CYBER-DETERRENCE

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Overview

Deterrence seeks to prevent someone from doing something by shaping their perception of costs and benefits to influence their decision-making.
Deterrence strategies

• Deterrence by denial
  • Defense (goal denial) – success uncertain
  • Resilience (benefit denial) – success futile

• Deterrence by imposing costs
  • Penalty/Consequences/Punishment – success costly
  • Dependency/entanglement (success counter-productive)
Deterrence strategies

• General deterrence
  • Dissuade any potential attacker
  • Obama – Dec 2015

• Specific deterrence
  • Keep a specific adversary from acting
  • Biden Aug 2016

• Tailored deterrence
  • Tailored to specific actors, situations, capabilities, and communications
  • Obama – Nov 2016
Targets of deterrence

• Potentially subject to direct deterrence – first party
  • Nation states (peers, near-peers, lesser states)
  • Legitimate/identifiable organizations/group

• Potentially subject to indirect deterrence – second party
  • Proxies/hybrids/sponsors, terrorists/funders, criminals/home jurisdiction, individuals/ISPs,

• Not easily subject to deterrence
  • untraceable/ephemeral
  • “useful idiots”
Actions

• Cyber Attacks (syntactic)
  • Break systems or networks
  • Availability of Critical Infrastructure

• Malicious Cyber Actions
  • Unauthorized access (espionage)
  • Confidentiality of information

• Semantic/outcome (cf. information war)
  • “Weaponized information”
  • Integrity of systems for decision making
US policy is “effects” based

- CA/MCA intended to cause casualties
- CA/MCA “intended to cause significant disruption to the normal functioning of US society or government, including attacks against CI ... used to provide key services”
- CA/MCA threatens military C&C, other assets
- MCA that undermines economic security, economic espionage or sabotage
Deterrence by imposing cost

- Requires:
  - Consequential threat
  - Adequately signaled
  - That is credible
  - And relatively incontestable

- Impacts:
  - Discloses victim (disincentive)
  - Punishes attacker (second party)
  - Warns others (third parties)
Consequential threat

- All instrument of national power DIME-LE
  - Whole Government/Whole Nation
- Cross-domain
- Escalation (proportionality)
  - Name and shame (Russia)
  - Law enforcement (China, Iran)
  - Diplomatic/economic sanctions (North Korea)
  - Cyber-attacks (disclosure problem)
  - Kinetic attacks (declared policy but …)
Clear statement

• “Whole point of a doomsday device is lost if you keep it a secret!” Dr. Strangelove 1964

• Signaling dilemma
  • Too precise trigger/red line becomes safe-harbor
  • Elicits precisely calibrated challenges
  • Obliged to respond
  • So, maintain strategic ambiguity for flexibility

• Cf, US policy (too vague for declaration? CYA?)
Credibility

• Consequences likely to be imposed
  • Known/proven capability
  • Demonstrated intention or will
  • Political environment (bayonet)

• Credible on its face
  • “Kill people who kill bits?”
Contestability

• Effectiveness of deterrence based on its Certainty, Celerity and Severity
  • Probability of being held accountable
  • Swiftness of the punishment
  • Magnitude of the cost

• ~what are chances of being quickly identified and punished?

• Contestability
  • Challenge (political, legal, normative) (JP Morgan hack)
  • Resistance (counter-force) (Russian banks)
Cyber-domain issues

- **Scalability** –
  - non-linear/can’t calibrate blast radius

- **Temporality** –
  - instantaneous, no time for early warning or ladders of escalation

- **Attribution** –
  - ambiguous attribution and motivation (proof discloses sources & methods)

- **Digital economics** –
  - zero marginal cost of attack, no predictable ROI on offense or defense

- **Contestability** –
  - no testing, demonstration
Cyber response issues

- Can’t disclose sources and methods of attribution
- Can’t demonstrate capabilities
- Payloads/attacks have to be customized thus arms race (and everyone is “prepping”)
- Duality – civilian/military, offense/defense, probe/attack
- Infinitely asymmetrical (zero day exploit > any defense)
Case Studies
Russia