Space as a Warfighting Domain and the Relevance of Deterrence

Nicholas Taylor

Director

18 December 2025

OAKLANDS CONSULTING

OAK/PRES/202506

Introduction: who am I?

- Independent analyst, consultant and adviser; roles include:
  - Visiting Senior Research Fellow, Department of War Studies, King's College London
  - Senior Associate, RAND Europe
  - NATO Chief Scientist's Pool of Experts - Deterrence Subject Matter Expert (SME)
- 2007-2025, Senior Principal Analyst, UK MOD Science & Technology Laboratory (Dstl)
  - Led research, analysis and campaign planning on deterrence and other strategic effects
  - Provision of deterrence advice to seniors across UK Government
  - Strong links with academia, US partners and NATO
- 2002-2007: commercial sector, defence consultancy
  - Project office support to UK Ministry of Defence, US Department of Defense, and other allies and partners
- 1995-2001: Commissioned Officer, Royal Air Force, Fighter Control Branch
- BA (Hons), International Relations and Strategic Studies

Caveats

I am <u>not</u> a space subject matter expert

I am <u>not</u> an expert on any of the actors I will discuss in this presentation

Contents

Theories of Space Warfare

- Historical evolution
  - '**Sanctuary**' domain: space as a peaceful commons
  - Transition to '**contested, congested, competitive**' (2011 *U.S. National Security Space Strategy*)
  - Current framing: space as a **warfighting domain**
- Theoretical approaches
  - Control of orbital **lines of communication** akin to sea control
  - Space conflict as a **continuation of earthly politics** (Clausewitzian)
  - **Cross-domain deterrence**: impact of actions across all domains (Gartzke & Lindsay)

Conceptual models of space warfare

- Sanctuary model
  - Emerged during the Cold War
  - Space is a **protected environment**
  - Military uses are **strategic** but not offensive
  - Shaped by deterrence logic and desire to avoid escalation
- High ground model
  - Space confers **strategic advantage**
  - Command of 'space lines of communication'
  - Ref: Colin Gray, 'The Influence of Space Power Upon History'
    - Frames space as a **'commanding height of modern warfare'**
- Combat domain model
  - Space assets and infrastructure are **legitimate military targets**
  - Warfighting extends through and into space
  - U.S. Space Force, *Spacepower: Doctrine for Space Forces* (2020): 'spacepower' as a **distinct form of military power**

Deterrence Theory

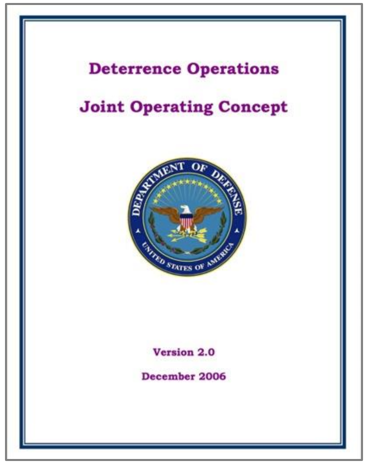
- **Deterrence by punishment:** persuade the opponent not to act for fear of unacceptable costs being imposed on them subsequently
- **Deterrence by denial:** persuade the opponent not to act by convincing them that they will not achieve their intended objective(s)

- **Immediate** deterrence: relevant when there are indications of an **imminent attack**; focused on a specific threat
- **General** deterrence: derived from an **overall reputation** as an actor, as perceived by others
  - Describes the relationship between two potential antagonists when there is **no immediate threat** of hostile activity
- **Extended** deterrence
  - Persuading an adversary that you will respond if they attack an ally of yours

NATO's AJP 0-01 provides a good starting point regarding deterrence

Evolution of Deterrence Thinking: The Fourth Wave

- Deterrence was **largely ignored** after the Cold War ended
- Terrorist attacks of 11 Sep 2001 prompted renewed interest
  - Focus on **asymmetric threats**, mainly from **non-state actors**
  - Fear of use of **weapons of mass destruction**
- Development of '**tailored deterrence**', emphasis on understanding the opponent
  - We should not assume coldly rational cost-benefit calculations by leaders (Payne)
  - U.S. DoD *Deterrence Operations Joint Operating Concept* set out an active approach to campaign planning where deterrence outcomes are the primary objective
  - Use all levers of national power ('integrated deterrence') - not just Defence (Bunn)
- Consider:
  - The consequences of inaction for the opponent
  - That deterrence should also include **inducements** and **reassurances**
- Acknowledgement that **deterrence may fail**


Deterrence Operations

Joint Operating Concept

Version 2.0

December 2006


Strategic Forum

No. 225

January 2007

Can Deterrence Be Tailored?

by M. Elaine Bunn

Key Points

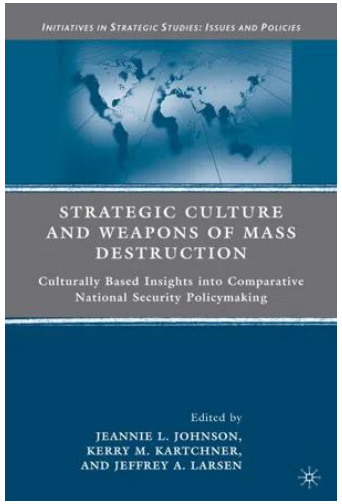
Recommended reference: Jeffrey Knopf, 'The Fourth Wave in Deterrence Research', *Comparative Security Policy* Vol.31, No.1 (April 2010)

Understanding the Opponent: The Utility of Strategic Culture

- Understanding opponent strategic culture can avoid ‘**mirror imaging**’ and improve understanding of group perceptions
- Preferred definition:

*‘that set of shared **beliefs**, **assumptions** and **modes of behaviour**, derived from **common experience** and **accepted narratives** (both oral and written), that shape **collective identity** and **relationships to other groups**, and which determine **appropriate end and means** for achieving security objectives’* *

- Jeannie Johnson suggests four ‘lenses’ through which to examine group strategic culture:
  - ***Identity***: a nation-state’s view of itself, comprising the traits of its national characters, its intended regional and global roles, and its perceptions of its eventual destiny
  - ***Values***: highly prized features of a society, whether tangible (e.g. territory) or ideational (e.g. honour)
  - ***Norms***: accepted and expected modes of behaviour
  - ***Perceptual lens***: beliefs (both true and misinformed) and experiences (or the lack of experience) that colour the way the world is viewed



* Johnson, Kartchner and Larsen, *Strategic Culture and Weapons of Mass Destruction*, (2009: Palgrave Macmillan), p. 9

Deterrence and the Space Domain

- 'Classic' approaches to deterrence - punishment and denial - still apply
  - … but complexity and interdependence of the space domain increase the relevance of concepts such as **entanglement**, **redundancy** and **resilience**

<u>Nature of deterrence in space</u>

- Cost imposition is limited by difficulty of **attribution**, dual-use **ambiguity** and **lack of clear thresholds**
- Denial of benefits has more promise, e.g. **resilience**, **rapid reconstitution** and so on
- **Assurance** can maintain allies' confidence in access to space capabilities
- **Compellence**: threat of the use of space power can shape adversary behaviour

<u>Challenges</u>

- Attribution: **non-kinetic**, **covert** and **reversible** attacks complicate response
- Normative ambiguity: **few <u>binding</u> norms**, can make deterrence messaging less credible
- Dual-use: risk of escalation from **misinterpretation**
- Escalation risks: dependence of **nuclear C2** on space could trigger rapid escalation

Role of Resilience and Redundancy

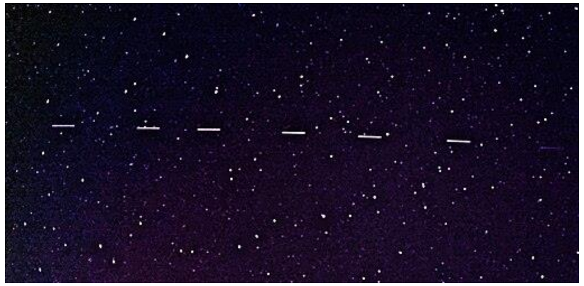
Redundancy

- **Multiple, overlapping systems** or pathways for delivering space functions
  - E.g. multiple GNSS systems: GPS, Galileo, GLONASS and so on
- Deterrence logic:
  - Supports **deterrence by denial**
  - An opponent cannot easily deny a critical capability if we have back-ups

Resilience

- Broader than redundancy
- The ability to **absorb**, **adapt** and **recover** from disruption
- Multiple aspects:
  - **Technical**: hardened satellites, manoeuvrability and so on
  - **Architectural**: disaggregated constellations, diversified providers
  - **Operational**: adaptable C2, cross-domain alternatives. (e.g. UAV provision of ISR)
- Deterrence logic:
  - Reduces opponent confidence in success (**denial**)
  - Also **assures** allies
  - Signals resolve

Chain of six Starlink satellites



Deterrence by Entanglement

- When states are **mutually dependent** on shared systems, the costs and risks of hostile action rise
  - Discourages deliberate attacks or destabilising behaviour
- Relevance to space:
  - **Mutual reliance** on some of the same services, e.g. GPS, OneWeb
  - **Shared orbits** and **debris risk** make kinetic actions dangerous for all
    - *Mutual assured disruption*
  - **Political**: actions may **alienate allies or third parties** who are affected by space activities
- Deterrence impact: entanglement **raises the perceived cost** of aggression
  - Arguably more of a **stabiliser**, not a coercive / deterrent tool

National Approaches

UK

- Approach guided by **multilateral co-operation**
- Values stress **responsibility**, **legality** and **proportionality**
- Norms of behaviour favour **transparency**, **partnership** and **resilience**
- Deterrence through the space domain serves to **reassure allies** and **reinforce rules-based stability**
  - Not project coercive power
- Overall: a **stewardship-oriented** and **multilateral** space culture

RAF Fylingdales

U.S.A.

- Values
  - Belief in **technological mastery**, **innovation** and **control** as pathways to security
  - Emphasis on **freedom of access** and **action**
  - Strategic stability arises from **dominance**, not mutual restraint
- Norms
  - Prefer normative frameworks that **preserve U.S. freedom of action**
  - **Coalition leadership** so that others' norms reflect U.S. practice
- Identity: space is an extension of **America's frontier ethos**
- Perceptual lens: space as a **warfighting domain**; but **resilience** and **denial** are more credible than punishment
- Overall: space is a domain to be **managed and defended** through **integration** - not restraint

National Approaches: Russia

Values

- Security through strength: **deep distrust** of Western intentions
- **Strategic depth** an enduring theme

Identity

- Sees itself as a **great power** under siege; space achievements are part of its enduring prestige
- **Continuity** from Soviet-era military space culture, emphasises parity with the U.S.
- Tied to **self-reliance** and **technical sovereignty**

Norms

- Comfortable with **militarisation** and **ambiguity**; deterrence through uncertainty and fear of escalation
- Counter-space as **asymmetric deterrence**: a cheap way to offset Western precision warfare
- Preference for **denial** and **ambiguity** (e.g. co-orbital inspections) to signal capability and resolve

Perceptual Lens

- Space is a strategic enabler for nuclear deterrence
- Interprets U.S. & NATO space posture as **encroachment**
- **Deterrence** with **compellence** through creation of risk (for the opponent): make conflict too costly

A defensive, revisionist strategic culture:
deterrence through unpredictability, risk tolerance and asymmetric capability

National Approaches: China

Values

- Belief in **strategic deception**, **patience** and **control of information**
- Unity of civil and military purpose: **no clear separation** between commercial, civil and military space activities

Identity

- Self-conception as a **rising power**; space success symbolises **national rejuvenation**
- Space achievements reinforce **nationalist pride** and **legitimacy** for the Communist Party
- Aspire to be **peer competitor** to U.S.

Norms

- Accept **military use of space** as natural; see Western ‘sanctuary’ norms as self-serving
- Deterrence through capability demonstration, e.g. ASAT tests; showcasing power is a signalling tool

Perceptual Lens

- Space is a **contested information domain**
- Sees U.S. actions (Space Force, missile defence) as evidence of **hegemony** and **encirclement**
- Understand that deterrence is not just about the military balance, but **psychological**: shaping opponents’ **perceptions**

A control- and information-centric strategic culture; deterrence as a holistic influence effect, built on demonstration, deception and integration

Some closing thoughts

- Deterrence thinking **continues to evolve** to address the evolving security environment
  - Fifth Wave of deterrence: to address hybrid / subthreshold threats?
  - Sixth Wave: to address the ‘three-body’ problem of China, Russia and U.S. as nuclear peers / near-peers??
- Developments in the Fourth Wave are enduring and have direct utility
  - Enable approaches to maximising **understanding of opponents** and employing **all levers of national power**
- Direct relevance to the space domain and how we should approach deterrence, compellence and assurance
  - Understanding our opponents - and Allies and partners - is a crucial first step in avoiding strategic miscalculation
- Must consider the **whole space system** (on-orbit, link and ground segments) as well as other domains, not think solely of **‘space deterrence’**
- It can be argued that the success of deterrence in space lies in **resilience**, **attribution** and **collective security**, rather than emphasis on punishment
- Space will endure as an arena of strategic competition; effective approaches to deterrence and assurance can **limit escalation** and **maintain stability**

Questions & discussion

Nicholas Taylor

OAKLANDS CONSULTING

Thank you and merry Christmas!

Nicholas Taylor
ntaylor@oaklandsconsulting.co.uk