



THE CYBER- NUCLEAR NEXUS

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WARGAMES



AND
TODAY?

“In operational testing, [the US Department of Defense] routinely found mission-critical cyber vulnerabilities in systems that were under development, yet program officials GAO met with believed their systems were secure and discounted some test results as unrealistic”

– Government Accountability Office [GAO] Report to the Committee on Armed Services, US Senate, October 2018

AGENDA

- Defining the problem
 - Cyber? Nuclear?
- Understanding the problem
 - Case study: NC3
- How can we address the problem
 - Unilateral, bi/multilateral measures

DEFINING THE PROBLEM

Cyber?

- Cyberspace: “all computer systems and networks in existence, including air-gapped systems” (Kello)
- Cyberattack: “the use of code to interfere with the functionality of a computer system for a *political or strategic* purpose” (Kello, emphasis added)
- Cyberspace both an attack vector *and* a sphere of operations (Dunn-Cavelty)

DEFINING THE PROBLEM

Nuclear?

- Nuclear order
 - “Given the existence of nuclear technology, the international nuclear order entails *evolving patterns of thought and activity* that serve primary goals of world survival, war avoidance and economic development” (Walker, emphasis added)
- Two linked systems to achieve this
 - System of deterrence
 - System of abstinence

DEFINING THE PROBLEM

So if we have set up these political systems around nuclear weapons

to “serve primary goals of *world survival*, war avoidance and economic development” (Walker, emphasis added),

how will developments in cyberspace disrupt them?

- Central idea of nuclear deterrence: don't attack us or we'll attack you
- Cyber-attack affecting nuclear command, control and communications (NC3)?
- Examples:
 - Tampering with infrared sensors intended to detect ballistic missiles (within the supply chain)
 - Jamming or spoofing satellite communications
- These attacks could impede communication between:
 - Early-warning systems and National Command Authority (NCA)
 - NCA and nuclear weapons operators
 - NCA and diplomatic counterparts

UNDERSTANDING THE PROBLEM

HOW CAN ADDRESS THE PROBLEM

UNILATERAL

- Separate out conventional and nuclear systems
- Building in more decision-making time to nuclear postures
- Prioritizing cybersecurity in procurement / supply-chain and culture

BILATERAL OR MULTILATERAL

- Nuclear weapons states pledge not to attack one another's NC3 systems
- Cyber incident hotlines

CONCLUSION

- Activity in cyberspace is changing nuclear order, increasing risks around nuclear weapons
- We still don't fully understand in what ways cyber is impacting nuclear order
 - Non-proliferation?
- There are things nuclear weapons states can do to reduce risk in this area

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