

# **CYBERSPACE**

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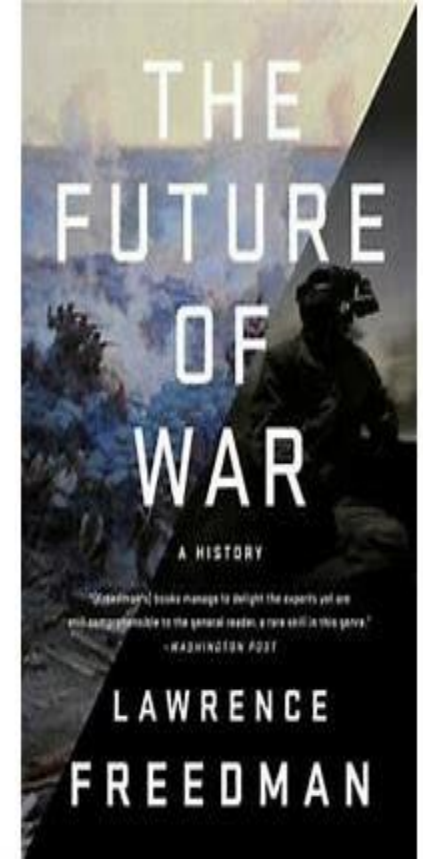
**NOVEMBER 2019**

**DKI APCSS**

# OUTLINE

- ◊ **INSIDE THE 'REVOLUTION'**
- ◊ **#complexworld**

**“The world isn’t run by weapons anymore, or energy, or money. It’s run by ones and zeroes, little bits of data. It’s all just electrons...there’s a war out there, old friend, a world war. And its not about who’s got the most bullets. It’s about who controls the information: what we see and hear, how we work, what we think. It’s all about the information.”**



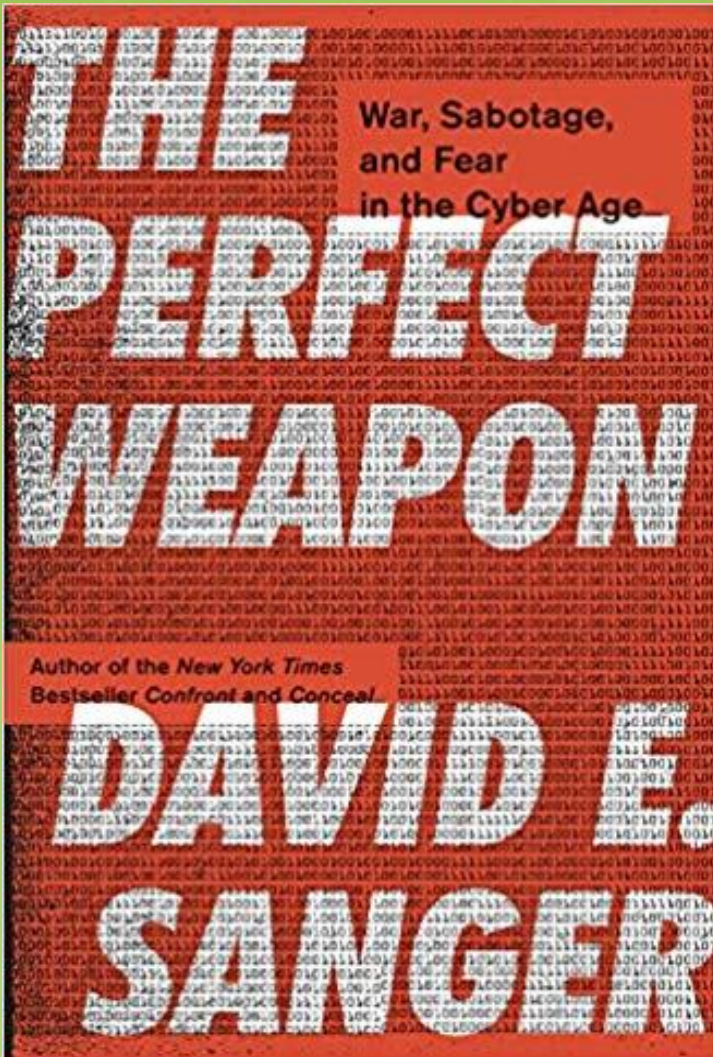
Freedman, Lawrence. The Future of War, cited from the movie script of *SNEAKERS* (1992). NY: Hachette Book Group, 2017: 234.

# INSIDE THE 'REVOLUTION'

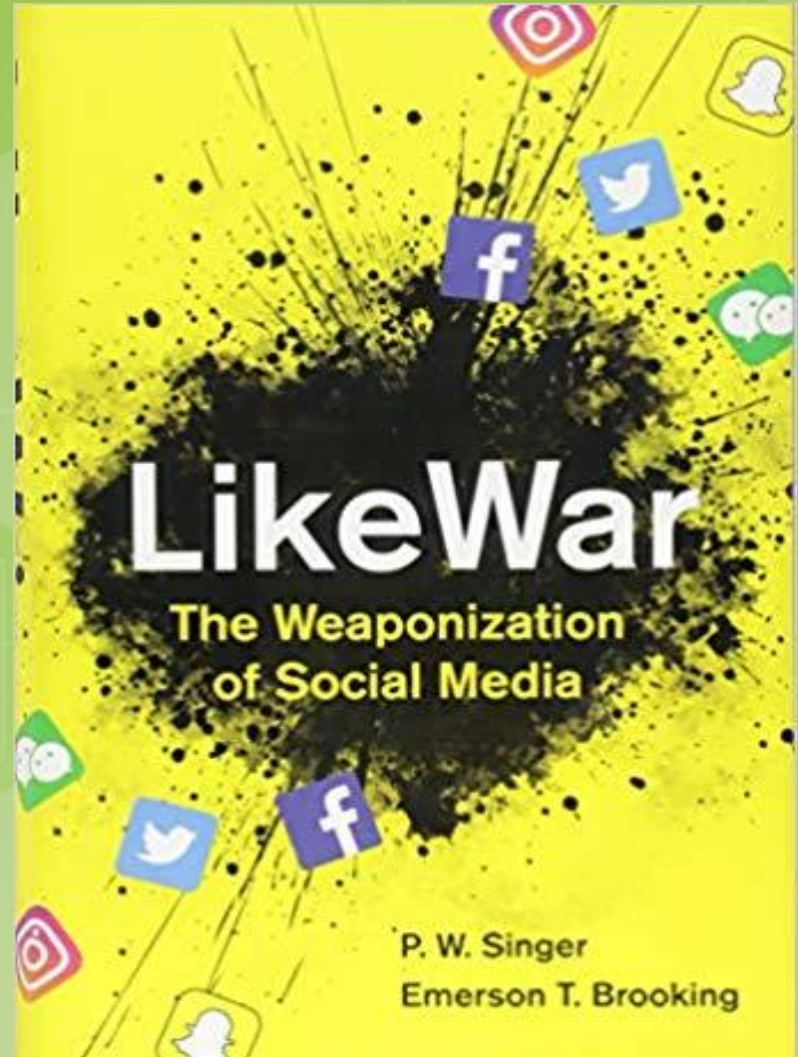
- Universal access, utility, penetration
  - Information revolution
  - “Levels” playing field
  - Expanded modalities of power and change
- Major source of innovation: civilian/private sector
  - High speed of invention, dissemination
  - Time-Space collapse
  - Convergence with other advanced technologies
- Conceptual Upheavals
- Geopolitics-Technology-Security nexus
- A new moral order

# INSIDE THE 'REVOLUTION'

- ◆ New battleground
  - Information/data as 'weapon'
  - Expands scope of harmful activities that do not conform to established conceptions of war
  - Objective: Cognitive
  - Effect: Manipulation



<https://www.amazon.com/Perfect-Weapon-Sabotage-Fear-Cyber/dp/0451497899>



<https://www.amazon.com/LikeWar-Weaponization-P-W-Singer/dp/1328695743>

# CASE STUDIES

- ◆ Estonia (2007)
- ◆ Georgia (2008)
- ◆ Stuxnet (2010)
- ◆ Saudi ARAMCO (2012)
- ◆ Ukraine (2015)

Approved for Public Release

Georgia-Russia 2008

U.S. ARMY

August 2008 – Russian troops cross into South Ossetia w/

**Stuxnet**

**CYBER ATTACK**

**UKRAINE THE UNSEEN ATTACKS**

0.437	IMTL	2037.00	20.00	0.992	SHPL	1982
<b>0.898</b>	INVPL	<b>398.39</b>	<b>-0.89</b>	<b>-0.218</b>	SL.L	190
0.522	IPRL	313.80	2.80	0.90	SMIN.L	923
0.508	ISAT.L	468.00	4.90	1.058	SN.L	573
<b>1.548</b>	ITRK.L	1961.00	11.00	0.564	SRPL	494
0.483	ITVL	<b>58.39</b>	<b>-0.05</b>	<b>-0.089</b>	SSEL	1291
0.894	JMAT.L	1608.00	10.00	0.626	STAN.L	1294
<b>0.48</b>	KAZL	<b>841.50</b>	<b>-2.00</b>	<b>-0.238</b>	SVTL	1485
0.433	KGFL	244.90	1.50	0.616	TATEL	608
<b>1.436</b>	LAND.L	647.50	4.50	0.70	TLWL	1278
<b>0.872</b>	LGEN.L	91.85	0.45	0.492	TSOCL	360
0.147	LLOY.L	32.915	0.405	1.246	ULVR.L	1954
0.748	LML	1076.00	1.00	0.083	UU.L	603
0.536	MKS.L	326.20	2.60	0.803	VEDL	1128
<b>-0.049</b>	MRWL	285.60	2.10	0.741	VODL	161

# LESSONS LEARNED

## Hybrid war and the Gray Zone

- May not be violent, absence of injuries
- Fails to meet conditions of war
- Perpetrators can be non-state actors (exposes existing legal shortcomings)
- Non-state actors were 'stand alones', not part of state operations
- Blurred lines: Military-civilian targets



# INSIDE THE 'REVOLUTION'

- ◆ Offense 'easier' than Defense:
  - More options
  - Defending against a cyberattack
    - Unpredictable
    - Undetectable
    - Complexity of defense systems
    - 'Supply-chain' as source of risks

# INSIDE THE 'REVOLUTION'

## ◆ Strategic Challenges

- Enemy on “Permanent Resident” status
- Conceptualization of cyberattacks
  - Counter? Response? End?
  - Cooperation?
- Big concepts: war, peace, power, stability, etc.
- Dual-use nature of technology

# 'INSIDE THE REVOLUTION': BLURRED LINES

- ◆ War and Peace
  - Military - Civilian
  - Regular - Irregular
  - Conventional - Unconventional
- ◆ State - Non-state
- ◆ Legitimate - Criminal
- ◆ Real – Virtual
- ◆ Domestic - International
- ◆ “Good” – “Bad”

**IN THE AFTERMATH OF THE RELATIVE CERTAINTY OF DOCTRINE, TRAINING, TACTICS, ADVERSARY, AND KNOWN TERRAIN OF THE COLD WAR, OUR MILITARY TODAY IS IN A SENSE OPERATING WITHOUT A CONCEPT OF WAR AND IS SEARCHING DESPERATELY FOR THE NEW “UNIFIED FIELD THEORY” OF CONFLICT.**

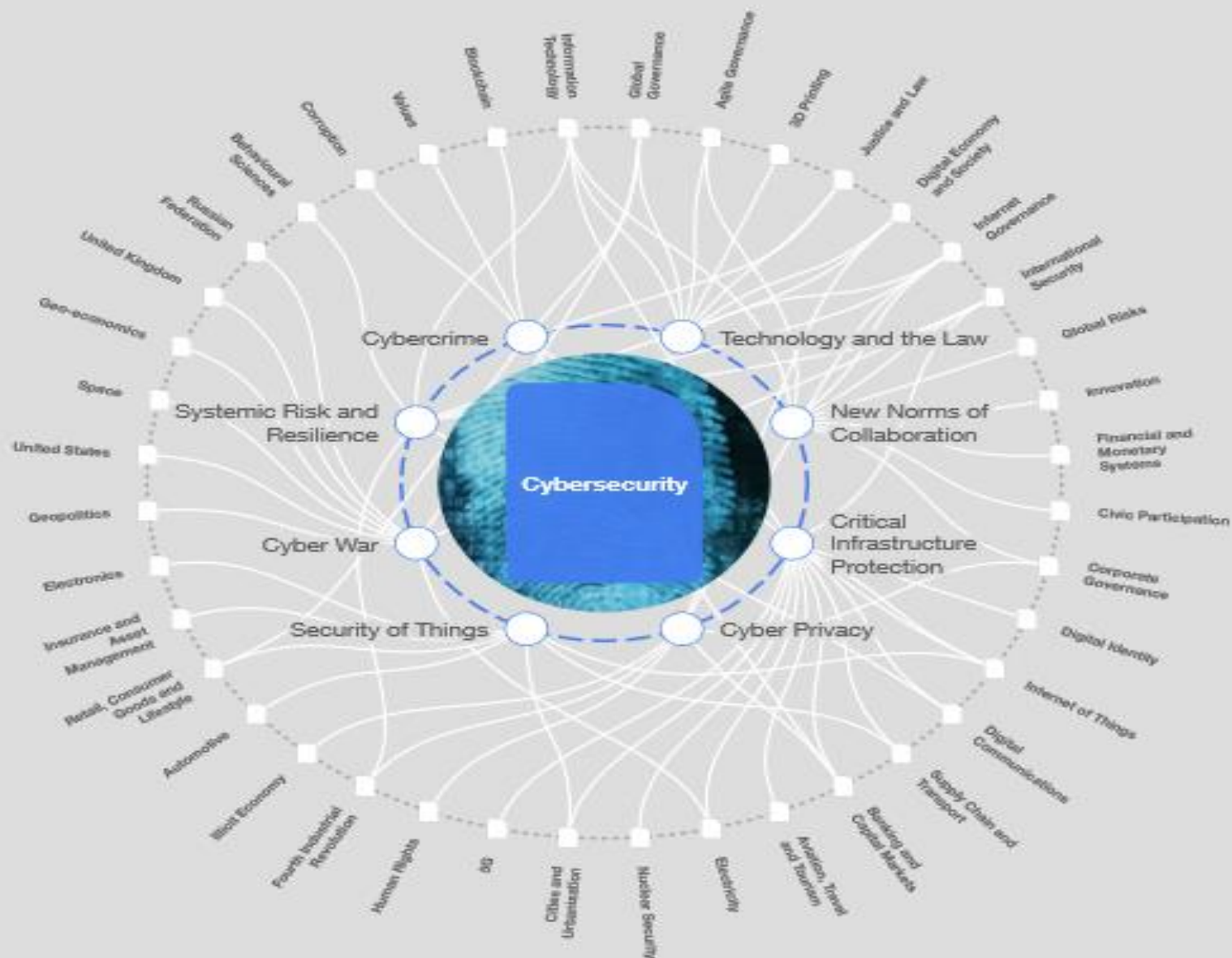
**-GENERAL DAVID BARNO  
[David W. Barno, *'Military Adaptation in Complex Operations'*,  
PRISM 1:1 (2009): 30.]**

# #cybercomplexity

- ◆ International System: Disruptive ----> Revisionist
  - Paradigm Shift
  - Strategic Concepts (power, war, peace, etc.)
  - Wholistic approaches
  - New capabilities
- ◆ Operating in a Networked world
  - Network sensibility and language
    - Invisible, interconnected
    - Networked response to networked threats

# #cybercomplexity

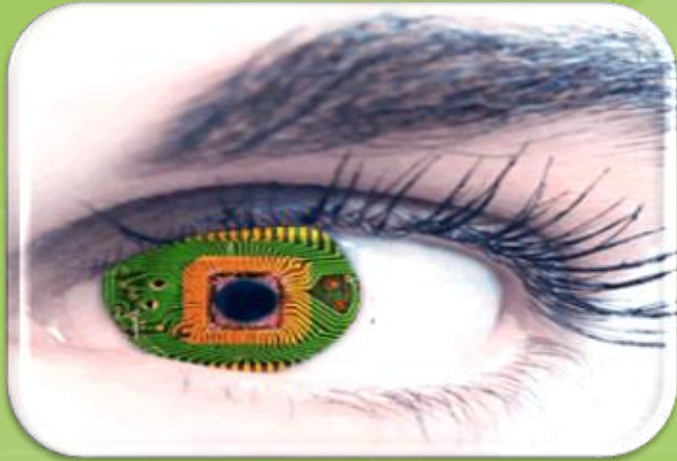
- ◇ Re-imagined state
  - Multi-dimensional, agile, vigilant, resilient
- ◇ Central players
  - Resilient
  - Able to quickly integrate emerging/new technologies
  - Has the most connections
  - Has the power to set agenda/terms of engagement
  - Controls data & information



# #cybercomplexity

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STRONG



going \*  
**LOCAL**

POLITICAL and ECONOMIC ALIGNMENT





**THANK YOU!**

<https://www.nytimes.com/2017/10/22/technology/artificial-intelligence-experts-salaries.html>