NATO HFM-377 Symposium on
Meaningful Human Control in Information Warfare,
Amsterdam, 21-22 October 2024

P24

From Exploitation to Augmentation: Navigating AI's Impact on Human Value and Inference-based Decision-Making

Esther S. Kox
M. Birna van Riemsdijk
José H. Kerstholt

TNO innovation for life
UNIVERSITY OF TWENTE.

Introduction

- **Multi-Domain Operations (MDO)**, the integration and coordination of military activities across the five domains sea, land, air, cyber and space, become increasingly complex.
- Advancements in **Artificial Intelligence (AI)** bring both opportunities and challenges.
- How to maintain **Meaningful Human Control (MHC**)?

Objective

From Exploitation to Augmentation: Navigating AI's Impact on Human Value and Inference-based Decision-Making

	Augmentation	Exploitation
Inference-based decision-making (judgement)		
Value-based decision-making (choice)		

Two types of human decision-making

Inference-based decision-making (judgement)

Combining cues to form a **judgement** about a situation, drawing **logical conclusions** from available information
(e.g., detecting a military threat,
predicting the COA of an enemy)

Augmentation

How AI is used to support military decision-makers

	Augmentation	Exploitation
Inference-based decision-making (judgement)		
Value-based decision-making (choice)		

	Augmentation	Exploitation
Inference-based decision-making (judgement)	Enhanced information processing and pattern recognition can improve situational awareness	
Value decisio (ch		

Maintaining MHC:

Incorporate key design principles such as **Observability, Predictability, Explainability,** and **Directability** in AI-systems to make their decisions and predictions more understandable for human operators. (Johnson et al., 2014)

	Augmentation	Exploitation
Inference-based decision-making (judgement)	Enhanced information processing and pattern recognition can improve situational awareness	Spread and creation of mis- and disinformation
Va… deci…		

Maintaining MHC:

- Improve people's **AI, media and digital literacy**, including critical thinking, fact-checking and verification skills.
- Government regulation, platform responsibility and content policies and moderation.

Inference decision- (judge	situational awareness	creation of information
Value-based decision-making (choice)	Decision and behaviour (change) support	

Maintaining MHC:

While AI can help compare the options, value-based decisions are prone to **context effects** and should eventually be made by a human.

Maintaining MHC:

- Enhance user awareness and control
- Improve algorithmic transparency
- Strengthen **data privacy laws** and government regulation

Infere… decisi… (jud…	situational awareness	…ation of …rmation
Value-based decision-making (choice)	Decision and behaviour (change) support	AI-driven profile-based, micro-targeting techniques (hyper-nudging)

Conclusions

- Maintaining meaningful human control and building and maintaining trustworthy AI requires a systematic, multidisciplinary approach.

> “Just as it takes a village to raise a child, the governing of AI needs to be a multidisciplinary village so that we can raise AIs that are productive, valued contributors to society.”
>
> (Winkler, 2024)

Thank you for your attention!

Esther Kox
Birna van Riemsdijk
José Kerstholt

TNO innovation for life

UNIVERSITY OF TWENTE.