

# Perspectives on Deterrence and Assurance in Hyperbolic Warfare

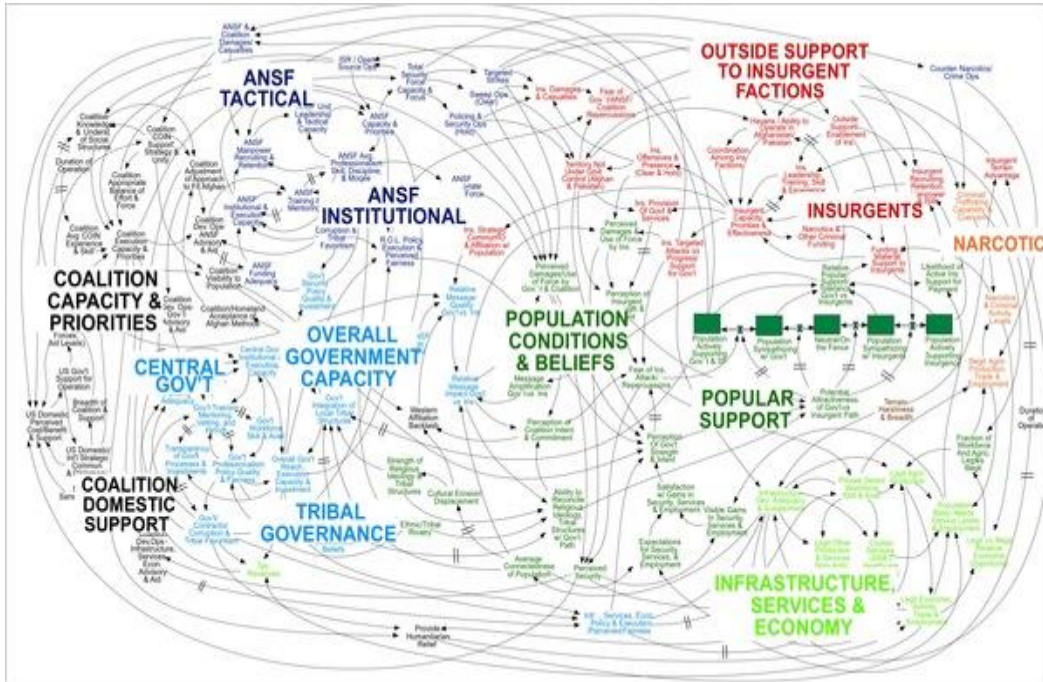
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*NATO SAS-141 Symposium Deterrence & Assurance within an Alliance Framework*

*– King's College London, United Kingdom, 17-18 January 2019*



# From Complicated to Complex



“ When we understand that slide, we’ll have won the war. ”

*Gen. Stanley A. McChrystal,  
Commander, NATO and US Forces  
in Afghanistan*

# The Convergence



Exponential growth of technology  
Exponential compression of time

# Hyperbolic Warfare, or Hyperwar

AI-fueled, machine-waged conflict – a type of conflict where human decision making is almost entirely absent from the OODA loop.



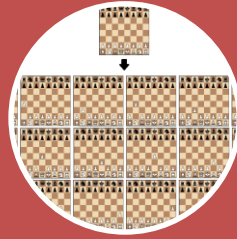
Infinite,  
distributed  
Command &  
Control capacity



Concurrency of  
action and  
perfect  
coordination



Logistical  
simplification



Instant mission  
adaptation



# Hyperwar is a consequence of the militarization of AI

It is here and will only become more significant with time. We must understand it and factor the implications of broad, widely deployed autonomous systems into our planning and our thinking.



# Inadequate SD&A

- **Strategy**  
High level plan to achieve goals. Solve VUCA of the environment.
- **Deterrence**  
Prevention or inhibition of action by fear of the consequences. A state of mind brought about by the existence of a credible threat of unacceptable counteraction with the purpose to avoid operational contact.
- **Assurance**  
Full life-cycle engineering process to identify and mitigate design, production, test, and field support deficiencies threatening mission success.



## Broader concept for Strategy in the Cognitive Age

**Ends + Ways + Means = Strategy**

V, U, C, A

*Convergence*

**Ends + Context and Consequences + Means = Strategy**

V, U, C, A, R

## Deterrence in the Cognitive Age

Can we?

What?

Nature?

## Assurance in the Cognitive Age

**from Assurance...**

**...to Resilience**



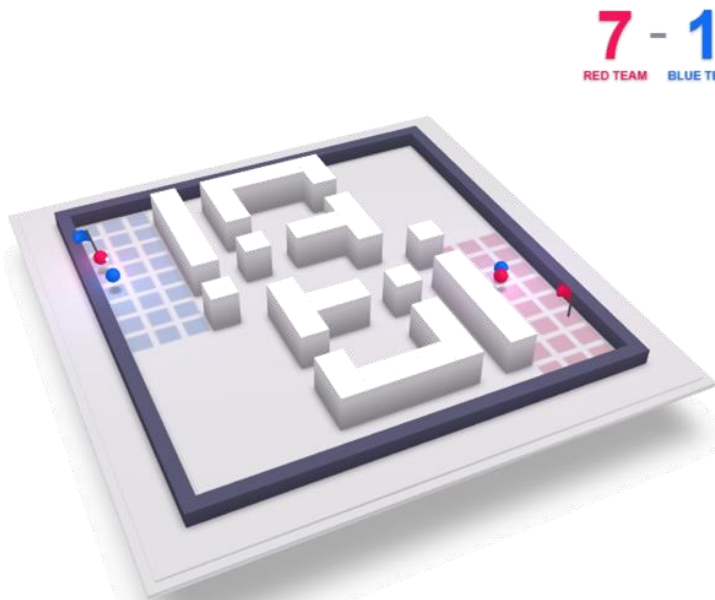
# What exists today – fighting

The future is already here – it's just not very evenly distributed.

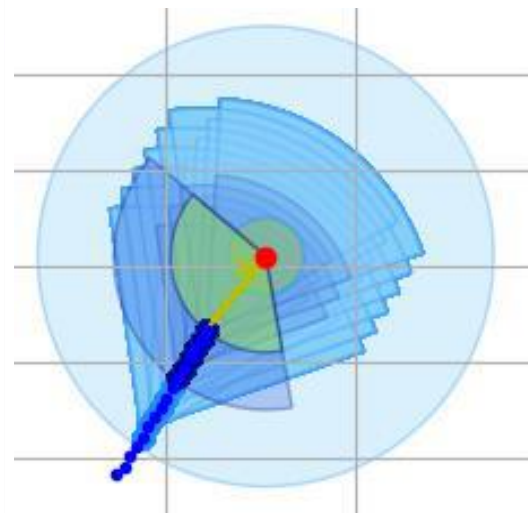
—William Gibson



AlphaGo Zero

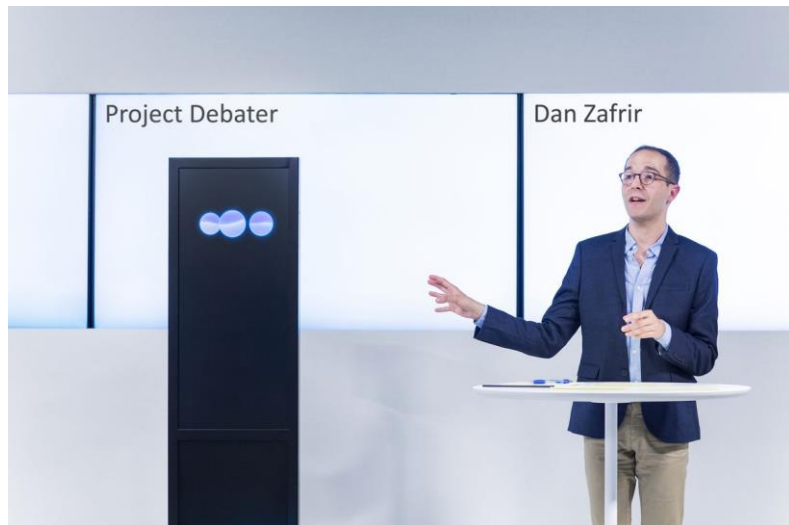


FTW Capture the Flag

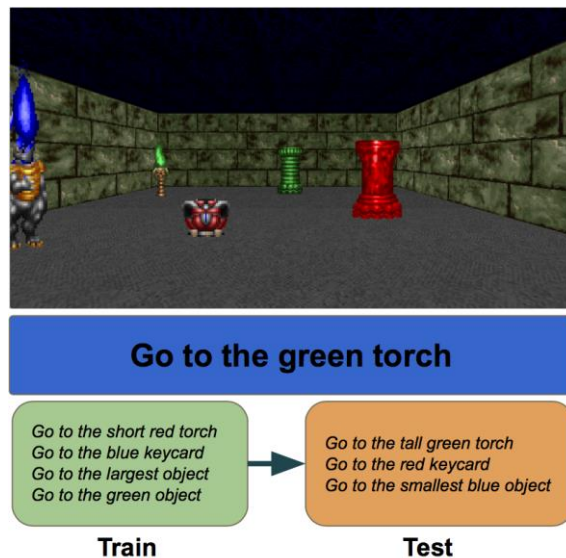


FFI

# What exists today – other than fighting



Project Debater



FPS for language



Big Data Analysis,  
Hyperhistory

**Offset:** a persistent, pervasive, univocal and unbalanced advantage, which shifts the competition from an unfavorable scenario to one that allows the application of forces to an otherwise immovable problem, or surmountable at an unacceptable cost. Offset is the heart of strategic advantage, and is generally achieved through a long-term technological superiority strategy (*offset strategy*).



**Innovation** is the engine of a technological superiority strategy



But it is not enough, strategy has to include:

- the integration of the technologies into capabilities
- the development of new ways of operating

# What we need to aim for tomorrow – Offset strategies

**Overwhelm the adversary with a unilateral irreconcilable capability gap**

1950 Eisenhower's "New Look"



Nuclear weapons  
Long-range bomber  
forces  
Missile forces

1970 SECDEF Brown and Perry



Networked precision  
strike  
Stealth  
C4ISR for conventional  
forces

*Cognitive Age*  
2016 SECDEF Chuck Hagel



Robotics  
Autonomous systems  
Miniaturisation  
Big Data  
Advanced  
Manufacturing

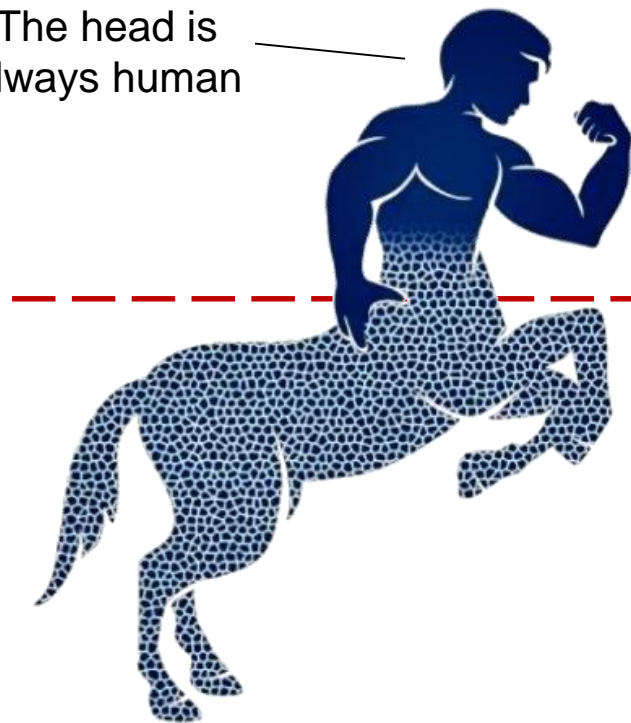
*Imagination Age*  
2040 – 2050



Hyperwar  
Hypercontested  
domains  
Resilience/Antifragility  
Ethics

# Centaur Intelligence: the best of both worlds

The head is always human



**BI**  
biological

Creativity

Empathy

Ethics

**CI**  
centaur

Advisors

Assistants

**AI**  
artificial

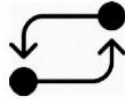
Agents

# Four Centaur Intelligence Scenarios



## Pass the baton

- It's your turn now



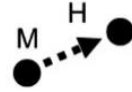
## Symbiosis

- One can't live without the other



## Take me to the next level

- Train me
- Show me the possibilities



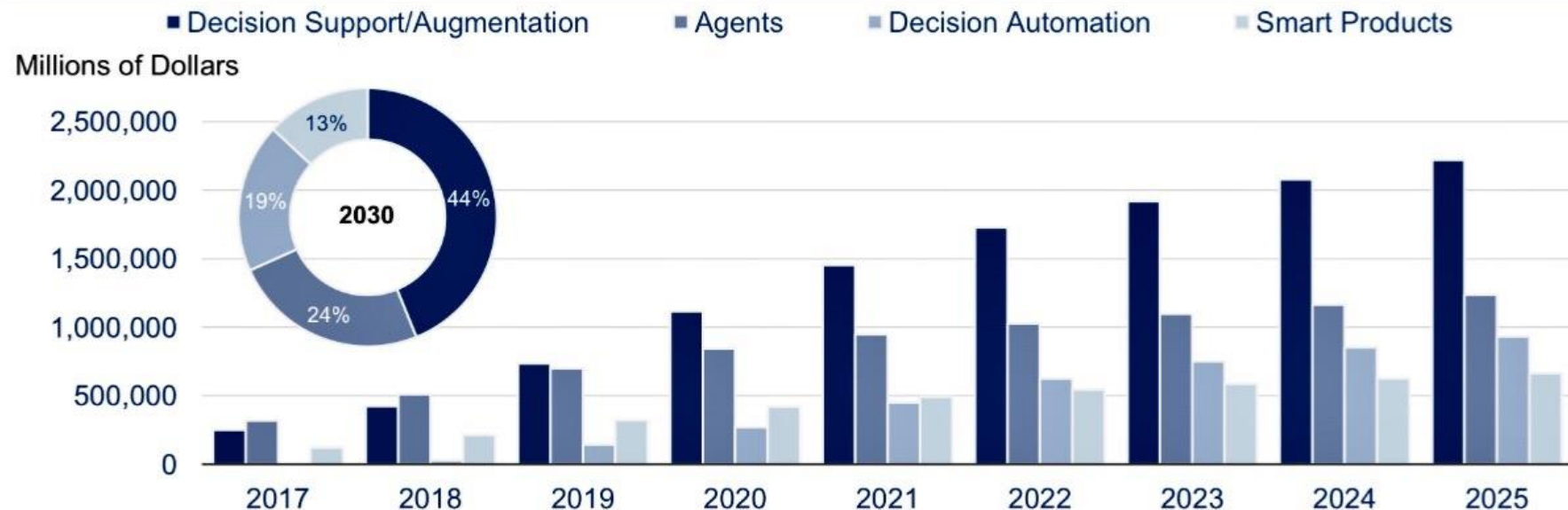
## Go the last mile

- Human in the loop



# Centaur Intelligence Focuses on Decision Support and Human Augmentation for AI-Derived Business Value

In 2021, AI augmentation will create 2.9 trillion dollars of business value and 6.2 billion hours of worker productivity.



Source: [Forecast: The Business Value of Artificial Intelligence, Worldwide, 2017-2025](#) (G00348137)

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# Get the best of both worlds



## Machines ...

solve narrow problems

learn from data

improve in iterations

are not people

## People learn how to:

Formulate a problem

Teach machines with data  
(data is the new code)

Establish a feedback loop

Reimagine old tasks

## Creative people ...

have broad interests

like to teach themselves

work best in new frontiers

in average, work harder,  
because they love their work

## How to Cultivate Creativity

Build a cross-disciplinary team

Help people to learn

Discover how AI can take people to the  
new frontiers

Use AI to find out what people love and  
redefine their work



# Conclusions

- Disorganic metamorphosis incoming – impact of hyperwar
- Need to preserve the right side of the offset
- Evolve concepts of Strategy, Deterrence and Assurance/Resilience in a hyperwar and Fourth Offset perspective
- Embrace  $AI+BI=CI$  the soonest
- Not adaptation, but Transformation

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THANK YOU FOR YOUR ATTENTION

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