HUMAN-AI CO-OPERATION

Karel van den Bosch
Adelbert Bronkhorst
MILITARY DECISION MAKING
CONTEMPORARY WARFARE
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CONTEMPORARY WARFARE
HUMAN DECISION MAKING

intuitive
hunches
heuristics
FAST

System 1

rational
systematic
thoughtful
slow

System 2

FAST

NA TO IST 1-160
UNCERTAINTY, HEURISTICS & BIAS

Heuristics and Biases in Military Decision Making

Major Blair S. Williams, U.S. Army

Decision support is needed, because of:

- the vulnerabilities of human decision making;
- the diversity and complexity of conflict situations;
- the information and technology means employed in warfare;
- the amount of information needed to be processed in real time.
INTELLIGENT DECISION SUPPORT SYSTEMS

Intelligent Support Systems may assist the decision maker by:

- discovering familiarity in patterns of events
- being alert to possible cognitive biases of humans in general, and of the individual decision maker
- speeding up the process of sense making and situation understanding
SHORTCOMINGS OF CURRENT I-DSSs

- Emphasis on modelling the world, little emphasis on modelling the user
- Incomprehensibility of models
- Limited or even rigid scope of models
- Insufficient trust
- Model vulnerability

The US military is funding an effort to catch deepfakes and other AI trickery

But DARPA's technologists admit that it might be a losing battle.
TOWARDS INTELLIGENT HUMAN-AI DM

Requirements of Human and AI:

› be mutually predictable in their actions
› be mutually directable
› maintain common ground

Principles of Human AI collaboration:

› Predictability
› Directability
› Observability, Transparency, & Explainability


TOWARDS COLLABORATED DECISION MAKING
STEPS TOWARDS HUMAN-AI COLLABORATIVE DM

Level of Human-AI Collaboration

- Black Box (only outcomes)
  - Uni-directional (AI -> human)
- Transparant (outcomes and process)
- Explainable (query-based)
  - Bi-directional (AI <-> human)
- Self-explaining (mixed initiative)
- Adaptive (based on observables)
- Teaming (based on Theory of Mind)
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- Collaborative
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Collaborative
CONCLUSION

- Military decision making can benefit from advances in AI and Big Data analytics
- Lessons of previous (I)DSSs show risks and pitfalls
- AI for (military) decision making should strive for effective human-AI collaboration
- AI should function as an adaptive team player: communicative, and aware of context and goals
- Progress requires developing functions for effective Human-AI collaboration
- Progress requires efforts from Human Factors, Artificial Intelligence, and Information Technology
Human-AI Cooperation to Benefit Military Decision Making

Karel van den Bosch and Adelbert Bronkhorst
TNO
PO Box 23
3769 ZG Soesterberg
THE NETHERLANDS

karel.vandenbosch@tno.nl, adelbert.bronkhorst@tno.nl

THANK YOU