netzwerk (Schwarm) bilden.
- Bis heute scheiterte die optimale Vernetzung vor
- allem auch an der fehlenden Bandbreite.
- Durch den Einsatz einer Netzwerk zentrierten Kriegsführung erhofft man sich einen Informationsvorteil, der dem einzelnen Soldaten eine stark verbesserte Informationsposition bringen soll.
- Dies geschieht in Form von gemeinsamen Einsatzbildern, die Basis für “shared situational awarenees and knowledge” sind.
- Erwartetes Ergebnis: Steigerung der gesamten Kampfkraft.

*Mit dem „**G**lobal **I**nformation **G**rid“ zur Network Centric Warfare*

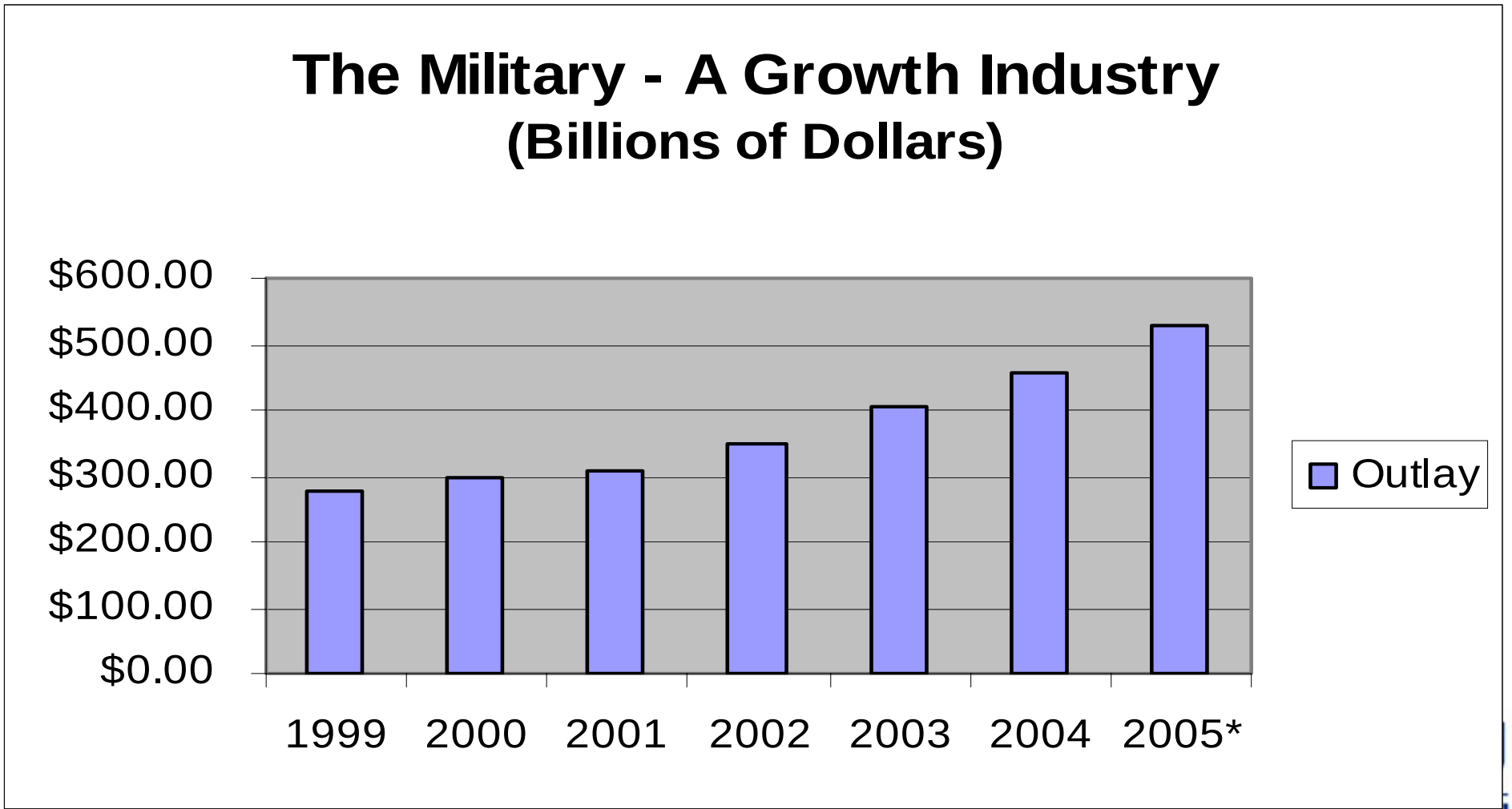
- Dazu wurde das Global Information Grid (GIG) Projekt ins Leben gerufen.
- Das GIG soll *ein* großes Netzwerk werden, mit dem die Personen im DoD und in den Geheimdiensten auf einem sicheren und verlässlichen Wege Informationen austauschen können. Darüber hinaus:
- Das Netzwerk soll so allgegenwärtig sein, dass der Benutzer an jedem beliebigen Ort relevante
- Informationen abrufen kann. Man erwartet vom GIG, dass es die erhoffte Transformation des amerikanischen Militärs bewirkt, und den Soldaten, Führungspositionen und dem übrigen Personal erlaubt, schneller als bisher Entscheidungen zu treffen.
- GIG integriert Erdsatelliten, Glasfaserkabel und Bodenstationen – ein Internet am Himmel

The (opportunity) cost of war

Country (2002)	Military Budget	GDP	Percentage share
	Billions of Dollars	Billions of Dollars	%
United States	399,1	10383,100	3,84
Russian Fed. (2001)	65,0	346,520	18,76
China (2001)	47,0	1266,052	3,71
Japan	42,6	3993,433	1,07
UK	38,4	1566,283	2,45
France	29,5	1431,278	2,06
Germany	24,9	1984,095	1,25

“I’m a war President. I make decisions here in the Oval Office on foreign policy matters with war on my mind . . . .”
--George W. Bush—

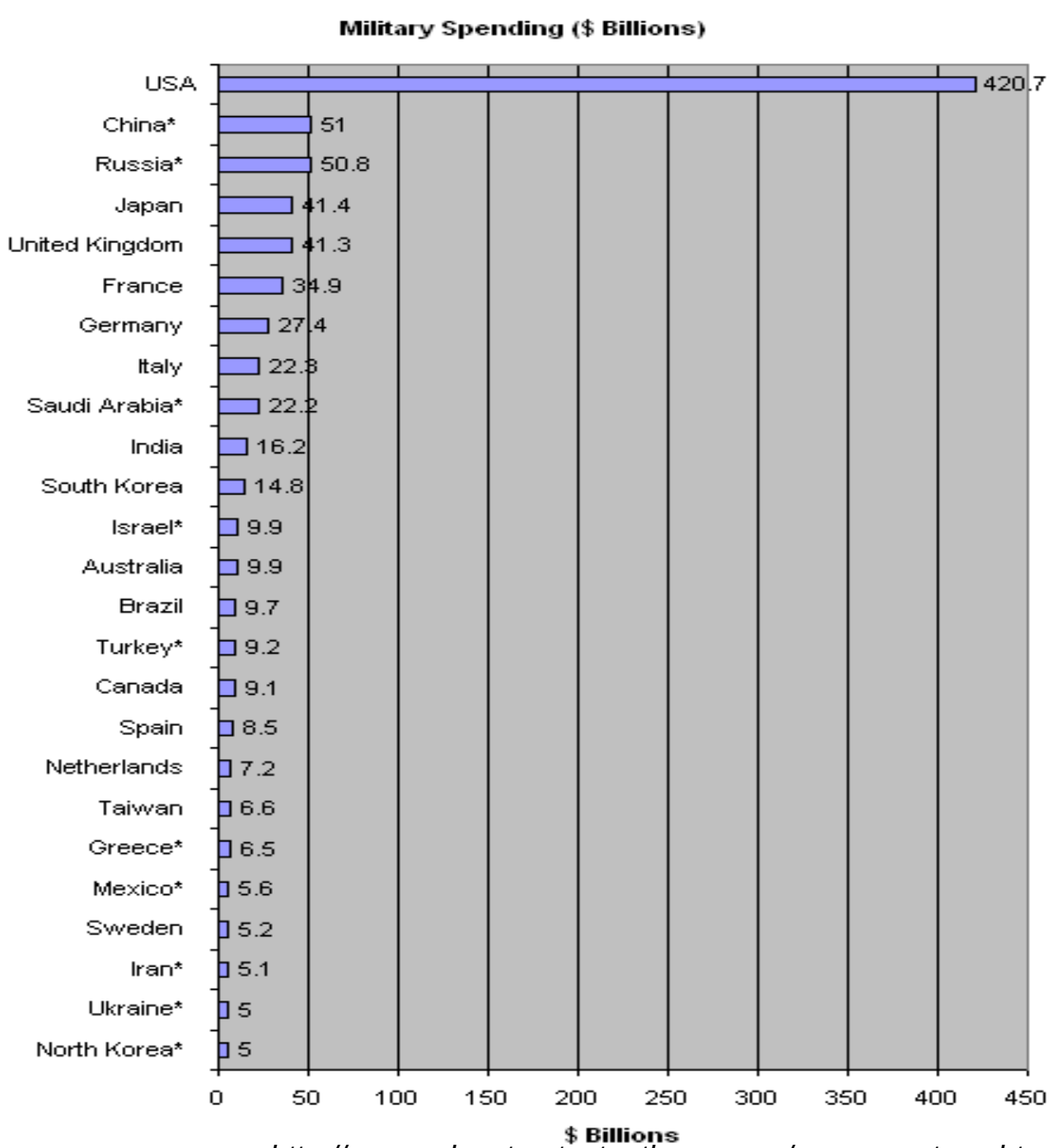
see http://www.educatorstostopthewar.org/permanentwar.htm



U.S. Military Spending vs. World (2005)

US spending almost as great as the development assistance needed to fulfill the United Nations Millenium Development Goals *over 10 years*.

At about $443 billion the FY 2005 estimated budget outlay for Defense exceeds the combined expenditures of the next 23 largest military spenders in the world. It is over 80 times that of Iran and North Korea, members of the"Axis of Evil". This figure *does not* include the rapidly mounting costs of pacifying and reconstructing Iraq and Afghanistan.



see http://www.educatorstostopthewar.org/permanentwar.htm

Die größten Waffenkäufer

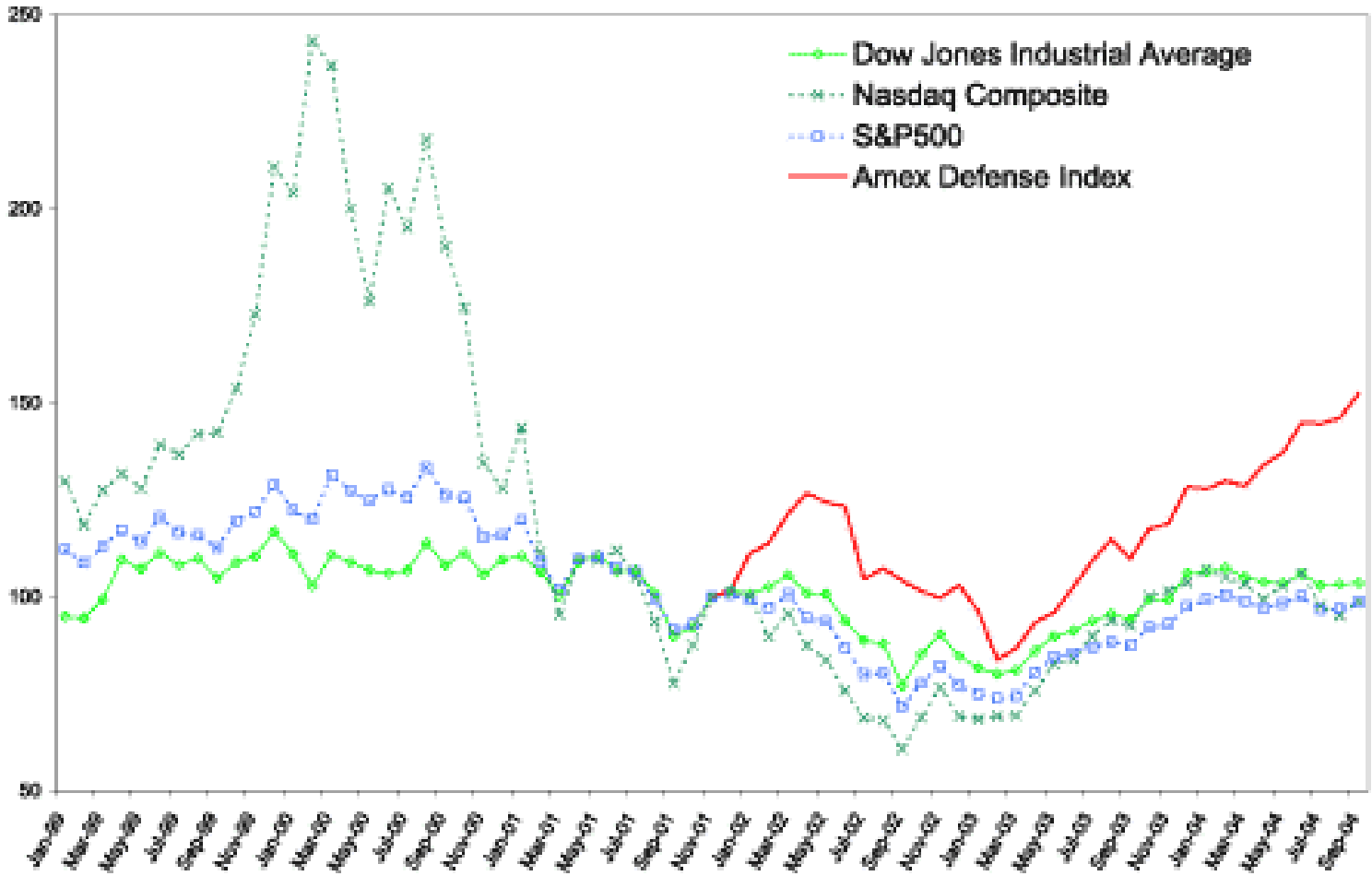
- **WAFFENHANDEL:** *Weltweit werden wieder mehr Waffen produziert und verkauft. Russland ist der größte Waffenexporteur.*
- **AMERIKAS DOMINANZ:** *Das US-Militär-budget verschlingt allein 47 Prozent der globalen Ausgaben für Rüstung.*

Die Presse, 8. Juni2005, S.1

Rüstungsausgaben und Waffenexporte

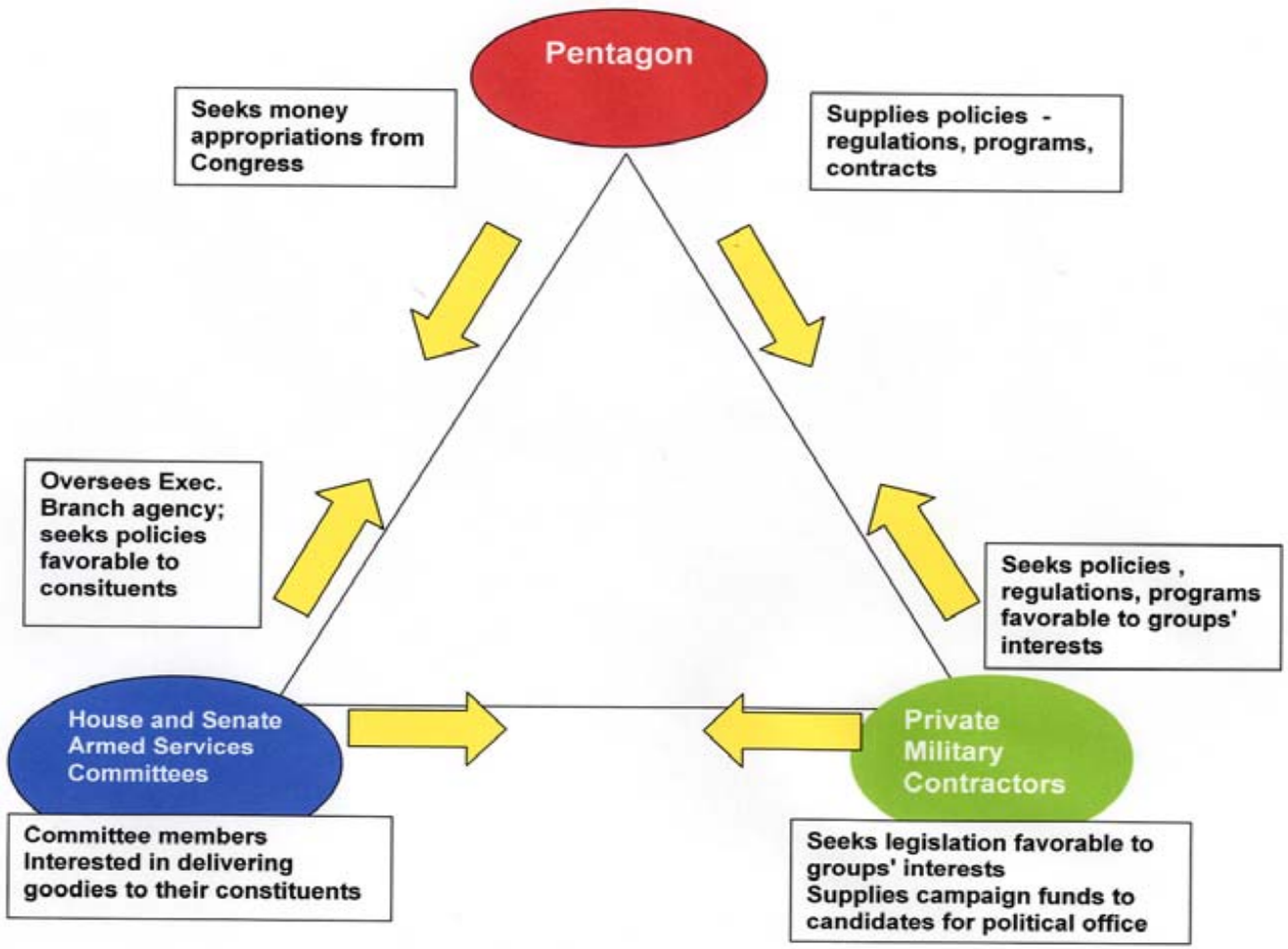
Die Presse, 8. Juni2005, S.1

Defense Stocks Soar



see http://www.educatorstostopthewar.org/permanentwar.htm

The "Military Industrial Complex"

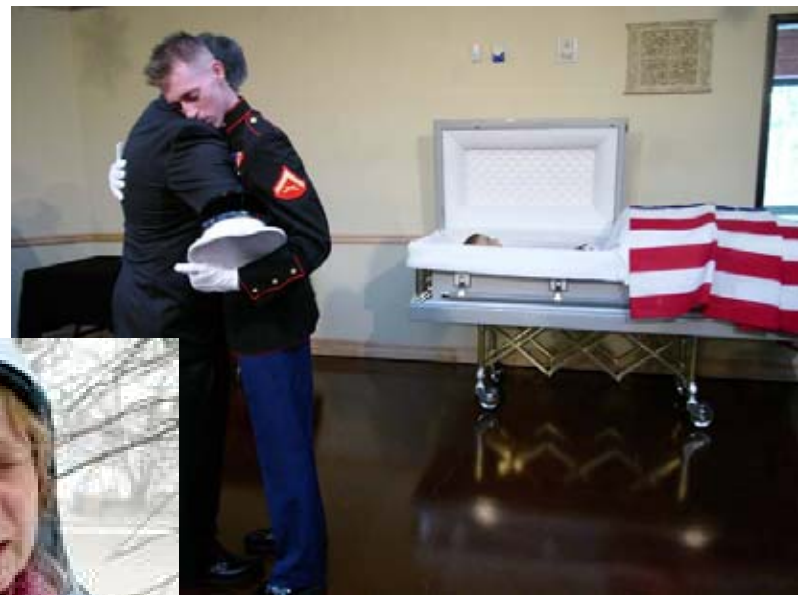


see http://www.educatorstostopthewar.org/permanentwar.htm

The REAL *Costs of War*

see http://www.educatorstostopthewar.org/permanentwar.htm

Censored



The REAL *Costs of War*

Censored

see http://www.educatorstostopthewar.org/permanentwar.htm

The REAL *Costs of War*

Homeless Needs Rise as U.S. Aid Declines
Pressed for Resources, Many Area Agencies Had to Turn Clients Away Report Says
By Mary Otto
Washington Post , February 16, 2005

see http://www.educatorstostopthewar.org/permanentwar.htm

The REAL *Costs of War*

see http://www.educatorstostopthewar.org/permanentwar.htm

“Collateral Damage”

see http://www.educatorstostopthewar.org/permanentwar.htm


Is there a way out?

Assessment of military doctrines

- View of the bible
- View of the Founding Fathers
- View of “Old Europe”

Part 2: Beat Swords into ploughshares

"They shall beat their swords into ploughshares, and their spears into pruning-hooks; nation shall not lift up sword against nation, neither shall they learn war any more".

Prophet Isaiah, 2500 years ago

Beat Swords into ploughshares - modern version

“Every gun that is made, every warship launched, every rocket fired, signifies in the final sense a theft from those who hunger and are not fed, those who are cold and are not clothed”.

President Dwight D. Eisenhower, 50 years ago

The cost of the European welfare state up to 2010

Expenditure	**Shares of GDP**
• Pensions and old age	5 - 13%
• Health Care	7 - 11%
• Education	5 - 8%
• Unemployment support	3 - 5%
• Active employment policy	0.4 - 3.2%
Total range	**20.4 - 40.2%**

Crisis factors

- Demographic factors
  - declining fertility rates
  - longer life expectancy
  - demographic pyramids convert to rectangles
- Economic factors
  - increasing costs and reduced economic growth rates
  - Increased income levels
  - Chronically high unemployment - less solidarity
- Political factors and public discourse
  - Decline of political movements defending the traditional welfare state
  - Decline of traditional grand narratives
- Societal and institutional factors
  - Mosaic society; singles households increase
  - over-bureaucratization

Is there a way out?

New possibilities come up by new technologies and new societal trends
ICTs allow reduction of transaction costs
=>New forms of organizations can emerge

- Hierarchy levels can become less
- Responsibility back to people
- But: services of the welfare state continue to be a right of the citizen

Look for examples already in place

Average Transistor Price By Year

Source: Dataquest/Intel 12/02

Is there a way out?

New possibilities come up by new technologies and new societal trends
ICTs allow reduction of transaction costs
=>New forms of organizations can emerge

- Hierarchy levels can become less
- Responsibility back to people
- But: services of the welfare state continue to be a right of the citizen

Look for examples already in place

Targeted Intelligence Networks

Empirical examples (“Keimzellen”)

- "Peer Group Care“
  - complementary structure to take care for the elderly, poor, disabled and other outsiders;
- "Study Circles"
  - to complement traditional schools;
- "Workers' Health Assurance Groups"
  - to improve the occupational ill-health status, and
- "Intrapreneurial Groups"
  - against alienation on the workplace and to gain responsibility

Challenges of Implementation

- welfare functions should be complemented by TINs, not replaced
- Society's responsibility should not be taken away, but increased (in particular financial resources should be available, private–public partnerships, involvement of of NGOs needed)
- Important issue: how to monitor and control the TINs to create a process of self-improvement
- Experiencing directly the darker side of life can lead to more effective political engagement

Conclusion

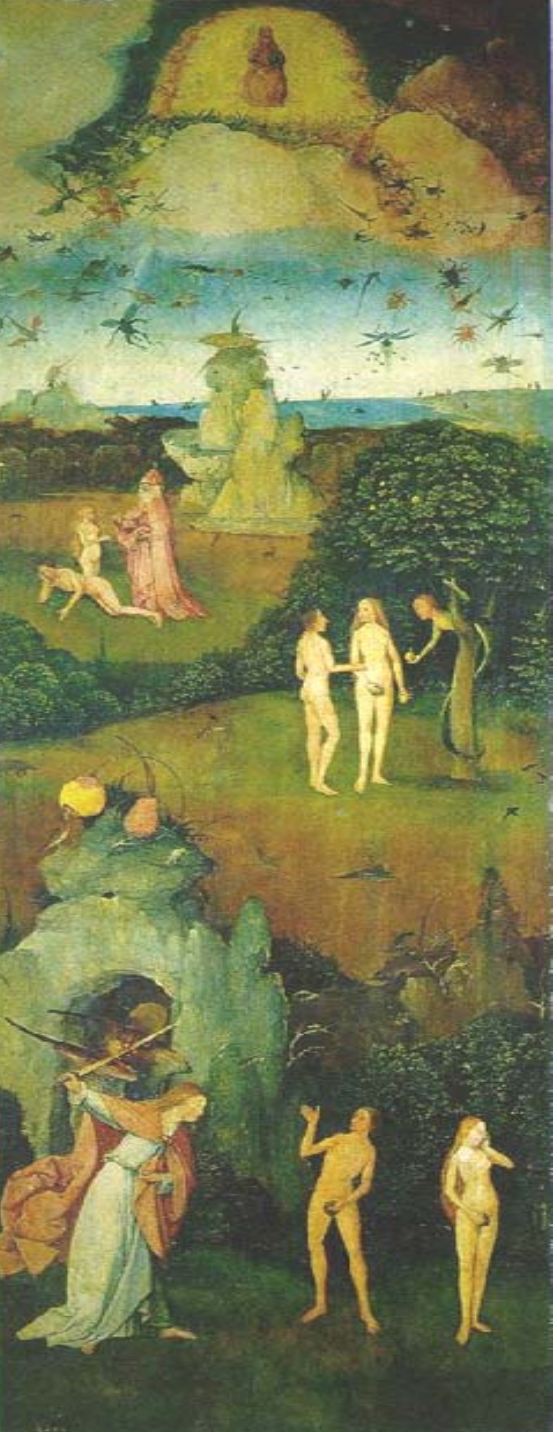
Kant‘s expectation behind his request in „To eternal peace“ (1795)

„Die bürgerliche Verfassung in jedem Staat soll republikanisch sein!“

Countries with autocratic system will not ban war, but countries with a republican constitution are able to do so

But, as recent history shows: Kant was not right!

! Modify the living conditions in such a way that Kant‘s expectation becomes true !



It‘s up to us to find the *appropriate* way!

Vorlesungsplan

Datum	Inhalt
09.05.2005, jeweils 16:00 bis 20:00 Uhr	Als Auftakt Prof Dr. iur. Bernd Lutterbeck, TU-Berlin. Im Anschluss Vorlesung zum geschichtlichen Hintergrund des Informationsbegriffs
23.05.2005	Geschichtlicher Hintergrund II: Informations- und Kommunikationssysteme
30.05.2005	Technik und Gesellschaft, Technikfolgenabschätzung
06.06.2005	Vom Fordismus zur Informationsgesellschaft, Grundelemente wirtschaftlichen Handelns
13.06.2005	Digitale Medien
20.06.2005	Informationstechnik und militärische Strategien
27.06.2005 	Prüfung (Alle schriftlichen Unterlagen können verwendet werden, aber kein Taschenrechner, Laptop, Palmtop oder mobiles Kommunikationsgerät)

Danke für Ihre Aufmerksamkeit…

….und viel Glück bei der Prüfung!