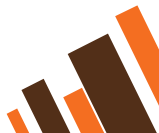


Fielding and securing autonomous combat units

JM Pelletier



Agenda

- » What is happening?
- » Why is it happening?
- » What does it mean for the future?
- » What can/should we do about it?

What is happening?

» Historical context:



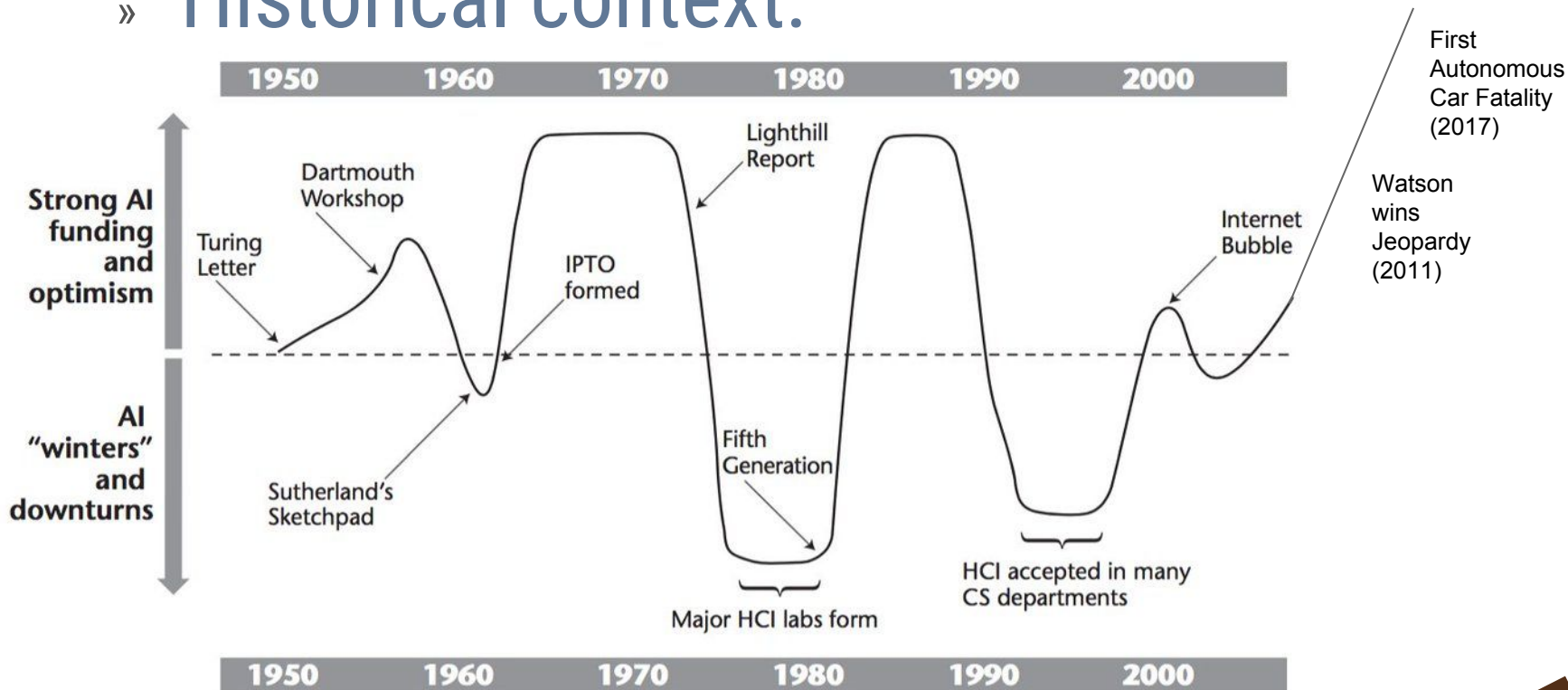
1940 - TT-26 teletank (RUS)



1944 - Goliath (DEU)

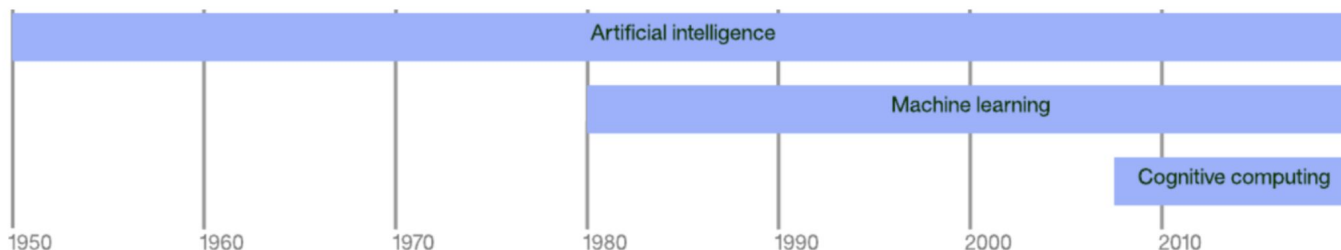
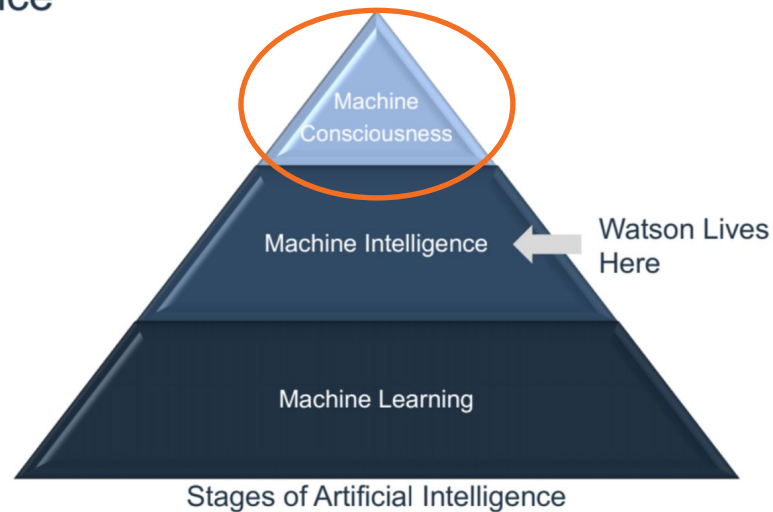
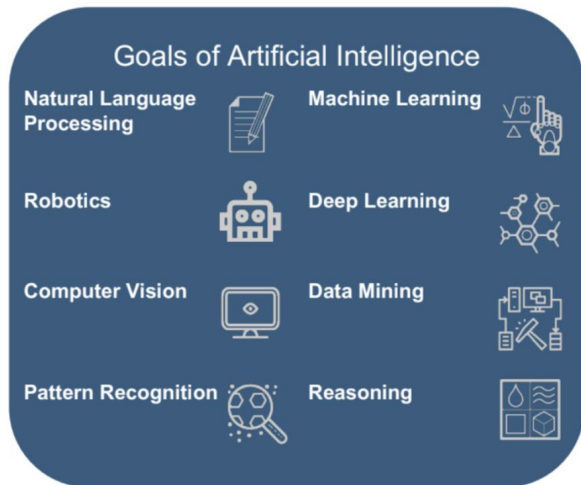
What is happening?

» Historical context:



What is happening?

Demystifying Artificial Intelligence



What is happening?

» \$\$\$ poured into AI systems

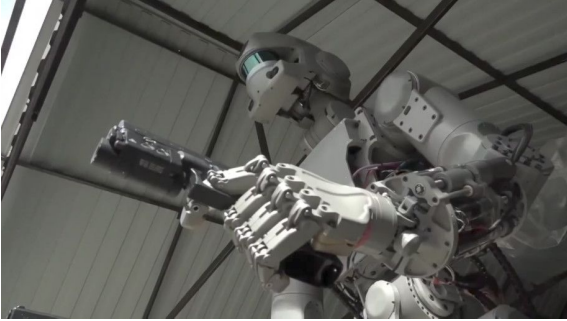


2017-2018: Mohammed bin Salman (KSA) and Masayoshi Son (JPN) announce commitment of over **\$45bn** to fund/build superintelligent machines



2017: Pentagon spent **\$7.4bn (in 2017 alone)** as part of overall strategy to increase use of AI in combat, combat support & combat service support

Project Maven



FEDOR (RUS)



TALON (USA)



Guardium (ISR)



MQ-1 Predator (USA)



Hermes 450 (ISR)



Shahed 129 (IRN)

Why is it happening?

“ *Artificial intelligence is the future, not only for Russia but for all humankind. **Whoever becomes the leader in this sphere will become the ruler of the world.***

-Vladimir Putin, 9/1/2017

What does it mean for the future?

Update September 4th, 5:40AM ET: Elon Musk offers his cheery perspective on Twitter:



- » United States ~ 2025
- » China ~ 2030
- » Russia ~ 2035
- » Asymmetric option

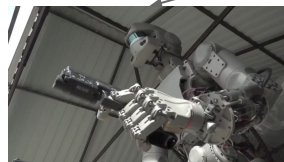
NOW
Many-to-one



**SOON
(NOW)**
One-to-one



~2025
One-to-many





Joint Concept Note 1/18
Human-Machine Teaming



Development, Concepts and Doctrine Centre

“Any actor with the financial resources to buy, or steal, an AI APT (advanced persistent threat) system could gain access to tremendous offensive cyber-capability, even if that actor is relatively ignorant of internet security technology.

- Ministry of Defense (GBR), 1/2018

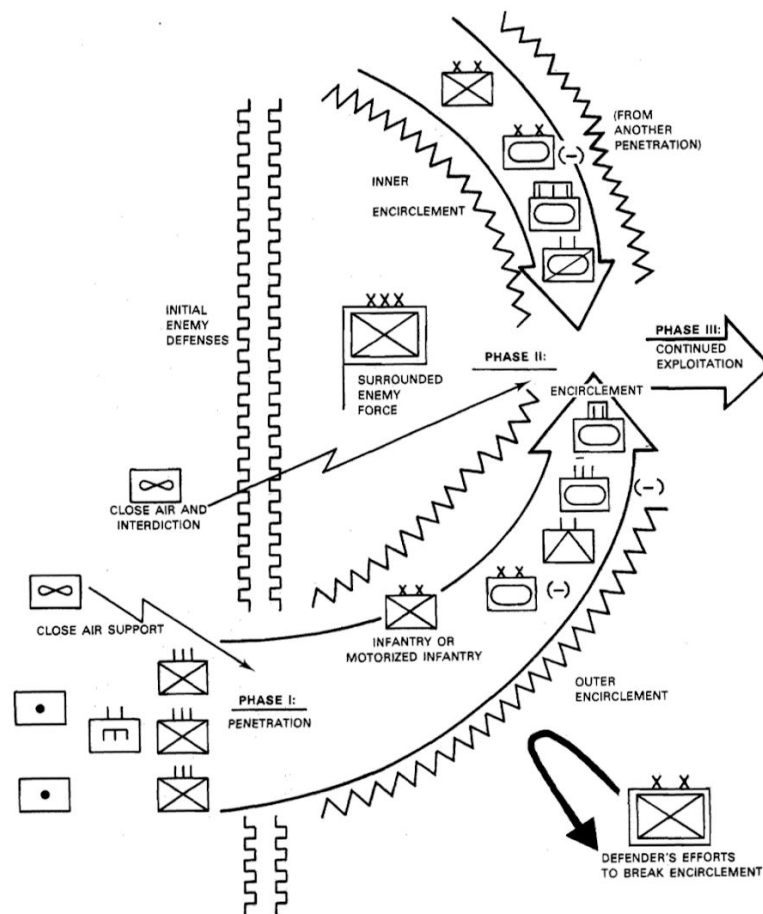
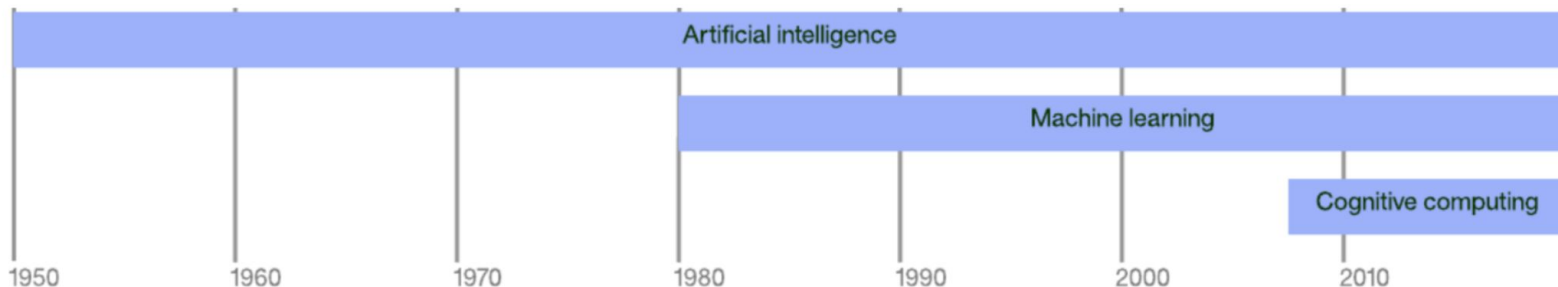
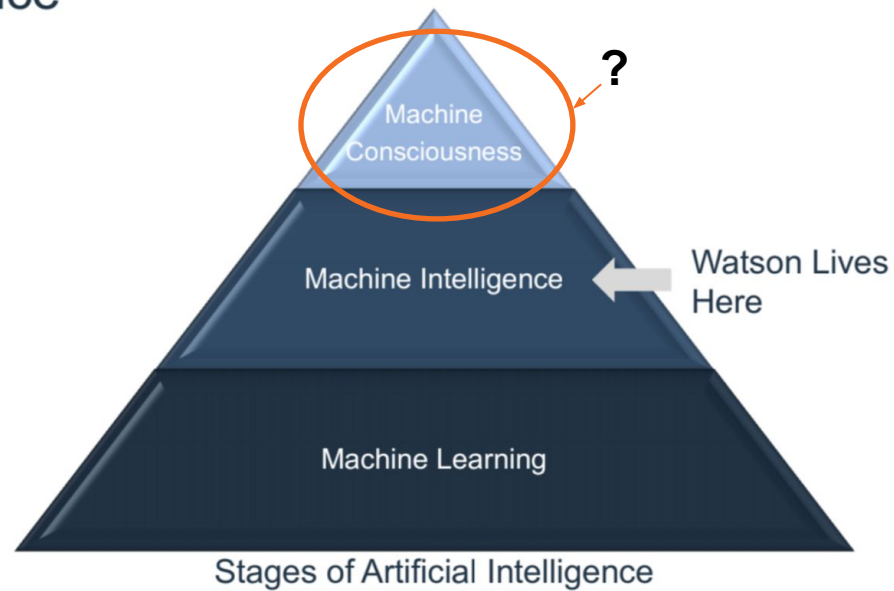
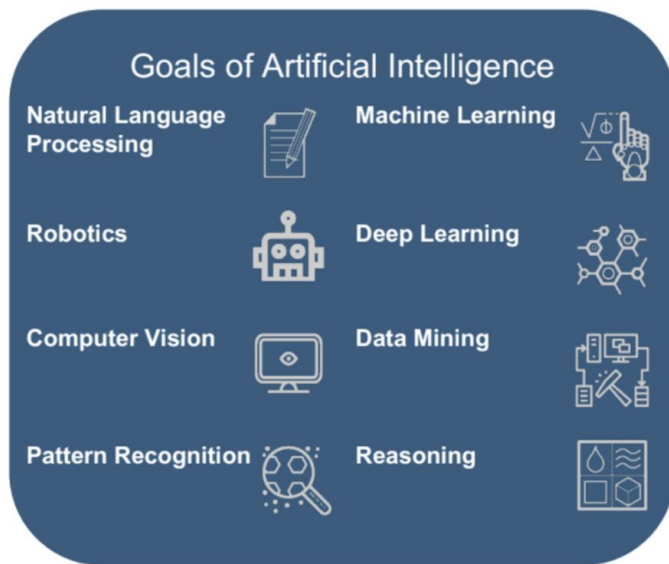


Figure 10. Schematic of Blitzkrieg Encirclement.

Demystifying Artificial Intelligence



What can/should we do about it?

- » Embed protections in AI to prevent harm to humans
 - » DARPA Assured Autonomy Program
 - » IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems
 - » Asilomar AI Principles



CENTRE FOR THE STUDY OF
EXISTENTIAL RISK



Center for a
New American
Security



ELECTRONIC FRONTIER FOUNDATION



OpenAI

Proposed experimental design: From generative adversarial nets toward a **Confidence-Emitting Diode** for embedded goal security in autonomous combat machines

