Games & AI: How did game engines become unbeatable & does AI dominance entail any risks?

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UHASSELT — KNOWLEDGE IN ACTION

Research Questions:

1. How did AI advance in board games?
   1a. What does that tell us about human and AI dynamics?
2. What risks does AI dominance entail?
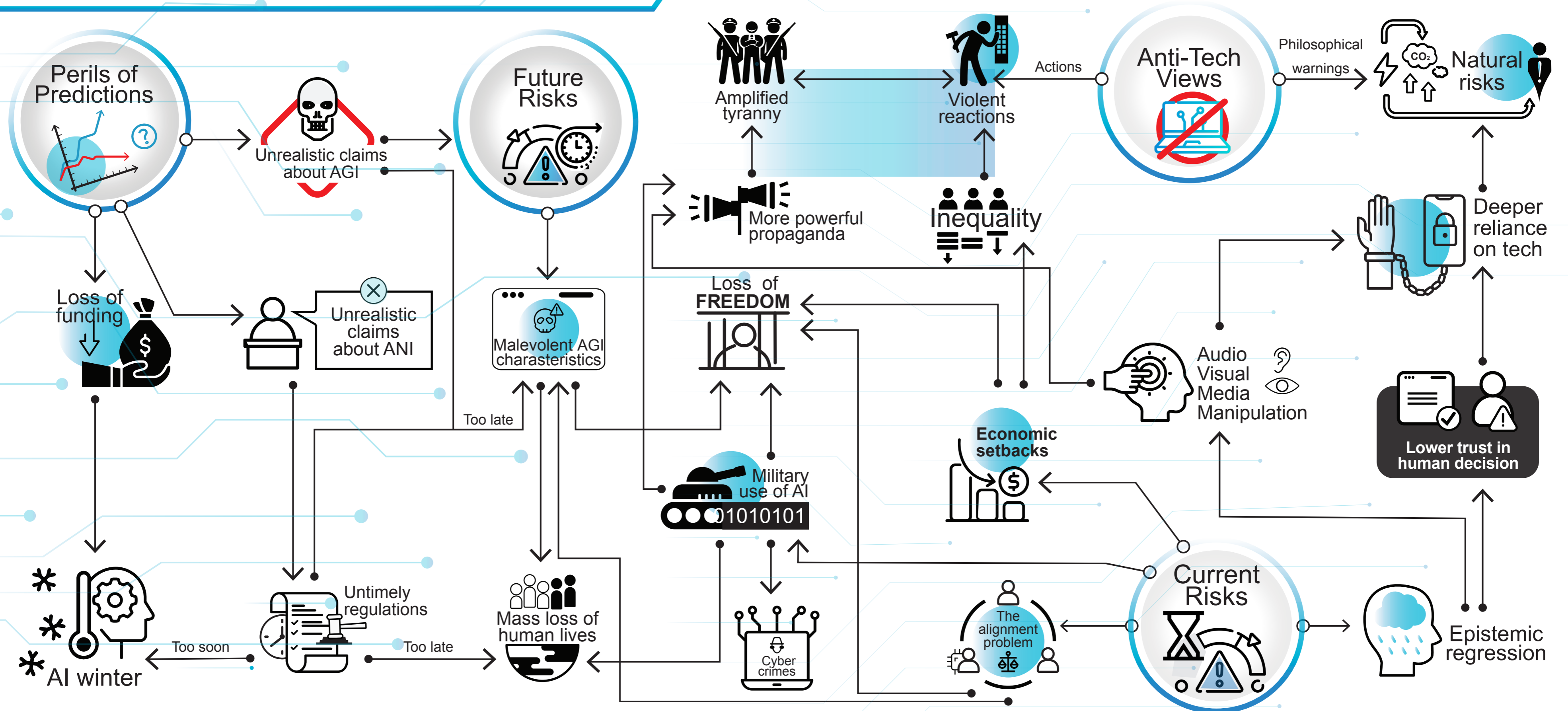
Methodology:
Literature Review

Chapter 01: Brief History of AI

1950s + 1960s: AI and Internet on Paper

1970s + 1980s: Techniques and Critiques

1990s + 2000s: Adversaries to Guides

2010s + 2020s: Arts & Languages

Chapter 02: AI Rise to Championships

T — Tool

1989 Schaeffer started working on 'Chinook'.	**1985** Feng Hsiung Hsu started working on 'Chiptest'.	**2014** DeepMind started working on 'AlphaGo'.

A — Adversary

1994 Chinook **3** — **3** Tinsley	**1997** Deep Blue **3.5** — **2.5** Garry Kasparov	**2016** AlphaGo **4** — **1** Lee Sedol

G — Guide

2007 Checkers is solved.	**Since 1997** Top human players turn to chess programs for practice and analysis.	**2017** AlphaZero mastered Go, Chess, and Shogi... ... all by learning from scratch.

Chapter 03: The Network of AI Risks

- Perils of Predictions
- Unrealistic claims about AGI
- Future Risks
- Amplified tyranny
- Violent reactions
- Actions
- Anti-Tech Views
- Philosophical warnings
- Natural risks
- Loss of funding
- Unrealistic claims about ANI
- More powerful propaganda
- Inequality
- Deeper reliance on tech
- Loss of FREEDOM
- Malevolent AGI characteristics
- Too late
- Audio Visual Media Manipulation
- Economic setbacks
- Lower trust in human decision
- Military use of AI — 10101010101
- AI winter
- Too soon
- Untimely regulations
- Too late
- Mass loss of human lives
- Cyber crimes
- The alignment problem
- Current Risks
- Epistemic regression

Recommendations:

- **Enhance risk models** to inform regulations
- Bypass the **adversary stage**
- Further research into histories of **AI applications**

Conclusion:

- ☑ Anthropomorphizing AI instead of reviewing its history leads to inaccurate risk assessments.
- ☑ AI could develop with minimal adversity to humans, through a robust risk model as a path to a model of holistic solutions.

Citations:

1. Christian, B. (2021). The alignment problem: How Can Machines Learn Human Values? Atlantic Books.
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3. Hsu, F. (2002). Behind Deep Blue: Building the Computer That Defeated the World Chess Champion. Princeton University Press.
4. McCorduck, P. (2004). Machines Who Think: A Personal Inquiry into the History and Prospects of Artificial Intelligence. CRC Press.
5. Schaeffer, J. (1997). One Jump Ahead: Challenging Human Supremacy in Checkers. Springer Science & Business Media.