

Next Generation Wargaming

The Need For a Revolution In Wargaming
& How That Revolution Can Be Achieved

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BLUF (Bottom Line Up Front)

- This is the time to innovate wargaming to its next generation
- Innovation (like murder and war) requires motive, means & opportunity
 - Motive:
 - Runaway Climate Change is increasing motives for war
 - Our traditional abilities to deter (and win) war are eroding
 - Means:
 - Tech, several emerging capabilities can create a synergistic effect
 - Procedural, a systems approach will enable best application of tech
 - Opportunity:
 - The Democracies are more united than we have been in decades
 - The Connections conferences are ready to facilitate the elements of the wargame community to work together synergistically.
- We can advance wargaming to its next generation - before our adversaries

Generations of Military Capabilities



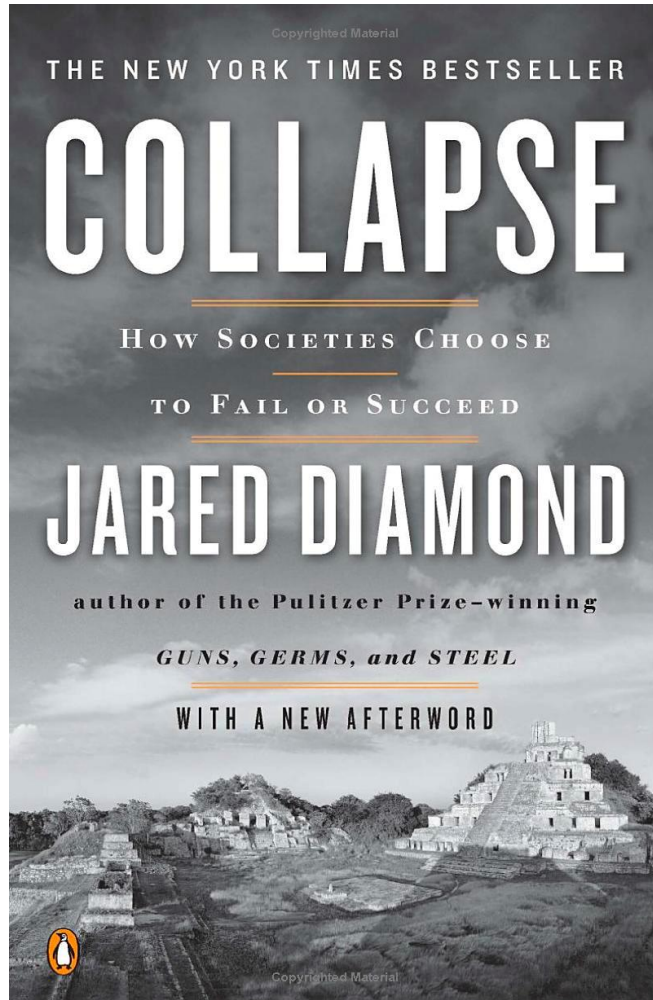
Previous Wargame Revolutions

Generation	Motive	Opportunity
1 st Abstract	Increased Societal Complexity	Food enough for specialization
2 nd Simulation	Prussia lost	Advances in probability and cartography
2.5 Developmental	Germany lost	Abundant of wargame expertise

Next Wargame Revolution/Generation

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1 st Abstract	Increased Societal Complexity	Food enough for specialization
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3.0 Comprehensive	More need/less ability	Interlocking Tech Advances + Process Improvements

Motive/Need - A Less Stable World +



- Earth's climate has changed continually.
- Past mass extinctions occurred when the climate changed too fast for natural selection to adapt.
- Humans have always experienced climate change, most civilizations (though not all) have been able to adapt.
- The danger comes when the speed of climate change is too fast for societies to adapt:
 - Conflict over water (More people - less water)
 - Climate refugees (Former homes too hot, too dry or under water)
 - Power shifts (Some powers will see a net benefit from climate changes)
- Plus areas not depicted well by 2nd gen wargames
 - New tech applications
 - International crime/insurgency/Gray area offensives
 - Combat in the information and economic areas

Eroding Advantages

- Arsenal of Democracy
 - bury our enemies in stuff
 - US produced more munitions than all
- US declining share of Global GDP
 - 1950 25%
 - 2019 24%
- China increasing share of Global GDP
 - 1950 5%
 - 2019 16%



Eroding Advantages

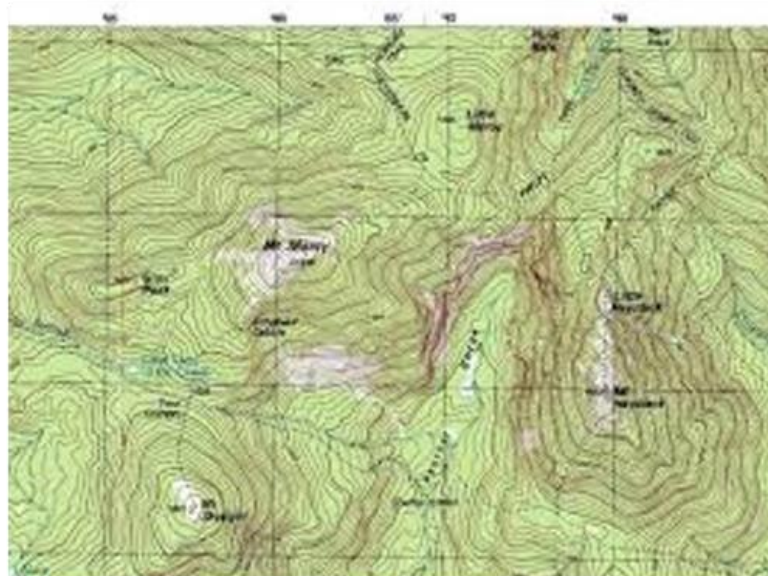
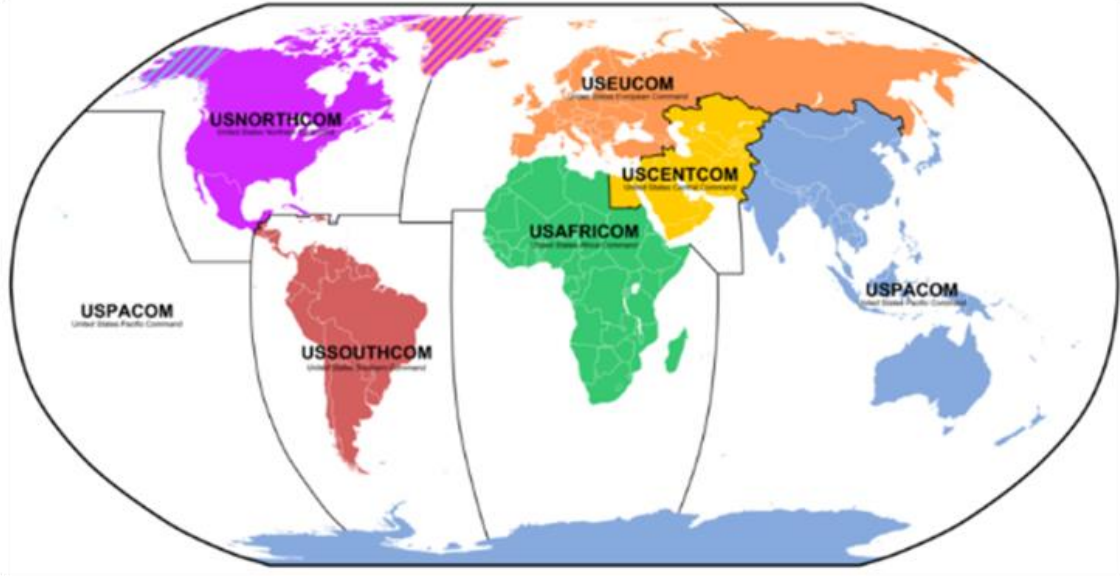
- American Way of War
 - More Tech – Less Blood
- China is
 - Catching up in R&D Spending
 - 2000
 - US 280B
 - China 40B
 - 2019
 - US 549B
 - China 496B
 - Far ahead in STEM graduates
 - US 7,700K
 - China 568K



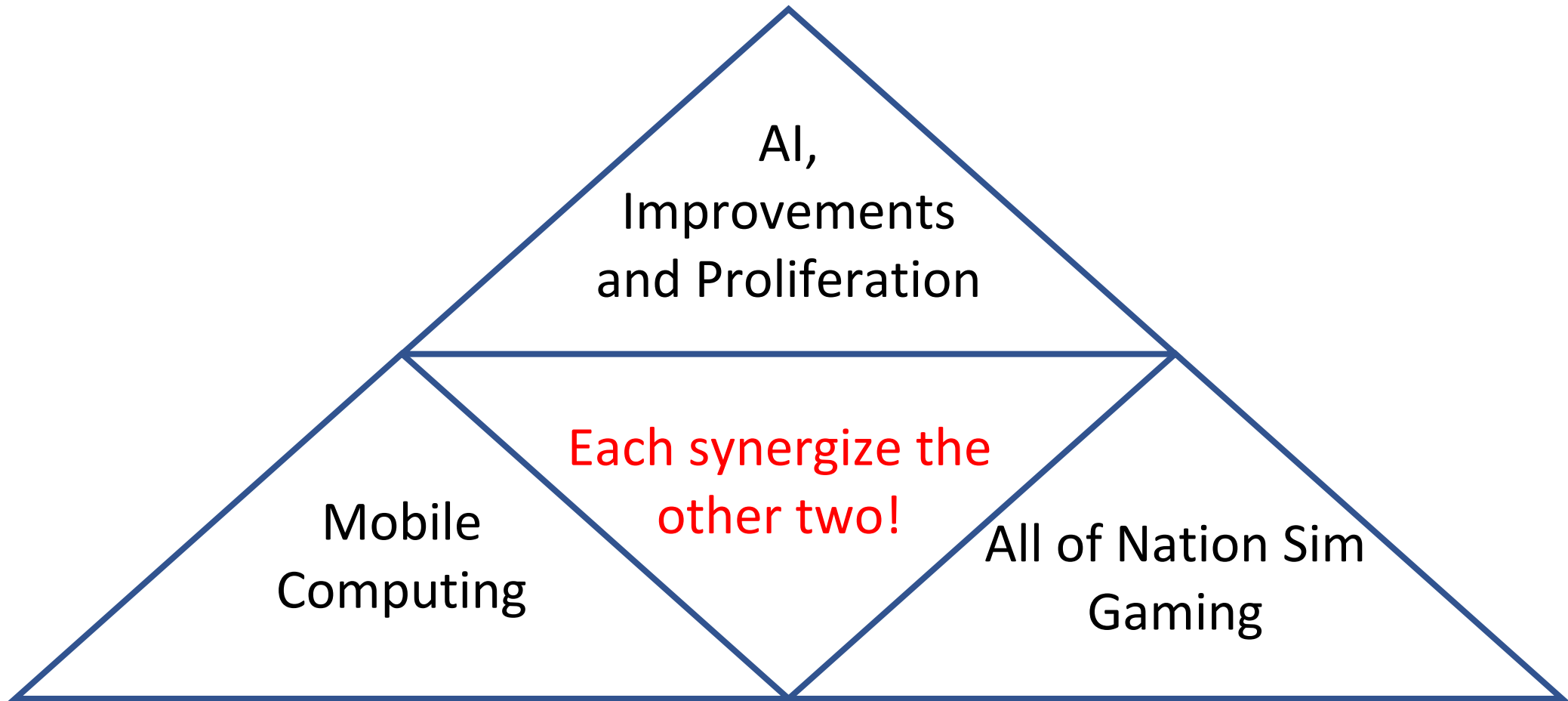
Capabilities of 3rd Generation Wargaming

- Decision Support/Developmental
 - Relevant to each level/type of decision cycle
 - Integrated with, and executable within, each level/type of decision cycle
- Education and Training
 - Relevant to subject
 - Executable within available time
- All
 - Available at scale
 - Appropriate depth (duration of wargamed period), breadth (all high impact factors) and detail

Appropriate Detail



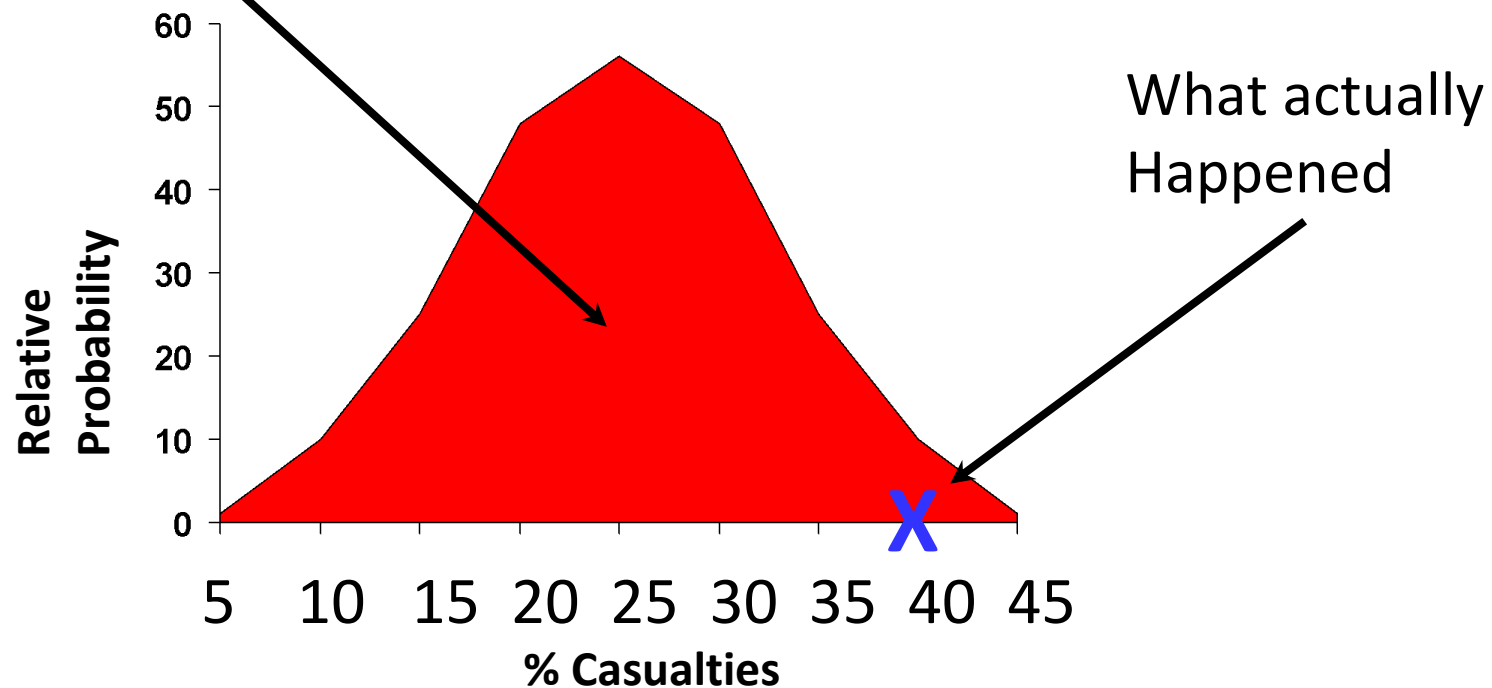
Opportunity - Tech



Why AI is Important?

Each **war** is one pass through a series of chance events; however, what ultimately happens is not necessarily the most likely outcome.

Outcome with
relative likelihood



AI, Improvements and Proliferation

- AI software has improved in effectiveness and expanded in application.
- Why is this an opportunity for wargaming?
 - Real wars take a long time and have a spectrum of possible outcomes.
 - Manual Wargames have struggled to “go deep” and to capture the spectrum of possible outcomes and their relative likelihood. They typically run out of time and show only one outcome.
 - Computer assisted wargames can show spectrum of outcomes, but if they run beyond a single decision cycle outcomes can be very, very wrong.
 - Putting a human “in the loop” slows execution to roughly manual wargaming speeds.
- With greater effectiveness and accessibility AI can more often serve the role of subordinate decision makers at computer speeds.

Mobile Computing

- The huge recreational software industry (surpassed film/TV in 2003 or 2005) expands mobility of sim games.
 - Executable on notebook computers, tablets, smart phones.
 - Network downloadable and team play easy.
- Why is this an opportunity for defense wargaming?
 - Value of wargaming = value of each wargame X number of wargames.
 - Easier forming of wargame teams.
 - Innovation tools are in the hands of the innovators.

All of Nation Sim Gaming

- Proliferation of serious and recreational nonmilitary sim games:
 - Serious-- MBA programs, climate change, disaster relief etc.
 - Recreational -- Civilization, _____ Tycoon, Tropico etc.
- Why is this an opportunity for wargaming?
 - Adversaries move to “gray zone” war
 - Friendly interest in all of nation/alliance
 - Help explore possible outcomes of Minimally Invasive Warfare

Opportunity - Process

- Organize: Establish an entity to lead common efforts.
- Train: Adapt UK approach.
- Equip: Advanced tools to promote interoperability & collaboration.

Organize

No one in charge is costly:

- Each fighter squadron should not field their next generation fighter
- Who develops training requirements when each entity serves their boss?
- Who developed tools, references, common standards?

DoD Wargaming has fighter squadrons but no Air Combat Command

- Who do allied wargame organizations talk to?
- Who helps develop allied/friendly wargame capabilities?

The Defense Wargame Alignment Group (DWAG) is a start; their common repository and forum are invaluable:

- Still, DWAG an additional duty

First step in revolution is designating/creating a lead organization

Train

My understanding is UK is taking a systematic approach:

- Examining their “Defense Enterprise” and establishing which billets need to know what about wargaming.
- Establish the knowledge level of current incumbents and their rough turnover rate to establish an initial and annual training requirement.
- Establish criteria for maintaining currency

The US takes a similar approach to developing and providing the training needs of cooks.

If training is necessary to ensure quality cooking it should be necessary to ensure effective wargaming – effective war – effective peace.

Equip

Adapting tech from civilian industry & allies key to WWII victory in the air:

- Going from DC-3 to C-47 required about 50 modifications.
- The P-51 had an UK engine and an US airframe.

Adapting tech from the civilian recreational software industry will be a key to achieving the tools needed for the next generation of wargaming, but:

- Unlikely any one commercial product will be optimal “as is” (see DC-3).
- Commercial conventions and attributes may be more helpful than individual products, i.e. networked play, execution on mobile platforms etc.
- We should also be alert for parts or products we can acquire from our friends.

What Will Third Gen Wargames Enable

- Every decision cycle has a wargame capable of executing within that decision cycle.
- Decision makers have access to wargames that are as mobile as they are.
- Common interface conventions will enable users to easily go from an ed wargame to a decision support wargame to professional development wargame – minimizing time to learn game – maximizing time to learn war.
- Innovations have greater impact, faster, at a lower cost, and adversaries will take longer to mitigate them.
- Forecast of War outcome before war begins, updated with real data as war progresses – changes in outcome projected and diagnosed.

Will Our Adversaries Be Able To Catch Up Quickly?

Unlikely

- China: Spending money and talent on wargame software but, culturally failure is not acceptable, so learning is limited.
- Russia: While the USSR had a strong and deep wargaming culture,
 - Staff colleges closed with the fall of the USSR. First open source mention I found of Russian wargaming was in 2020.
 - USSR techniques focused on movement and kinetics – not consistent with their current gray zone focus.
- Iran: While very little is known, at least at the unclass level
 - If there were any US trained wargamers they were most likely killed during their revolution.
 - Current wargaming appears to analytical wargaming among OR PhDs.

Will Our Adversaries Be Able To Catch Up Quickly?

Unlikely – But:

- China: Infrastructure in place if attitudes are changed.
- Russia: Soviet wargaming was eclipsed before WWII, but recovered by mid war, led the world by 1946.
- Iran: Very little is known, at least at the unclass level
 - Most (all?) literature on wargaming in public domain.
 - Intellectual foundation exists.

Summary

- Motive
 - Less stable world
 - Eroding advantages
- Opportunity
 - Tech
 - Advances in AI
 - Advances in mobile computing
 - Proliferation of elements of power simulation
 - Process
 - Organize
 - Train
 - Equip

Conclusion

- Jumping a generation ahead of our adversaries in wargaming will help us increase the odds of success in war, at a lower cost in lives, time and treasure.
- Such an edge may help us achieve the highest level of victory – a just and lasting peace.

Our Connections Conferences Can Play a Key Role in Developing / Employing 3rd Generation Wargames - before our adversaries