



International Seminar

**DISRUPTIVE TECHNOLOGIES, STRATEGIC VULNERABILITY, AND THE FUTURE
OF DETERRENCE**

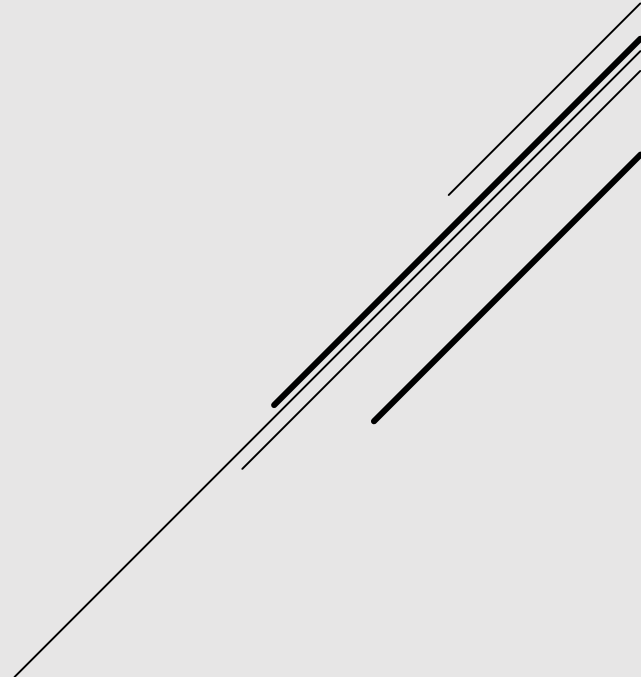
CLANDESTINE CAPABILITIES AND DETERRENCE IN WORLD POLITICS

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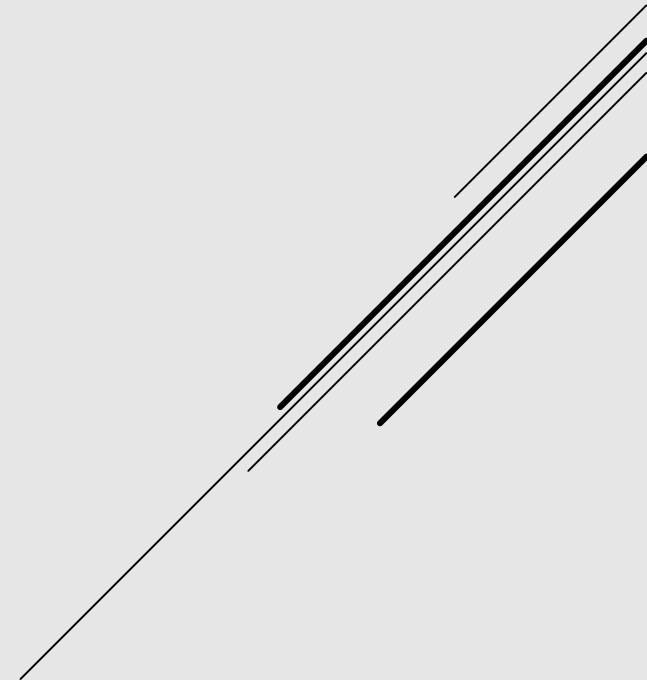
OUTLINE

- ▶ What are clandestine capabilities?
- ▶ What are the challenges of clandestine capabilities for deterrence?
- ▶ What strategies can states adopt regarding clandestine capabilities?
- ▶ A preliminary case study: U.S. strategic anti-submarine warfare



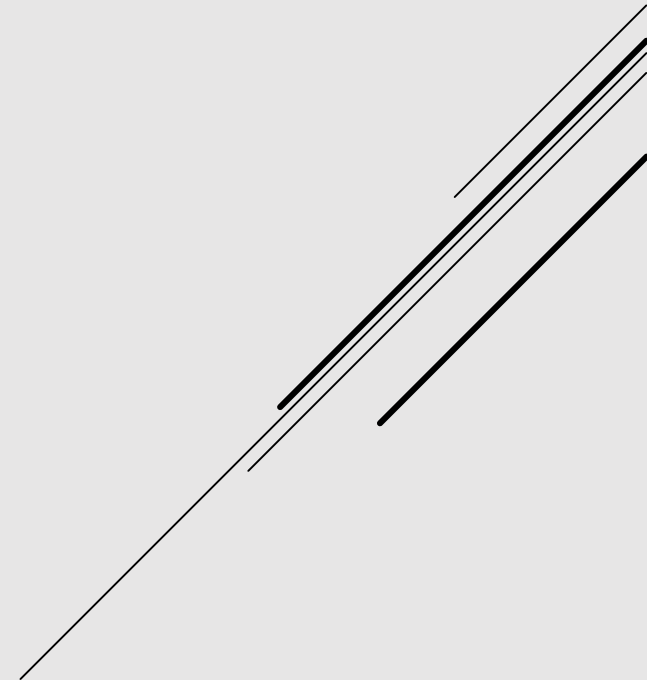
CLANDESTINE CAPABILITIES

- ▶ Definition: Elements of military power that depend on secrecy for their effectiveness
 - ▶ U.S./U.K. naval codebreaking in World War II
 - ▶ Israeli early warning of war in 1973
- ▶ Most military capabilities derive some advantage from remaining clandestine
- ▶ Clandestine capabilities differ as they exploit adversary vulnerabilities that if fixed will sharply or totally attenuate the capability
 - ▶ CANOPY WING and Soviet command and control
 - ▶ Combat Tree and Soviet export MiG IFF



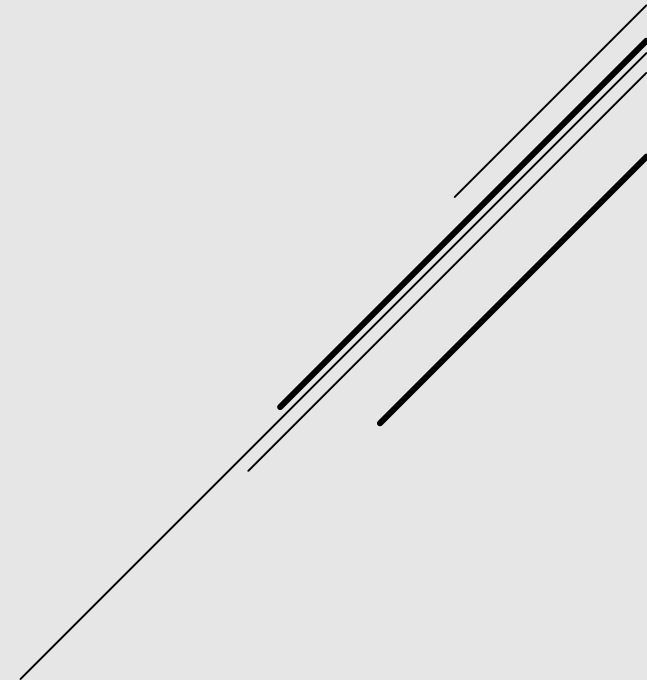
AN INCREASING ROLE IN THE 21ST CENTURY

- ▶ Clandestine capabilities are not new- however, they have increasing salience in the 21st century
- ▶ Vast improvements in command, control, communications, and intelligence (C3I) yield new ways to create vulnerabilities
 - ▶ Covert tagging, tracking, and locating (TTL) technologies
 - ▶ Covert unattended ground sensors (UGS)
- ▶ Increasing reliance on C3I systems and networks have also proliferated vulnerabilities
 - ▶ Offensive cyber operations
 - ▶ SIGINT based targeting



CHALLENGE OF CLANDESTINE CAPABILITIES

- ▶ Most rational theories of war and deterrence treat capabilities and the military balance as well understood by all parties in crisis- clandestine capabilities undermine this assumption
- ▶ Clandestine capabilities create a tension between military utility and political utility, requiring strategic management of information
 - ▶ External information management- the Doomsday Machine problem
 - ▶ Internal information management- the Magic Pixie Dust problem

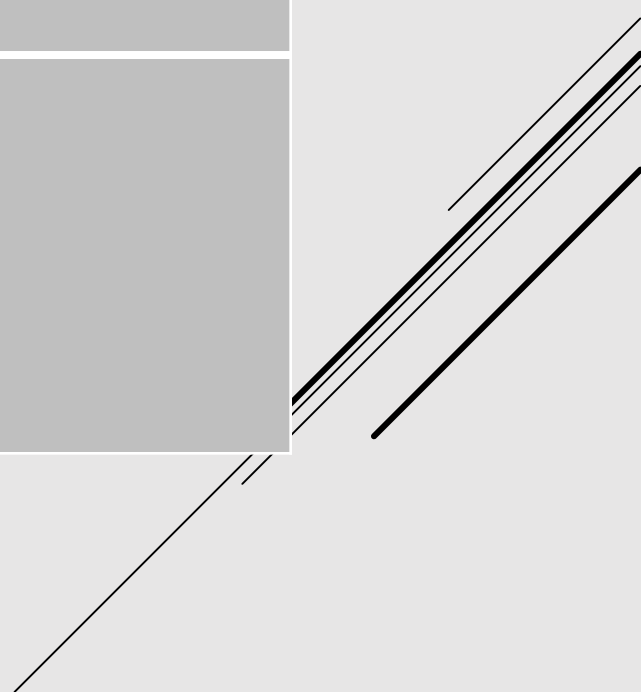


FRAMING THE PROBLEM: OUTCOMES

	No Military Utility	Military Utility
Political Impact	Middle Age	Youth
No Political Impact	Death	Birth

State strategic choices: reveal, conceal, or partial reveal

Dependent on: military costs, political benefits, implementation considerations



STATE CHOICE: MILITARY COSTS

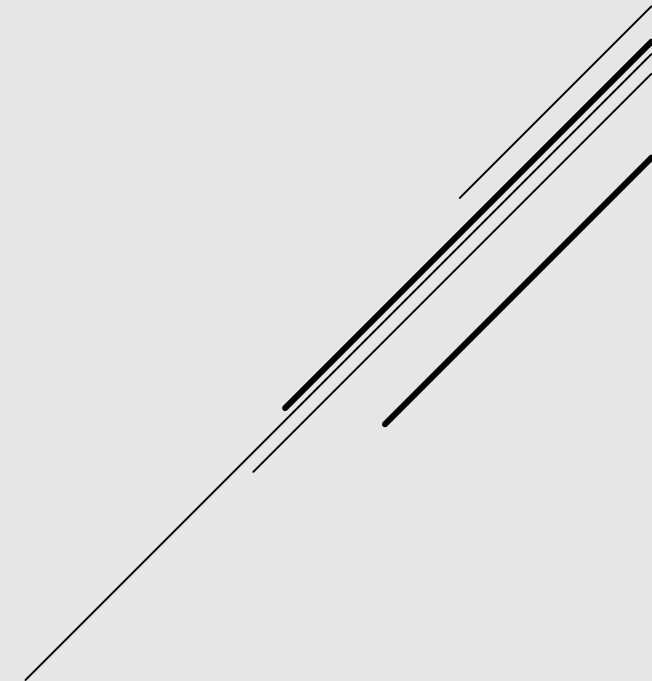
Adversary Reaction
Costly/Time-consuming

Adversary Reaction
Cheap/Fast

Capability Easily
Replaced/Duplicated

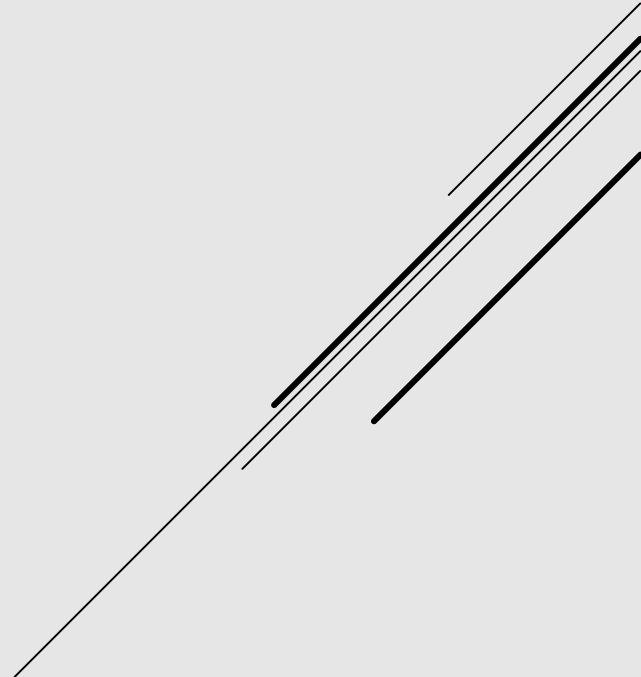
Capability Irreplaceable

Revelation Common	Revelation Intermittent
Revelation Uncommon	Revelation Rare



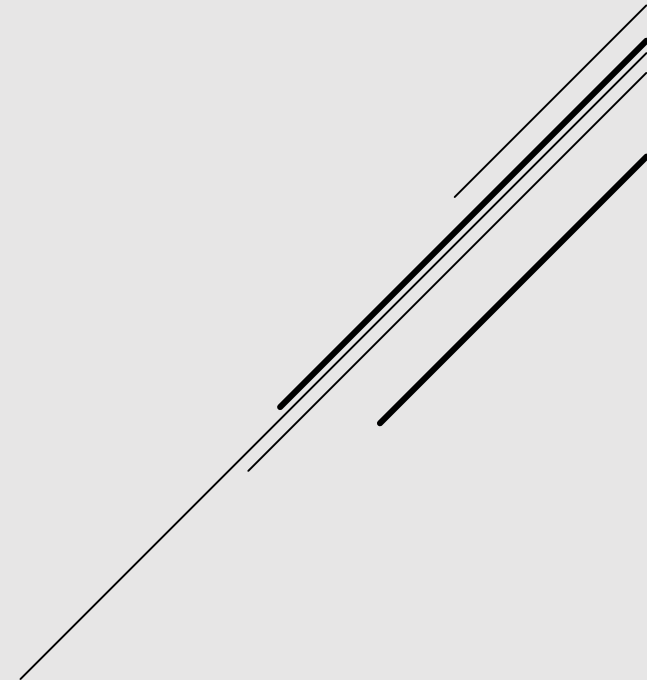
STATE CHOICE: POLITICAL BENEFITS

- ▶ States choose to reveal or conceal in three political environments: wartime, crisis, and peacetime
- ▶ Wartime choices will be dominated by military considerations
- ▶ Crisis choices characterized by
 - ▶ Potential high pay-off to capability revelation
 - ▶ However, possibility pay-off could be quickly reversed
- ▶ Revelation in crisis therefore infrequent and dependent on opportunity to lock-in gains from revelation



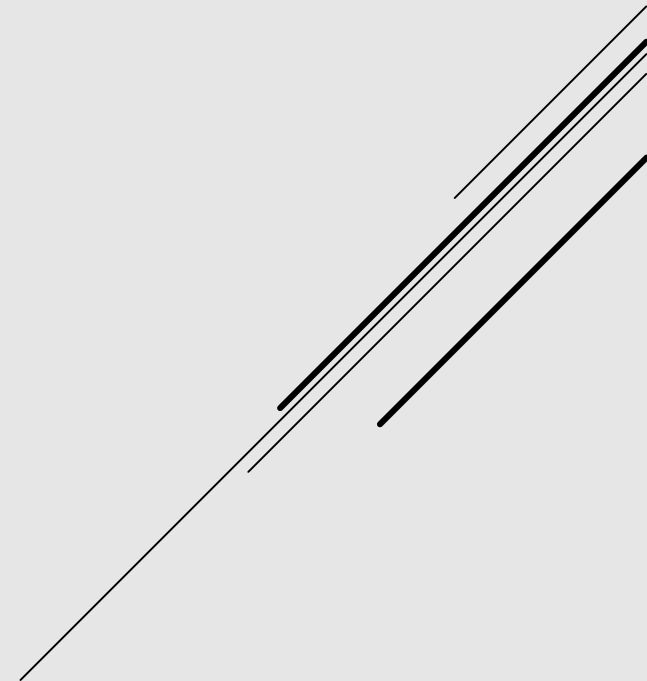
PEACETIME STRATEGIC CHOICE

- ▶ Peacetime environment is characterized by potential for long term strategic interaction
- ▶ Revelation therefore sends multiple types of signals
 - ▶ Near term military balance
 - ▶ Long term trends in military balance
 - ▶ Constitutional fitness for military competition
- ▶ Revelation also provides more diffuse and varied political benefits
 - ▶ General deterrence/assurance
 - ▶ Shaping adversary force posture/structure
 - ▶ Affects course of diplomacy and strategy



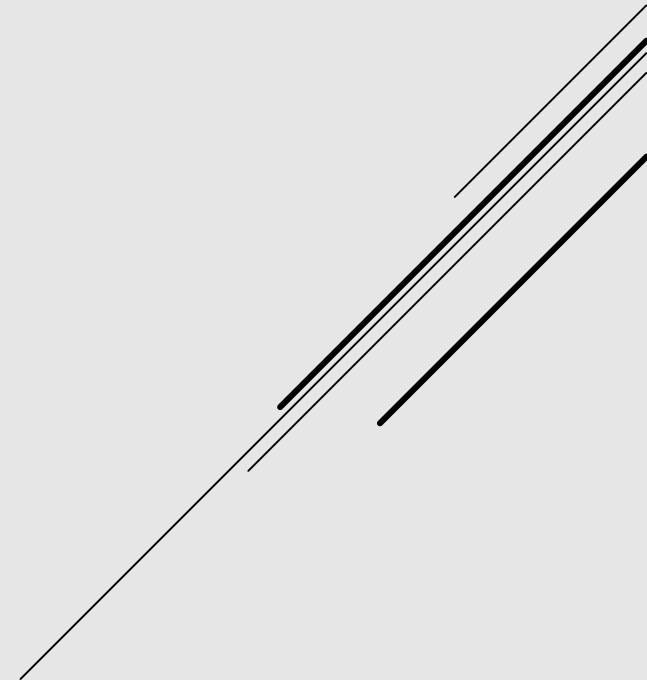
IMPLEMENTING INFORMATION STRATEGY

- ▶ Effective implementation of choices about revelation or concealment determined by
 - ▶ Effectiveness of intelligence and counter-intelligence
 - ▶ Target's mindset
- ▶ Deception offers key opportunity to implement partial reveal



STRATEGIC ASW: A QUICK LOOK

- ▶ U.S. Passive Acoustic Advantage
 - ▶ SOSUS
 - ▶ SSNs
- ▶ U.S. SIGINT
 - ▶ IVY BELLS
 - ▶ Other COMINT (?)
- ▶ Changing Soviet Doctrine
 - ▶ Yankee/Delta transition
 - ▶ Barrier vs. Forward operations



STRATEGIC ASW: OUTCOMES OVER TIME

No Military Utility

Military Utility

Political Impact

[NIL]

1980s: Maritime Strategy

No Political Impact

1970s:
The Walker Spy Ring

1950s-1960s:
Beyond Top Secret

- CC: SOSUS
- Military Costs: Highly Unique, Soviets Responsive
- Signaling Choice: Conceal
- Outcome: Dominant under the sea, equality at the negotiating table

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[NIL]

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**1970s:
The Walker Spy Ring**

1950s-1960s:
Beyond Top Secret

- Massive intelligence failure
- Soviets learn capabilities of SOSUS; trailing
- Retreat to the bastions: rearrange entire naval procurement program...again.
- Outcome: Soviet secure second strike from the sea

STRATEGIC ASW: OUTCOMES OVER TIME

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Military Utility

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[NIL]

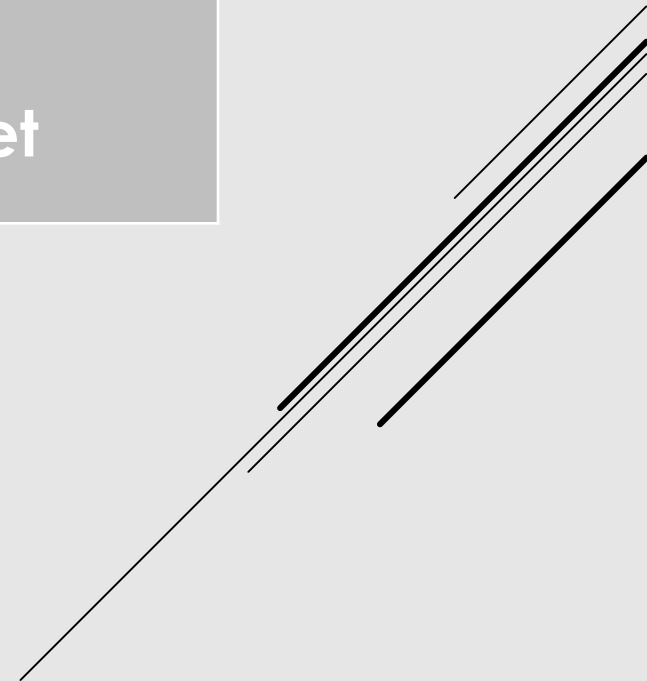
1980s: Maritime Strategy

No Political Impact

**1970s:
The Walker Spy Ring**

**1950s-1960s:
Beyond Top Secret**

- CC: Strategic ASW in the bastions. SSN Force acoustics, deployment.
- Costs and benefits different
- Signaling choice: partial reveal- military exercises; public statements
- Outcome: pressure on Soviet force posture + diplomacy



CONCLUSION

- ▶ How should we modify or amplify framework and hypotheses?
- ▶ Are there other examples we are missing?
- ▶ Are there hypothetical examples we could use to discuss sensitive capabilities in an unclassified manner?
- ▶ General thoughts, questions, or comments?

