

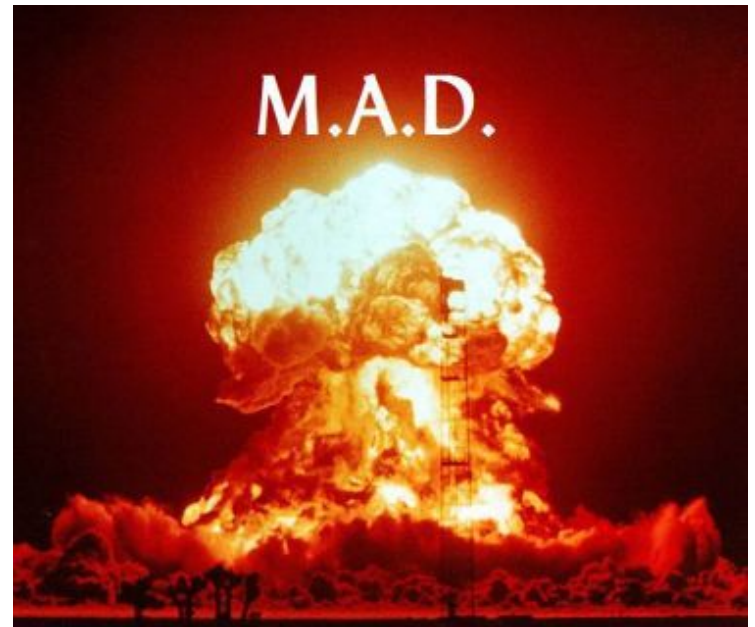


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DETERRENCE, HARDENING AND DISPLACEMENT

Resiliency, overt and covert counter-measures, deterrence and threat shifting in aviation security

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What is Deterrence?

1. **Imposing costs** on adversaries for acting (punitive deterrence, Mutually Assured Destruction)
2. **Offering benefits** to adversaries for not acting (e.g. bribes, cooptation, negotiation, reduction of counter attacks)
3. **Denying success** to adversaries for acting (strong defenses)
4. **Reducing benefits** to adversaries for acting (e.g., resiliency measures that allow systems to continue functioning, result in fewer deaths, etc.)

de·ter·rence

/də'tərəns/ 

noun

noun: deterrence; plural noun: deterrences

the action of discouraging an action or event through instilling doubt or fear of the consequences.
"nuclear missiles remain the main deterrence against possible aggression"

Translate deterrence to

Use over time for: deterrence



Threat Shifting and Deterrence

Better framework - aviation security organizations aim to provoke temporary threat shifting (instead of achieving a static state of deterrence).

Possible domains are:

1. **Time Shift** – Upon seeing countermeasures (material- and non-material-based security processes and technologies), adversary delays attack in order to surveil and collect more intel and better assess chances of success.
Gives us more time to conduct counter-surveillance, counter-terror and law enforcement actions to hopefully completely foil planned attack.
2. **Target Shift** – Adversary picks a softer target (less defended and hopefully less valuable (with fewer losses)). Likely involves time delay.
3. **Tactics Shift** – Adversary shifts to a less detectable but less reliable tactic (e.g. Underwear Bomber). Likely involves time delay.
4. **Resource Shift** – Adversary throws in more resources (from other operations) to overcome countermeasures. Increases logistical and planning challenges and our chances of foiling the plot.



Deterrence - Challenges

- Civil aviation terrorism is a (luckily) low-frequency phenomenon (compare to crime or illegal immigration) which makes measuring effectiveness a challenge.
- Academic studies (e.g. CREATE, RAND, etc.) offer promising conceptual frameworks (e.g. connection between adversary affect, risk perception, self-efficacy and motivation) but validation requires actual data which is lacking.
- Standard methods of measuring countermeasure effectiveness do not fully apply to deterrence (~4,000 FY15 Aviation Security Assessment Program (ASAP) red-teaming + 8,000 Scenario-based field Short-Notice Assessments (SNAs)).
- Heisenberg's Paradox



Deterrence – Overt vs. Covert Countermeasures



Deterrence – Overt vs. Covert Countermeasures (continued)



Suggested Path Forward

- Use proxy measures or output metrics (e.g. compare effective deterrence methods vs. less effective ones)
- Identify key parameters of counter measures most likely to provoke threat shifting.
- Ensure and measure adversary awareness through sufficient:
 - Visibility (tension between overt and covert counter measures)
 - Frequency
 - Credibility (can effectively address threats – e.g. insider threat and SIDA badge checking).
 - Unpredictability vs. random (if not conducted 100% of time)
 - Unavoidability
 - Visual / physical / mental impact (e.g. adversary chatter over public and non-public media, relevant intel, etc.)



Bottom Line – Why Should We Care?

- Unlike effectiveness of countermeasures, there are significant challenges with measuring effectiveness of deterrence effects (e.g. K-9, FAMS, BDOs – Sept 2017 GAO report).
- In a resource-limited and budget-constrained environment, TSA uses RBS and prioritizes effective deployment of resources (people and technology).
- It is a challenge for prioritized resources to conduct 100% screening.
- Evolving threat may be able to pass through current countermeasures.
- So with partial screening, deterrence is a critical and cost-effective measure to help evoke threat shifting.
- Threat shifting can buy us more time and provide better means to foil planned attacks.

