What is 'Cyber Conflict?'

POSC 3610 – International Conflict

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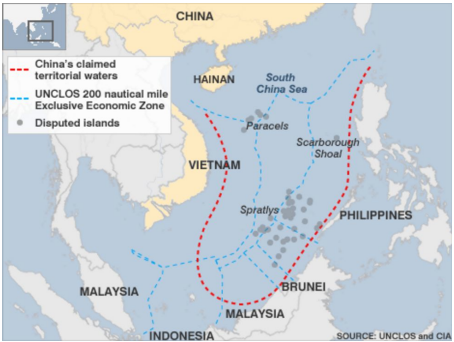
Goal for Today

Introduce conflict through so-called 'cyber' capabilities, and what we can say about these patterns so far.

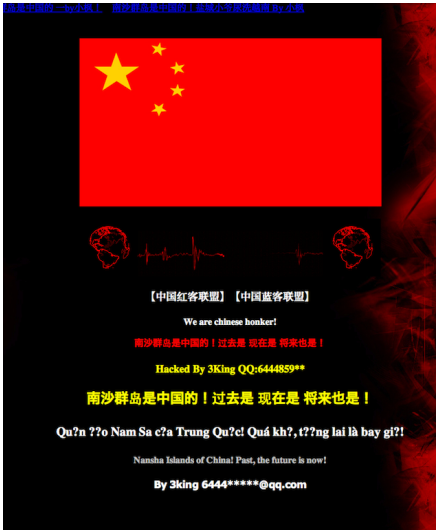
MIC of the Day: Another Spratly Island Confrontation (MIC#4699)



MIC#4699

- *Who*: China v. Vietnam (5 May 2011 - 5 July 2011)
- *Why*: maritime boundary dispute in the South China Sea (Spratly Islands)
- *What happened*:
  - May 2011: China patrol vessel cuts cable on Vietnamese survey boat (in DRV's waters)
  - June 2011: assorted shows of force/vessel chases between both sides
  - July 2011: Chinese soldiers board DRV fishing vessel and assault a crew member.

DCID Cyber Incident of the Day: 209



DCID Cyber Incident #209

- *Who*: China v. Vietnam (3 June 2011 - 6 June 2011)
- *Why*: maritime boundary dispute in the South China Sea (Spratly Islands)
  - A coordinated offensive strike to take down websites/disrupt online activities
- *What happened*:
  - Chinese hackers defaced over 200 Vietnamese websites (~10% of which were government websites)
  - Government websites targeted were non-military, mostly agricultural ministry websites
  - Apparent culprits “3King” and “Xiao Lan” were from “Honker Union”, a hacker collective from Yancheng
  - Hackers also apparently stole some sensitive information from these websites as well.

What is 'Cyber Conflict?'

"Cyber conflict", broadly understood (Valeriano and Manness, 2015) is:

- the use of computational technology
- for malevolent and destructive purposes to
- impact/change diplomatic/military interactions between states

Notice the phenomenon straddles how we might define things like "(militarized, inter-state) confrontations" and "terrorism".

- i.e. there are clear political aims for initiators against targets, including their respective governments.
- However, initiators/targets need not be "official" government actors/forces

Why ‘Cyber?’

The etymology of ‘cyber’ comes from Greek, meaning “governance.”

- Real origin story: rise of ‘cybernetics’ in the 1940s-1960s, studying self-governing systems (e.g. thermostats, cruise control).
- ‘Cyberspace’ first mentioned in 1982 by (SC-born) essayist William Gibson.

Even better origin story:

> *Cyber is such a perfect prefix. Because nobody has any idea what it means, it can be grafted onto any old word to make it seem new, cool — and therefore strange, spooky. [New York magazine, Dec. 23, 1996]*

The Dyadic Cyber Incident and Campaign Dataset (DCID)

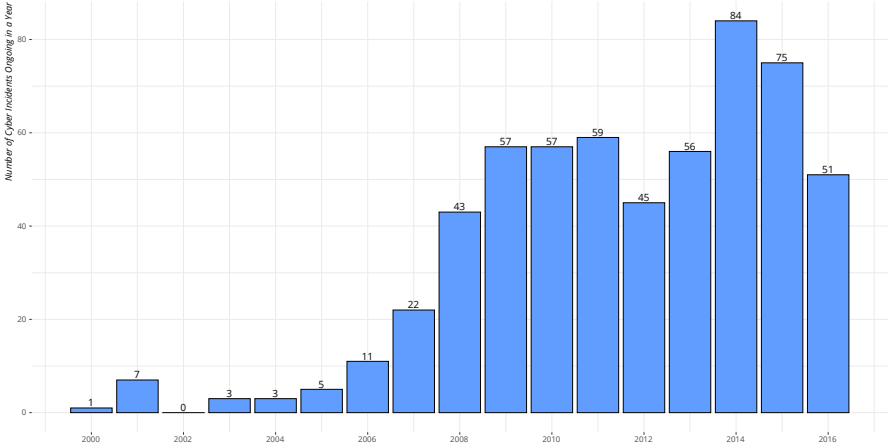
The Dyadic Cyber Incident and Campaign Dataset (DCID) records every instance of dyadic cyber incidents from 2000-2016.

- *Units*: rival dyads (Klein et al., 2006; Thompson, 2001)
- Initiators must be governments or government-sponsored groups.
  - e.g. “Fancy Bear” (i.e. the group that hacked the DNC in 2016) is (from what we know) a GRU outfit.
  - “Berserk Bear” (i.e. the group that hacked the whole damn government from 2019 to 2020) is effectively a state-sponsored (FSB) hacker group, albeit one with a lot of freelancers.
- Targets need not be government actors.

Total number of known cyber incidents: 226

The Number of Ongoing Dyadic Cyber Incidents by Year, 2000-2016

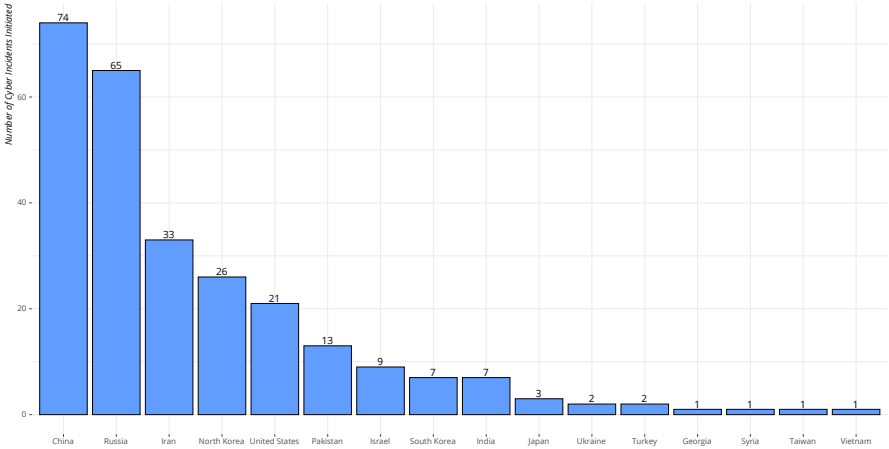
Cyber capabilities have become better developed over time. 2016 had more cyber incidents than 2000-2008 combined.



Data: Dyadic Cyber Incident and Campaign Dataset (DCID), v. 1.5.

All States Initiating Cyber Incidents, 2000-2016

China and Russia stand out for investing significant energy into cyber attacks. Combined, both are more than 52% of all cyber incidents in the data set.



Data: Dyadic Cyber Incident and Campaign Dataset (DCID), v. 1.5.

Table 1: The States Most Targeted by Cyber Attacks, 2000-2016

Targeted State	**Number of Cyber Incidents**
United States	82
South Korea	29
India	20
Ukraine	15
Iran	14
Japan	13
Russia	11
Israel	11
Saudi Arabia	7
China	7

Note:
Data: Dyadic Cyber Incident and Campaign Dataset (DCID), v. 1.5.

Table 2: The Dyads with the Most Dyadic Cyber Incidents, 2000-2016

Dyad	Number of Cyber Incidents
US-China	48
US-Russia	26
N Korea-S Korea	22
India-Pakistan	20
US-Iran	20
Iran-Israel	18
Russia-Ukraine	17
China-Japan	8
China-Taiwan	8
S Korea-Japan	8

Note:
Data: Dyadic Cyber Incident and Campaign Dataset (DCID), v. 1.5.

Target Types

Cyber incidents go after one of three groups in a state.

1. Private/non-state (e.g. the Sony hack in 2014 [incident 101])
2. Government/non-military (e.g. China's hack of Vietnam in 2011)
3. Government/military (e.g. Russia momentarily seized the JCS' [unclassified] email system in March 2015 [incident: 19])

The Sony Hack (#101)

The Sony Hack (#101)

On 24 Nov. 2014, a DPRK hacker group ("Guardians of Peace") leaked 100 TBs of Sony's data. Including:

- personal information about employees
- email communication between employees
- Copies of upcoming films/plans for future films

Why: Sony produced *The Interview*, a then forthcoming film about a plot to assassinate Kim Jong-un.

- The group demanded Sony withdraw the film, threatening terror attacks against cinemas that showed it.

What happened:

- Sony withdrew *The Interview* and cancelled all premieres.
- Sony lost about $35 million on IT repairs, and ate about $30 million on the film.

Table 3: Targets of Dyadic Cyber Incidents, 2000-2016

Target Type	**Number of Cyber Incidents**
Private/non-state	85
Government (Non-military)	132
Government (Military)	49

Note:
Data: Dyadic Cyber Incident and Campaign Dataset (DCID), v. 1.5.

Cyber Objectives

Analogous to terrorism, different cyber incidents carry different cyber objectives.

1. Disruption
2. Short-term espionage
3. Long-term espionage
4. Degradation

The Lockheed F-35 Hack (#66)

Table 4: Objective Types of Dyadic Cyber Incidents, 2000-2016

Objective Type	**Number of Cyber Incidents**
Disruption	86
Short-term Espionage	80
Long-term Espionage	65
Degradation	35

Note:
Data: Dyadic Cyber Incident and Campaign Dataset (DCID), v. 1.5.

Cyber Methods

1. Vandalism
2. DDoS attacks
3. Network intrusion
4. Network infiltration
    - 4.1 Logic bombs
    - 4.2 Viruses
    - 4.3 Worms
    - 4.4 Keystroke logging

Table 5: The Methods of Dyadic Cyber Incidents, 2000-2016

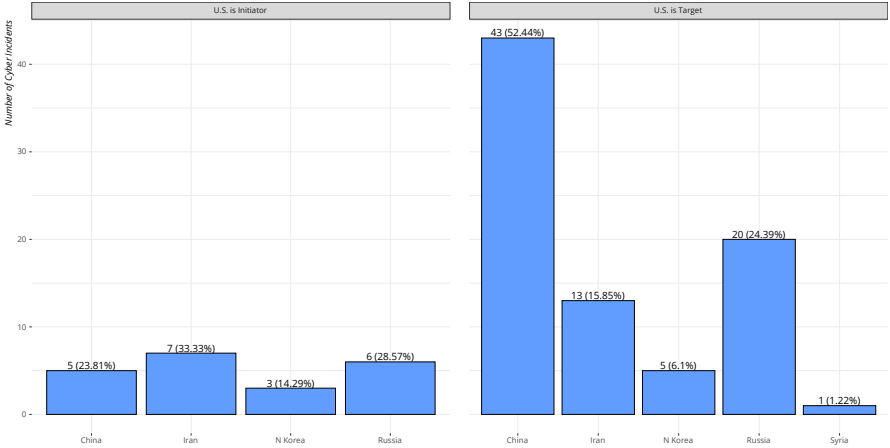
Method Type	**Number of Cyber Incidents**
Vandalism	28
DDoS Attacks	46
Network Intrusion	144
Network Infiltration (Logic Bombs)	7
Network Infiltration (Viruses)	24
Network Infiltration (Worms)	9
Network Infiltration (Keystroke Logging)	8

Note:

Data: Dyadic Cyber Incident and Campaign Dataset (DCID), v. 1.5.

The Dyadic Nature of U.S. Cyber Incidents by Initiator and Target, 2000-2016

The U.S. is the target of 36% of incidents in the whole data set, most of which are initiated by China.



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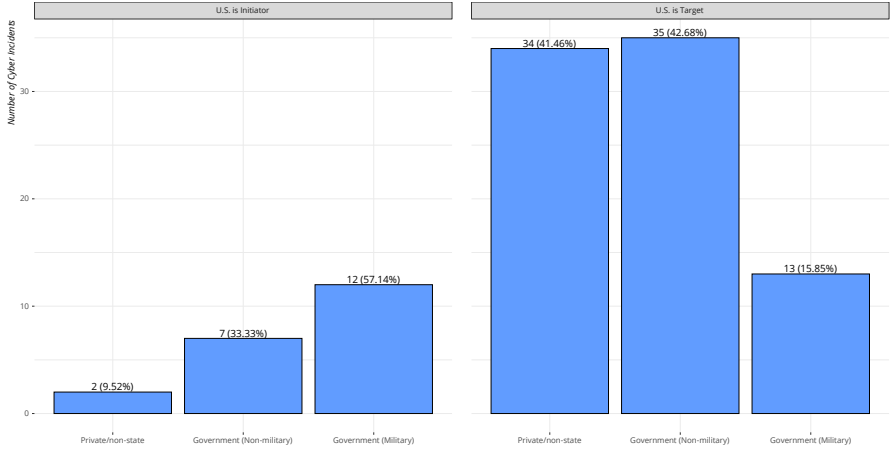
The Target Type of U.S. Cyber Incidents, whether U.S. is Initiator or Target (2000-2016)

The U.S. cyber capabailities go after the military of the target. By contrast, U.S. rivals have typically attacked private or non-military actors in the United States.



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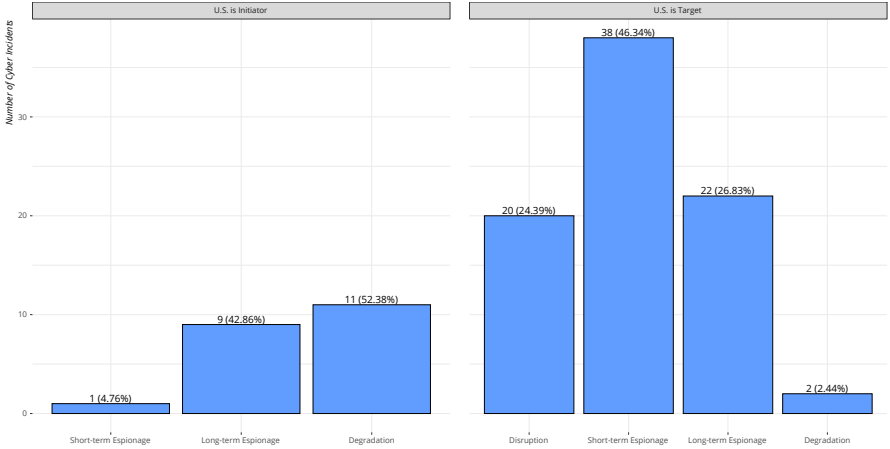
The Objective Type of U.S. Cyber Incidents, whether U.S. is Initiator or Target (2000-2016)

The U.S. cyber capabailities often focus on degrading the capacity of the target (e.g. Stuxnet). Almost 75% of the time, the U.S. itself is targeted in espionage campaigns.



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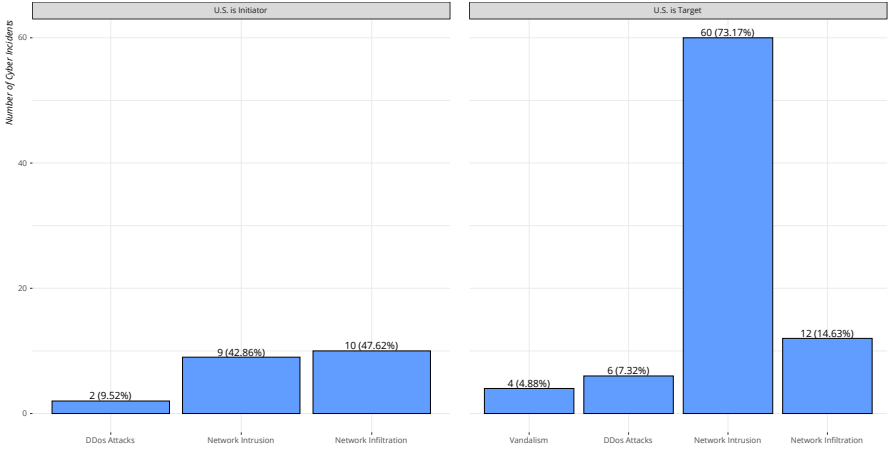
The Method of U.S. Cyber Incidents, whether U.S. is Initiator or Target (2000-2016)

American cyber sophistication allows for greater focus on more complicated attacks. Other states, by contrast, focus on trojans and 'backdoors' to gain access to a target's network.



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Conclusion

- Cyber incidents emerged as tools for weaker (but still sophisticated) states to signal dissatisfaction with rivals.
- Cyber aims are often limited, as are the cyber methods.

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