

Wargaming: Preparing for Multi-Domain Ops

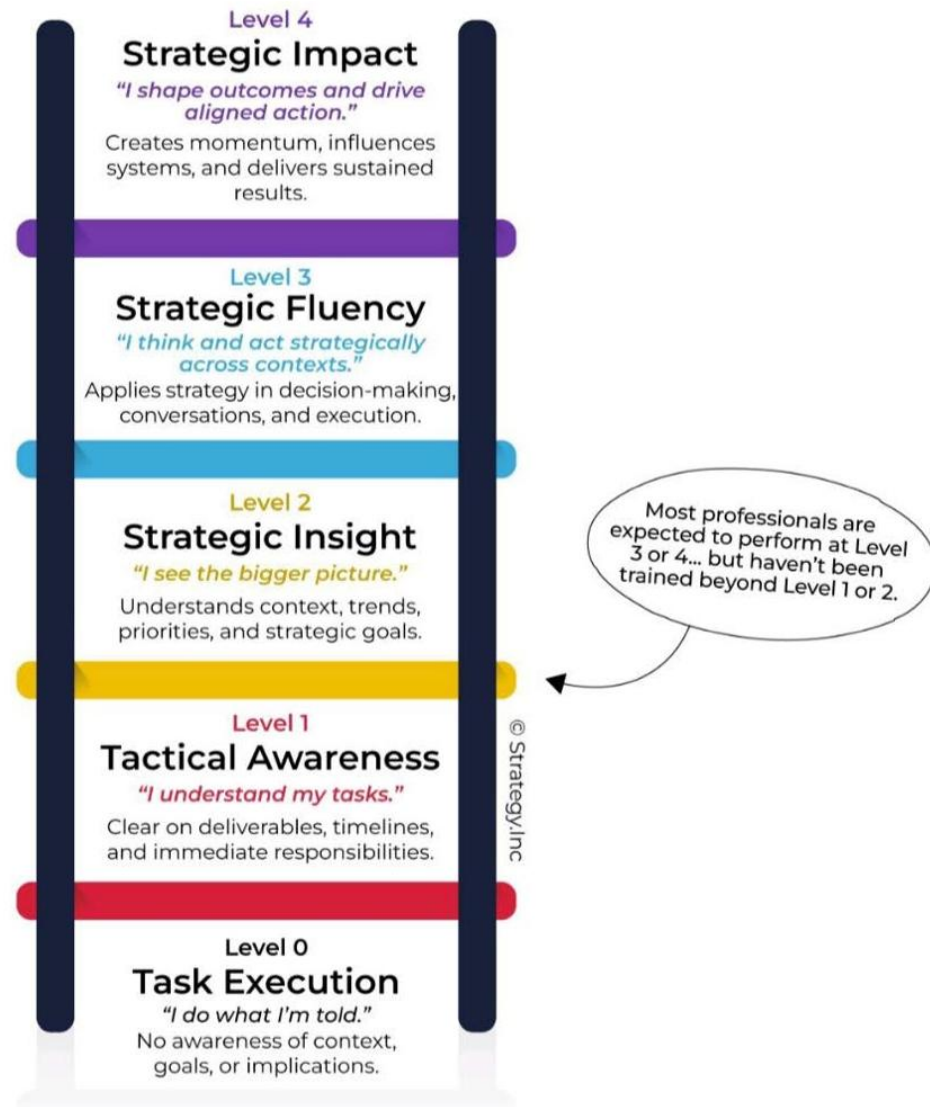
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Designing MDO Wargames

- Wargame Purpose
- Planning Assumptions
- Level of War
- Gray Zone, Cyber, Airstrikes
- Assessing Learning

The Strategic Fluency Ladder



Designing for Purpose

1. Culminating event for mid-level officers on MDO:
 - Tactical experts but limited synchronization of space, cyber, information operations, SOF, Cyber, and long-range targeting
 - Incorporation civil defense, militarization of infrastructure
 - MDO synchronization is planned at operational HQs
2. Identifying Capability Gaps to fight MDO
3. Evaluating future weapons technology for MDO

Single game is unlikely to meet all 3 purposes to same level

Design Assumptions

- Scenario selection must be linked to wargame learning outcome
- “Near Future” – an easy forecast of capabilities
 - Include planned purchases & development (not a gap)
 - Russia rebuilt to 2021 capabilities
- Scope & Scale of topic
 - Some wargames minimize importance of one or more domains.
 - Central Europe: focus on land
 - China: focus on sea & air
 - Baltic Sea + High North—facilitated cross-domain operations.

Operational Level of War

- Players like to think about tactics
- MDO Design must encourage operational focus
- Our recommendation:
 - Map Scale: 200km x 200km hexes (10 x 10 similar to a chessboard)
 - Unit size: Brigades, Naval Task Forces, Aircraft packages
 - Process: players write orders & sketch a concept of operations graphic
 - Combat: simple, but with modifiers to encourage MDO thinking

Designing for MDO

- Gray Zone
- Cyber
- LRS-Targeting Strategy

Wargaming Gray Zone Ops

- Require long turns = 3+ months (1 turn for fast game)
- Joint HQs requests DIME actions such as:
 - Article IV Declaration
 - Disinformation
 - Mobilization of reserves; request forces
- Actions cost political capital (not \$\$)
- Actions influence political capital!

Wargaming Cyber

- For learning, give players both cyber defense & cyber offense capabilities (NATO SCEPVA)
- Players choose networks to defend & attack
 - Limit to a reasonable number of choices (e.g., 12)
 - Each network should vary in:
 - Level of difficulty
 - Benefit of intelligence collection
 - Effect of disruptive attack
 - Major cyber decisions occur during Gray Zone

MDO and Long-Range Strike

- For learning, give players both air defense and air-strike capabilities (NATO)
- Require ISR (space, cyber, SOF) prior to strike
- Option for cyber, SOF to disable local air defense (infiltration occurs during Gray Zone)
- Player choose region & target system to defend & attack
 - Limit choices (e.g., 10 systems, 10 regions)
 - Effects vary by target system

Lessons for Wargame Design

- Reliance on reserves → reliance on MDO
- Complexity of Baltic Sea control (due to size, sonar)
- Winter in High North = night ops
- Lack of NATO space advantage in the High North
- For Baltic, NATO C2 is complex (Brunssum vs. Norfolk)
- SOF & Cyber must infiltrate during Gray Zone

Way Ahead: the Expansions

- Arctic-Svalbard wargame w/ Total Defence actors—civil defense & infrastructure
- Increase emphasis on emerging weapons
- INDOPACOM version w/ dispersal bases

Thank you

How to reconcile designing future capabilities with delivering those needed today?

- Wargame future force posture
 - Balance of quality vs. quantity
 - Key capabilities? Reinforcements from allies? If time delay, options to mitigate while waiting for arrival
- Challenge
 - design a fair game...sponsor desires
 - Need many plays to get a reliable answer
 - AI: to help design the game; to help players come up with answers faster, AI in the game—wargaming differences in autonomous weapons

Inspirations & Acknowledgements

- **Gray Zone**

- Persian Incursion
- South China Sea

- **Combat Mechanics**

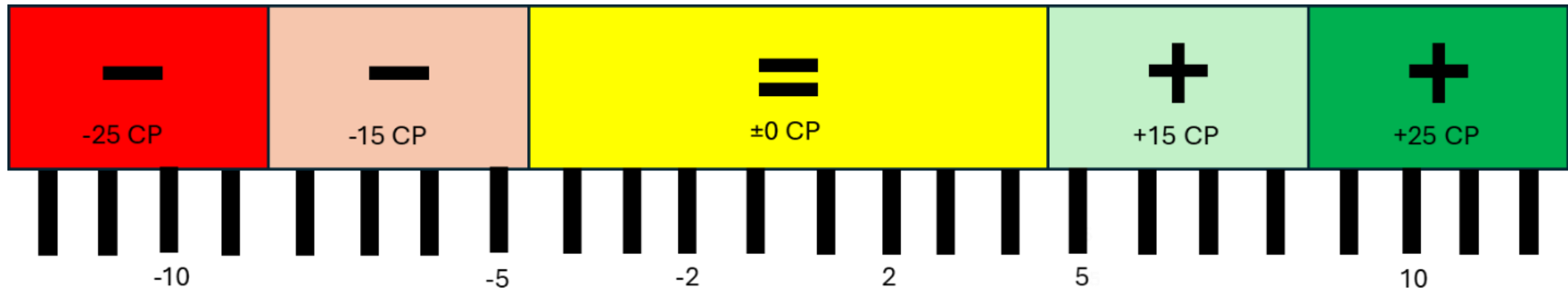
- Operational Wargame System @ US Marine Corps Univ.
- Littoral Commander
- MERLIN cyber game @ US Center for Naval Analysis
- Operation Northern Eclipse @ US Air Force Academy

Strategic Realities

Despite national objectives, players tend to focus on certain geographies:

- Norway = North Sea
- Finland = long border
- Baltics = rotational NATO units as tripwires
- Sweden = all above + Gotland = Finland
- Russia = threat to: SSBNs, Karelia, Kaliningrad

WTF Meter: impacts political capital



Political capital is the game “currency”

Action	Cost (CP)	WFM	Other Effects
Condemn behavior	10	-1E	Target –5 CP
Consult with Allies or Partners	10	+2	
Host a regional summit	25	+2	
Expel Embassy (once per game)	50	+1E	Target –15 CP
Airspace & Basing Agreement	10	+2	Enables use of air/land prior to Article V
Request Article IV consultation	35	+5	
Request Article V determination	50	+10	
Information Action	Cost (CP)	WFM	Other Effects
Disinformation attack	10	-1E	Target –5 CP
Disinformation Campaign	50	-3E	Target –15 CP
Info Resilience Campaign (once per game)	50	+3S	-5 probability of success for any disinfo attacks during the game.
Authorize offensive cyber	5	-	You may begin offensive cyber operations.
Economic Action	Cost (CP)	WFM	Other Effects
Increase sanctions enforcement or evasion	10	+2E	Target -5 CP
Attack or protect undersea infrastructure	25	-2E	Target –10 CP
Security Cooperation	10	+1P	Train Home Guard in guerrilla warfare. Attackers get -1 to combat in specific hex.
Airfield development	10	+2S	1 additional flight of fighters can land in hex
Military Action	Cost (CP)	WFM	Other Effects

Cyber Options (Merlin+)

Target Network	Mod	Attack Effect (effects on supply & combat modifiers last 1 turn)	ISR Collection Benefits
Port	-1	Inability to use ports in hex for movement or logistics	All major supply routes from this port
Comm Satellite Constellation	-3	-1 die roll for combat in a specified zone (A, B, or C)	Location of bombers in hex of collecting team's choice
PNT Satellite Constellation	-3	-2 die roll to air & missile strikes	N/A
National cell phone network	-2	-2 on WTF	Location of aircraft in hex of choice
Senior Cyber Officer computer	-2	Cyber offense team loses two turns.	Reveal location of cyber defense teams
Senior SOF Officer computer	-3	Next SOF order fails to reach the unit.	Reveal location of deployed SOF teams
Power	-2	-3 on WTF	N/A
Banking, finance	-2	-4 on WTF	N/A
C2 for air or missile strikes	-3	Orders to launch attack are delayed 1 turn	Location of strike packages & missiles in hex
C2: air defense	-2	-4 die roll for air defenses	ID air defense units in hex.
Rail network	-1	-2 on WTF No supply through hex	All major supply routes that use this hex.
Water or sewage systems	+1	-6 on WTF	N/A

SOF

- Two-turn sequence: infiltrate then act
 - Must infiltrate during gray zone
- Actions
 - Arm rebels of vulnerable population
 - Counter-SOF
 - Capture de-militarized island
 - ISR
 - Sabotage unit or infrastructure
- Combat: yes, but small size limits contribution

Space, ISR, & EW

- Space capabilities: ISR, communications, navigation
- Other ISR options: cyber, SOF, aircraft
- Successful ISR missions required for air/missile strikes on difficult to track targets (e.g., aircraft & missile systems)

Crisis: Initial Strike

- SOF: limited training in direct action
 - Russia: “Little green men” – subversion and ISR
 - Nordic: counter-subversion; ambush; limited in Gray Zone
- A2AD: slight NATO advantage
 - Scandinavia: advantage in 5th gen; rely on NATO for ISR, targeting
 - Finland & Sweden = ACE
 - Russian advantage in GLCMs, SRBMs, kamikaze drones (non-dynamic)

Long-Range Strike

Target Type	Effects (in specified target hex)
C3	No new orders – 1 turn
Strategic Air Defense SAMs	No AD Fire – 1 turn
Bridges, Rail, & Land Chokepoints	No supply, movement – 2 turns
Ports & Sea Chokepoints	Aerial mining prevents sea movement – 2 turns
Airfields	Deny runway use for combat or supply – 2 turns
Power station	No supply for 2 turns; -5 WTF; -10 WTF if winter
Fielded Forces	Damage as specified by unit
City or symbolic target	-5 WTF

Strike Attack Modifiers	Mod	Strike Defense Modifiers	Mod
C2/ISR/SOF Support	+1	Strategic SAM vs ballistic missile	-3
Severe weather	-2	Strategic SAM vs	-4
Moderate weather	-1	stealth/hypersonic	-5
Russia vs mobile targets	-5	Tactical SAM, AAA vs stealth	-1
Nav or Comm Satellite	-2	Tactical SAM, AAA vs 4 th gen	+4
Jamming	-1	fighters	
Attacked units in difficult terrain		Tactical SAM, AAA vs bombers	