

Leadership and Command & Control with and through Artificial Intelligence - An Exploratory Workshop

Leadership and Command & Control have many perspectives, motivationally it usually begins with the "follow me", in which it is negotiated why the guided ones should follow a manager. Then through shapeshifting into "let's go" the now common problem in the form of the coordination of space, time forces and information (Command) will be solved systematically.

Literature on the topic of leadership fills libraries, almost every manager seems to publish a leadership guide with sometimes anecdotal and sometimes scientifically founded experiences.

In principle, it can be stated that the leadership philosophy of mission command developed in the wake of the Enlightenment and the Prussian reforms in the 19th century, which includes both the leader and the leader, turns out to be a "positive template" in leadership.

The approach, that managers should only set goals, but leave the type of execution to the creativity and capabilities to their subordinates or co-workers, is based on the positive human image of the Enlightenment.

How can a clear separation of goal setting and fulfillment of tasks be transferred to the handling of AI and the use of AI? How can the use of AI affect different management situations? What will be the role of AI in strategy formulation, management, and human leadership? What happens, if AI is used in advising executives or subordinates or even be a "leader" or subordinate?

During the WS we explored together how the introduction of AI can, will and should affect strategic, tactical, and humane leadership and management situations.

In the future, AI will also take on tasks in areas that were previously reserved for human decision-makers. Instead of hard-wired tasks that must be repeated either boringly, with high precision or just as often as you like, algorithms are increasingly taking on creativity and creative activities. Where is human leadership necessary, where is command, where is the transition or turning point? Which data are available or recordable? Which parts are machine-learnable, where is human intervention required? Is data and algorithm bias just a machine problem only?

Using the Prussian War Game, the WS participants experienced the historic situation of 1866, in which they were forced to discuss and decide in a 2-party simulation. The groups were given the task to conquer and hold the same two bridges from different directions. When one group chose to destroy one of the bridges to put their emphasis on the other bridge, the other group was taken fully of guard.

This “out of the box decision” perfectly fueled the discussion on how AI might support strategic decision making. It was totally clear for all participants what kind of data items like structure of own and enemy forces, velocity, geo information, similar scenarios etc as well as rules (unbiased) are necessary to train an AI for the strategic situation. Following through the discussion a couple of questions surfaced of what the role or position of an AI will be:

Will it be an individual trained decision support element for a designated leader, or will it take over full control of the battlefield? Will there be one global AI, “steering” all battlefield-elements or will there be a network of AIs? How many decision-space will there be for a human or even worse may humans start to hide behind “AI decisions”? How will we train battlefield-AIs- will they rise with the individual leader, or will there be a “one size fits all leaders”-centrally trained AI? Will humans still be capable to cope with the AI induced complexity? How will we cope with AI errors in comparison to human errors? Will leaders see their AI companions as objects or as subjects? What kind of decision support will an AI need from his human environment? What will leaders expect from an AI – and what kind of support will AIs need from their Humans? And finally: “How biased is human gut feeling in comparison to programmer’s, data or algorithmic bias and how can we measure it?”

Based on Asimov’s “I Robot rules” we discussed three scenarios for the implementation of rules for AI

1, Industrial robots - Safety requirements (ISO 10218)

- **Safety-related monitored standstill:** Robot stops when the employee enters the shared workspace and continues when the employee has left the shared workspace again.
- **Manual guidance:** The robot movement is actively controlled by the worker with suitable equipment.
- **Speed and distance monitoring:** Contact between the worker and the robot in motion is prevented by the robot.

- **Power and force limitation:** The contact forces between employee and robot are technically limited to a harmless level.

We, **robots** - Artificial intelligence opportunities for all stakeholders

- People need **appropriate skills** to be able to deal with the opportunities, challenges, but also the risks.
- Organisations need to understand how to position themselves strategically and operationally in this field, what **visions, processes and tools** will be necessary for their respective businesses.
- The technical challenges have to be overcome. This concerns not only the use of adequate hardware for the processes supported by AI, but also the algorithms and frameworks that ultimately determine AI. It should not be forgotten that what applies to every technology and every innovation also applies to AI as a technology: it must be **reliable, safe and secure and operable** in order to be successful on the market.

And finally, Kenneth Payne's – *"I, Warbot"*¹

1. A warbot should only kill those I want it to, and it should do so as humanely as possible.
2. A warbot should understand my intentions and work creatively to achieve them.
3. A warbot should protect the humans on my side, sacrificing itself to do so — but not at the expense of the mission."

The latter were chosen to discuss AI aspects *ad extremum* to identify limits and challenges. It became very fast very clear that we are still at the beginning of the development. We must be aware that like digitalization (evolutionary) vs digital (revolutionary) there will be a question of AI-fication vs Living in an AI-world. Siri, Google etc. are already here, and we can already observe creeping processes which has led already to a loss of human competences like map-reading or navigating with already observed deadly outcomes. But there will also be challenges for organizations when the implementation of AI will shake existing C2 configurations or question hierarchical decision making. For the German Military, the concept of "Innere Führung" should guide the development of AI rules, which allows as a side effect to apply the

¹ Kenneth Payne, I, Warbot: The Dawn of Artificially Intelligent Conflict, June 2021

conceptual understanding of “Auftragstaktik” – ordering the what not the how, which natural fits into a man-machine interface.

The publication on Future Leadership can be found at: https://gids-hamburg.de/wp-content/uploads/2021/04/20201210-MCDC_Future_Leadership_web.pdf

And in German:

https://gids-hamburg.de/wp-content/uploads/2021/07/MCDC_Fuehren_von_morgen_2021_07.pdf

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