Wednesday, 11 Feb., 18h

Public Keynote: Elke Schwarz "Military AI, Risk Capital and the Making of War & Peace"

University of Hamburg,
Von Melle Park 6, Lecture Hall F

Thursday, 12 Feb.- Friday, 13 Feb.

International Conference

University of Hamburg,
Edmund-Siemers-Allee 1, East Wing (ESA East)
Room 221

11.-13.02.26

The Promises of Algorithmic Warfare – and Their World-Making Effects

More info :

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“Meaningful Human Control – Autonomous Weapon Systems between Regulation and Reflecion” (Mehuco)
Competence network funded by Federal Ministry of Research, Technology and Space

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MEHUCO

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18:00

Keynote

Elke Schwarz
"Military AI, Risk Capital and the Making of War & Peace"

Thursday, 12th Feb. 2026

University of Hamburg, Edmund-Siemers Allee 1,
East Wing, Room 221 (ESA East 221)

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Kino 3001, Schanzenstraße 75, 20357 Hamburg

18:30

Film screening & Q &A with the director

Director: Shona Illingworth
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Friday, 13th Feb. 2026

University of Hamburg, Edmund-Siemers Allee 1,
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Abstracts

Thursday, 12th Feb. 2026

Imaginaries, Promises & Aesthetics of Military AI

Thursday, 10:00 –12:00

Rupert Barrett-Taylor

The Aesthetics of Control: Science Fiction, Military Desire, and the Silicon Valley War Imaginary

This paper interrogates the convergence of dystopian science fiction, martial desire, and Silicon Valley entrepreneurial cultures in the constitution of contemporary military doctrines and concepts. Dystopian tropes function not simply as warnings but as epistemic resources that furnish military elites and their 'techbro' patrons with legitimating scripts for innovation, underwriting fantasies of predictive command and seamless control. The cultural logics at work can be situated within the oscillation between modernism and post-modernism: a modernist teleology of progress, mastery, and systematisation persists in the aspiration to render war fully calculable, while post-modern dynamics of spectacle, simulacra, and performativity produce technological artefacts whose appeal resides primarily in their aesthetic rather than in demonstrable efficacy. The entrepreneurial cultures of Silicon Valley and the institutional cultures of the military coalesce through this hybrid formation, in which the heroic futurism of modernism is sustained precisely through the post-modern commodification of images, demos, and dystopian imaginaries. By analysing these ideological circuits, the paper argues that the performative appeal of emerging systems lies less in their operational utility than in their capacity to materialise and circulate shared myths of inevitability, innovation, and control, thereby naturalising "disruption" as the governing grammar of contemporary warfare. The consequences of this analysis are to read the relationship between martial and tech communities as driving an increasingly performative role for warfare and the state. In this future success and failure are subordinated to the aesthetic performance of technology which drives marketisation, commodification and value, but at the expense of breaking and reconstructing the relationship between the state, violence, and international politics.

Biographical Note:

Rupert Barrett-Taylor is a research fellow at the Alan Turing Institute focused on the ethical, operational and epistemological implications of AI in military operations. He holds a PhD in International Relations from the University of Sussex, an MA in War Studies from King's College London and a B.Eng. in Aerospace Engineering.

Jens Hälterlein

The deceitful promise of military swarming

Robotic swarming is the application of methods from the field of Artificial Swarm Intelligence which mimics the ability of natural swarms to work collectively towards a common goal and to perform complex tasks. In the military realm, robotic swarms are seen as the key to superiority on future battlefields. At the same time, there is widespread scepticism that these weapon systems can be developed and deployed in a way that is compliant with international humanitarian law as well as ethical principles such as human accountability and responsibility. In my contribution, I will show how both the technoscientific promises and problematizations of robotic swarming relate to transformations in the way wars are cognized and conducted. Firstly, the presentation traces how a new understanding of life, established by complexity sciences, has enabled entanglements and translations between different forms of life and how these have informed the military imaginaries and design principles of military swarming. Secondly, I will stress that the problematisation of robotic swarms as potentially running out of human control can be reinterpreted in terms of this re-conceptualising and appropriation of a more-than-human life. My central argument is that a biomimetic robotic swarm, not only inherits the desired properties of a natural swarm but also ist inherent risks. On the one hand, the emergent behaviour of a robotic swarm enables a higher level of autonomy, adaptability and, ultimately, effectiveness in achieving complex operational tasks. On the other hand, emergence challenges the predictability of swarm behaviours. Hence, even from a military perspective, the imaginary of robotic swarming articulates deceitful promises.

Biographical Note:

Jens Hälterlein is a research associate in the Department of Media Studies at Paderborn University. He works with the project 'Meaningful Human Control. Autonomous Weapon Systems between Reflection and Regulation' (MEHUCO) and is coordinating the research network together with Jutta Weber. He has been principal investigator of the project "AI and Civil Security" and has been working in several other projects on security technologies.

Jutta Weber & Larissa Lenze

The Politics of Promises: On Technological Superiority and Mechanical Romance

„Power is about whose metaphor brings worlds together" Susan Leigh Star

In our talk, we will explore the politics of promises in algorithmic warfare by analysing tropes and images used by defence companies and start-ups.
In light of the rapid AI arms race currently taking place, which is sparking competition and greed within the military-industrial complex, we will examine the rhetoric and discursive strategies employed by German defence start-ups, as well as their balancing act between product marketing (promising technological superiority, machine speed and precision) and ethical rhetoric concerning human control, lawfulness and responsible AI.
Consider, for example, the recent 'trial' purchase of autonomous drones by the German Armed Forces, which were framed as ammunition. While Stark, a defence start-up which probably provides one of these systems, assures us that the kamikaze drone will always have a 'human in the loop', its company website emphasises the system's autonomous capabilities. Another example is Helsing's website, presenting iconographic motifs and visual codes previously seen in the internationally successful film Dune (2021) to build the myth of control and safety.
While the politics of tropes and images is certainly not frictionless, we hope to shed some light on the metaphorical world-making power of defence start-ups.

Biographical Note:

Jutta Weber is a STS scholar and professor of media, culture & society at the Institute of Media Studies at Paderborn University. Her research focuses on computational technoscience culture(s) asking how and for whom the non/human actors work. She is head of the BMBF research network 'Meaningful Human Control. Autonomous Weapon Systems between Reflection and Regulation' (MEHUCO). See also *https://juttaweber.eu/* as well as *https://meaningfulhumancontrol.de/*.

Larissa Lenze works as a research assistant at the Institute for Media Studies at the University of Paderborn. Her current research explores the aesthetic representation of the interplay between humans, technology, and nature.

Political Economies & Epistemologies of War

Thursday, 13:00 – 15:00

Erik Reichborn-Kiennerud

The Artificial Worlds of Martial Epistemologies

This paper asks how we might make critical sense of contemporary initiatives to construct and operationalize artificial worlds for warfighting. Working as infrastructures for the management of a variety of different databases and models, so-called digital twins are today coveted by militaries for their presumed ability to produce immersive information environments to automate and accelerate military operations. These virtual models of "real-world" systems and objects are alleged to produce simulated environments in which planners and warfighters are not only able to answer the 'what now', but also 'the what next' and the 'what ifs' in which near real-time simulation and analysis are to deliver seamlesstransitions between planning, training, and operations. By showing how these imaginaries are inscribed in visions AI enabled warfare, the paper seeks to map the 'end-to-end' generation of digital twins – from data production and analysis to immersion of analysts and operators in data worlds – to critically question the automation of knowledge production in support of martial logics. Against the narrative of faster, more accurate, and more ethical warfighting, the paper will show how digital twins not only reproduces the logics of militarism, but through its computational processes of trial and error generates a highly distributed and messy agency that makes warfare less controllable.

Biographical Note:

Erik Reichborn-Kiennerud is a senior research fellow at the Norwegian Institute of International Affairs. He holds an PhD in War Studies from King's College London and an MA in Security Policy Studies from The George Washington University. His rsearch interests include contemporary Western warfare, war and technology, military theorey and operational thinking and practice, critical IR theories and Science and Technology Studies.

Klaudia Klonowska

Experimentation on the Edge: How Forward Deployed Engineers Sustain AI Use in Defense and Security Context

Artifiical Intelligence (AI) systems are inherently opaque and their results unpredictable. However, despite their uncertainty, they are increasingly adopted by governments, including in high-stakes contexts such as in defense and security domains. This article investigates the role of a specific group of engineers called "forward deployed engineers" (FDEs) in facilitating, stabilizing, and legitimizing the use of AI systems.

Pioneered by Palantir, FDEs are transforming how AI systems are acquired and used in high-stakes environments. Unlike traditional engineering approaches that offer standardized products to multiple clients, FDEs work alongside end users to continuously tailor and customize AI systems to their needs and specific operational contexts. Acting as both consultants and ad-hoc engineers, FDEs troubleshoot, refine, fine-tune, and maintain AI performance in situ. This model is now also gaining traction beyond Palantir across big tech companies and startups.

This research explores the understudied role of FDEs in the perceived value of AI systems in high-stakes decision-making. It examines three practices that FDEs employ to compensate for the uncertainties of AI systems and sustain their value to the end users: (i) identification of needs, (ii) customer relations, and (iii) iterative technical fixes. The study contributes to scholarship in critical AI and socio-technical studies by idenitfying FDEs as significant intermediaries in sustaining the perceived value and legitimacy of AI systems despite the contested reliability of predictive models and the uncertain futures of defense and security environments. It shows that, without the labour and experimentation of FDEs, off-the-shelf AI products alone cannot deliver the expected value to its end users.

Biographical Note:

Klaudia Klonowska is a postdoctoral researcher at Sciences Po Paris and Managing Director of the West Point Manual on International Law Applicable to Artificial Intelligence in Warfare.

Marijn Hoijtink

New Sites of Defence Innovation in Europe: Experimentation in the wild and at scale

This paper explores how defence technological innovation is shaped through cross-sector and cross-boundary experimentation cultures and practices in Europe. Amid rising defence spending, advances in defence-related technologies, and ongoing debates about European technological sovereignty, our focus shifts from state- and policy-centered perspectives on defence innovation to the socio-technical and experimental work taking place on the ground and across various sites. We examine three such sites of experimentation: defence hackathons across Europe, a drone 'field lab' in the Netherlands, and the Ukraine frontline. Based on this multi-sited fieldwork, we argue that defence innovation is increasingly driven by a need to test technologies 'in the wild' (e.g. in public or on the battlefield) rather than in secluded laboratories or remote settings. This emphasis on experimental innovation, in turn, hinges on the need to enrol business, science, government and military actors, demonstrating future value to public and private funders, and prioritizing scaling over alternative trajectories. Studying experimental innovation is crucial to understanding what new realities of warfare are being performed, by whom, with what effects, and also, importantly, who is excluded and what path-dependencies are created in these processes.

Biographical Note:

Marijn Hoitjink is a associate research Professor at the Department of Politica Science at Universiy of Antwerp. Previously, she worked at Vrije Universiteit (VU) Amsterdam and the University of Amsterdam, where she abtained her PhD in 2016. Her research combines insights from International Relations, critical security studies, and science and technology studies to understand how war shapes technology and vice versa. With Dr. Lauren Gould (Utrecht Unversity), she co-leads the Realities of Algorithmic Warfare project on how algorithmic technology in warfare leads to new and compounding forms of civilian ham.

Christoph Marischka

Algorithmic Warfare: When (Venture) Capital Defines Strategy

The core of the idea of Algorithmic Warfare is the promise of continuous advantages in accelerating, viscous circles of innovation. Unmanned systems and electronic warfare in the Ukraine are an often cited example and this bloody war unfolds as a laboratory for not only technological, but also organizational innovations to bring new weapons to the front. New actors emerge here: CEOs of Startups and venture capitalists take the stage with their predictions about the evolvement of (future) technologies on the battlefields, define "capability gaps" and offer the products as well the rapidly erected manufacturing capacities to fill them. This will be illustrated by the German debate about the "Drohnenwall" as well as recent changes in the German bureaucracy of military procurement.

Biographical Note:

Christoph Marischka is a political scientist (M.A.) and activist who works for the Informationsstelle Militarisierierung e.V. - which defines itself as a node between peace research and peace movement. His interest in unmanned systems started 2006 with his critical research on Frontex and the so called "European Border Management". He published a wide variety of studies and articles about military use of AI and unmanned systems as well as a German monograph about the research cluster "Cyber Valley" in his hometown Tübingen.

⟶ Platforms, Simulation & Algorithmic Command Chain

Thursday, 15:30 – 17:30

Christoph Ernst & Thomas Christian Bächle

The Promise of Platformisation in Military AI

The notion of *platformisation* captures a far-reaching sociotechnical transformation encompassing technical, infrastructural, economic, political and cultural aspects. Contemporary forms of warfare are no exception. Examples of how platforms shape military realities are *AIP* by the US software company Palantir or *Brave1* by the government of Ukraine, which combine the platform logics of capitalism, automation and gamification.
Starting from the premise that an interface theory approach can be utilised to analyse platformisation processes in the military, the talk first traces their historical roots back to the doctrine of network-centric warfare (NCW) that emerged in the 1990s. It then examines the shift from NCW – conceived as a centralised "system of systems" aimed at archiving shared situational awareness – to contemporary "platforms of platforms" that orchestrate sensors, machine learning and human operators across Internet-of-Things infrastructures, edge processing and kill-web dynamics. Interfaces – both application programming interfaces (APIs) and user interfaces (UIs) – are not peripheral but constitutive for these processes: they enable datafication, profiling or interoperability, while also shaping claims of autonomy as *interface effects* (for example in manned-unmanned teaming).
It will be demonstrated how data-centric and algorithmic command-and-control-systems reconfigure the unresolved NCW promises and tensions between decentralisation and recentralisation, between chaos and control. Three vignettes elaborate these dynamics: (1) *targeting* as an epistemic practice in platform environments (for example in the form of decision-making tools) that conflates meaning-making with decision-making; (2) *gamification* and *simulation* (for example battle management UIs used for swarm control or virtual twin training environments) that steer attention, normalise playbook reasoning and amplify automation bias; and (3) *human augmentation* reframed as "human-as-a-platform", extending platform logics into bodies, cognition and social collaboration.
We propose a research agenda that couples *interface* theory with *interfacing* analysis across human–machine and machine–machine relations, interrogates defence sociotechnical imaginaries and addresses platform autonomy as a hidden locus of power in contemporary warfare.

Biographical Note:

Christoph Ernst is a research associate in Media Studies at the University of Bonn and is the lead of a subproject on human-maschine interaction and autonomous weapon systems within the research group "Meaningful Human Control. Autonomous Weapon Systems between Regulation and Reflection". He holds a PhD in Media Studies from the University of Mainz and completed his habilitation in Media Studies at the University of Erlangen-Nuremberg. He is specialized in media theory, interfaces, and the cultural and aestetic dimension of technology.

Thomas C. Bächle heads the research program "The Development of the Digital Society" at the Humboldt Institute for Internet and Society (HIIG) in Berlin and is part of the research group "Meaningful Human Control. Autonomous Weapon Systems between Regulation and Reflection". He is also the managing editor of the journal "Internet Policy Review". He holds a PhD in Media Studies and was a Fellow at the Cognitve Science Lab, Waseda University in Shinjuku, Japan. His areas of research include cultural representations of identities, bodies and (media) technologies; human/machine interaction, technological materialities, affective computing and simulation technologies.

Sylvia Kühne

The Algorithmic Narrative of War: The Role of LLMs and its Promise of Control in Military Wargaming

Over the past decade, wargaming has not only experienced a renaissance within military contexts but has also been rearticulated as a prioritized tool for military learning and training. In this regard, the integration of technologies from the field of Artificial Intelligence (AI) – particularly Large Language Models (LLMs) – is expected to assist in managing the emergent contingencies of modern warfare.
This paper argues that the integration of LLMs into military wargaming environments marks a new stage in the evolution of algorithmic warfare. By assuming the roles of designers, players, or decision-makers, LLMs generate a new epistemic and perceptual order of war. These 'narrative simulations' do not merely produce knowledge; they also articulate specific promises of rationality, speed, efficiency, and control.
Drawing on selected case studies, the paper examines how these promises become performatively effective through the interplay of technical architecture, military practice, and discourse. It shows that LLM-based wargames unfold a double dynamic: on the one hand, they reinforce the narrative of a controllable and regulated algorithmic warfare; on the other, they shift the boundary between human decision and machine autonomy within the simulation itself.
Wargaming thus becomes a laboratory of algorithmic governmentality – a space in which notions such as control, responsibility, and predictability are staged, anticipated, and technically rehearsed. Against this backdrop, the paper interrogates the configuration of control emerging from generative wargaming and explores its limits within the broader context of algorithmic rationality.
This invites further reflection on what it means when generative wargaming transforms the notion and practice of meaningful human control from a normative ethical requirement into a technical effect-one that simulates control by performatively producing the appearance of human oversight, while the underlying decision logic, contextual framing, and systemic biases of the model itself remain increasingly opaque and thus resistant to accountability.

Biographical Note:

Sylvia Kühne is a sociologist and criminologist exploring the social, epistemic, and political dimensions of emerging technologies, with a particular focus on artificial intelligence and algorithmic systems. She is interested in how new technological infrastructures and research practices shape what counts as knowledge, evidence, and rationality, and how they reconfigure relations between humans, machines, and institutions. At the center of her work are questions concerning the logic, consequences, and modes of inquiry through which contemporary research and technological innovation are conducted. Beyond the analysis of technical and epistemic processes, her research also addresses the acceptance, usability, and social embedding of technological systems. She is currently investigating technologies in the field of Artificial Intelligence at the AI Ethics Research Hub at the University of the Federal Armed Forces in Hamburg, Germany.

⟶ Platforms, Simulation & Algorithmic Command Chain

Thursday, 15:30 – 17:30

Ruben Stewart

Digital Delegation: How AI Decision Support Systems Reshape Military Command

Militaries are rapidly adopting AI-enabled Decision Support Systems (AI-DSS) with the promise of faster tempo, improved situational awareness, and reduced fog-of-war. Yet these systems exert world-altering effects that go far beyond automation or efficiency gains. This paper argues that AI-DSS alters the cognitive, organisational, and perceptual foundations of military command in ways that ultimately make armed forces more vulnerable, not more capable.
Three dynamics drive this erosion:
First, AI-DSS rely on fragile data sets and contested digital infrastructures that degrade rapidly in wartime, making the "scientific" side of command more brittle.
Second, routine reliance on algorithmic outputs accelerates cognitive skill-fade, diminishing human capacities for judgement, intuition, and adaptation — the "artistic" dimension of command that is essential for navigating uncertainty.
Third, AI systems operate within a wider information environment where truth, trust, and perception are increasingly manipulated, creating synthetic clarity atop an unstable epistemic foundation.
The result is algorithmically optimised decision-making that appears faster, more comprehensive and more precise but is strategically hollow. Rather than reducing fog and friction, AI-DSS risk deepening both — producing commanders who seem to know more while understanding less.

Biographical Note:

Ruben Stewart is a senior fellow for Land Warfare at The International Institute for Strategic Studies (IISS). His work focuses on the conduct and character of land conflict, force employment, operational adaptation, and the implications of technological change for land forces. He worked at the International Committee for the Red Cross (ICRC), where he provided advice on military affairs and before that, he held field roles with the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), liasing closely with state and non-state military actors across conflict settings in Africa, Asia and the Middle East.

Benedikt Bussmann

The Algorithmic Hyperwar and the Dehumanisation of War

The German Armed Forces use the term 'hyperwar' to describe the next expected transformation in military combat. The decisive factor in this development would be the linking of information and data streams with other weapon systems using artificial intelligence in order to massively accelerate the command process. This would necessitate an adjustment of combat dynamics based on machine speed (fight-at-machine-speed).
This framing is based on a certain inevitability that seems to be linked solely to technical feasibility and would thus become a self-fulfilling prophecy. From a military ethical perspective, the overarching question is to what extent human responsibility can still be possible in the course of this development (responsibility at machine speed).
The resulting tension between the technical competitiveness of the Bundeswehr on the one hand and compliance with constitutional standards on the other seems predestined for a debate based on inner leadership. The concept is regarded as the basis for both leadership culture and soldiers' self-image, placing humanity at the centre of its central concepts, such as the citizen in uniform.
The essential feature of this concept, although hotly contested at all times, is that it legitimises the military on the basis of peace rather than, as would be more obvious, war. Preparation and training for war remain unaffected by this, creating a momentum of conflict theory that allows normative disputes to be broken down in a completely different way.
This means that questions of technical transformation are also questions of ethics, in order to prevent a relapse into technocratic patterns of thought. The dehumanisation of the enemy, which also involves self-dehumanisation, plays a thoroughly functional role here, while at the same time harbouring the potential for uninhibited dynamics of violence and crime. The real – and not just linguistic – technologisation and abstraction of violence has contributed to promoting these dynamics in the past.
In my contribution, I would like to address this relationship between technology and dehumanisation and, in particular, discuss the question of the perception of war in 'hyperwar'. The aim is to present the ambivalent facets of war that have been raised in order to avoid both heroisation and condemnation. From this, conditions should be derived as to how a constitutional army such as the Bundeswehr can manage this balancing act in the future.

Biographical Note:

Benedikt Bussmann is a research associate in the AI Ethics research Hub at the Chair of Protestant Theology, specialising in social and technological ethics at the Helmut Schmidt University, University of the Federal Armed Forces in Hamburg. He was a lecturer in military ethics and social science in the Faculty of Political, Strategic and Social Science at the Bundeswehr Command and Staff College and was a former officer in the German Armed Forces.

Abstracts

Friday, 13th Feb. 2026

Government, Control & Responsibility in Algorithmic Warfare

Friday, 9:30 – 11:30

Anja-Liisa Gonsior

Is Soft Law the New Law? Exploring Discourses on Governance and Regulation of Emerging Disruptive Technologies in the Military Domain

In view of the increasing number of emerging disruptive technologies in military and warfare contexts, their regulation is becoming ever more urgent. EDTs encompass a very wide range of weapons technologies. This analysis focuses on technologies and applications in the fields of autonomy, artificial intelligence and cyber technologies. Dealing with the regulation of these technologies is particularly relevant as they are increasingly used in military contexts, yet at the same time there is no uniform international regulation approach to these EDTs. Moreover, this is a field in which different disciplines come into play. While social science research in this field focuses, for example, on the development of norms and political processes, aspects of human-machine interaction play an equally central role in this context, for example with regard to autonomous weapon systems. It becomes apparent that normative processes with regard to EDTs in the military sector take on a different dynamic and that soft law approaches are becoming increasingly important in view of unsuccessful regulatory and arms control efforts.

Biographical Note:

Anja-Liisa Gonsior is a research associate and PhD candidate at Science and Technology for Peace and Security (PEASEC) at the Technical University of Darmstadt. Her research interests include autonomous weapon systems, meaningful human control, (cyber) arms control, (scientific and technical) peace and conflict studies, and critical security studies. She holds a BA degree in Political Science and English Studies and a MA degress in International Studies/Peace and Conflict Studies.

Ishmael Bhila

The many Faces of Accountability: Tracing Differences in the Conceptualisation of Accountability in the Governance of Autonomous Weapons Systems

The reconfiguration of our understanding of human agency in algorithmically charged warfare has prompted reconsiderations of what it means to be accountable in warfare. Yet, accountability is seen in very different ways by different actors. Different states, cultures, and regions have different conceptions of accountability when it comes to human-machine interaction. This paper maps out the differences in the understanding of what it means to be responsible and accountable based on research in international forums on autonomous weapons systems. Using statements and submissions/proposals from states, this paper shows how state positions on accountability are shaped by various factors, including normative alignment, geopolitical positioning, power, colonial histories, and past experiences with other forms of technologies of violence. It shows how states like Fiji, Kiribati, and the Philippines have stretched the understanding of accountability to include factors like ecological/environmental accountability and responsibility, while states like Malawi and Samoa have raised issues like the ethics of technological testing on Global South communities as central to the understanding of accountability in the development and use of autonomous weapons systems. For many of these Global South states, accountability means avoiding "history repeat(ing) itself in the testing of autonomous weapons, as we do see parallels between nuclear weapons and LAWS." This paper, therefore, showcases these diverse views of accountability in the understanding of autonomous weapons systems, making visible those perspectives that have largely been sidelined in academic literature and policy analysis.

Biographical Note:

Ishmael Bhila is a researcher on autonomous weapons systems. His PhD, submitted in August 2025, focused on Global South perspectives on the governance of autonomous weapons systems. His research utilises event ethnography (participant observation at international events) to understand the dynamics of in/exclusion, in/equality, and norm development on emerging military technologies. Ishmael is also a lecturer at Paderborn University, teaching seminars on autonomous weapons systems. He also works closely with the Stop Killer Robots Campaign, a global coalition of more than 270 organisations working towards the development of a legally binding instrument on autonomous weapons systems.

Susanne Beck

"Impossibility Structures" as a Means of Enabling "Meaningful Human Control" in the Context of Drone Swarms?

When it comes to the use of AI, there is increasing discussion about how algorithms can also contribute in various ways to complying with and enforcing existing law. In addition to the field of "legal tech," reference is regularly made in this context to "impossibility structures," meaning the technical prevention of legal violations. These can include upload filters, as well as automatic deletion of offensive posts on social media or the prevention of running red lights by semi-autonomous vehicles. At first glance, these structures seem to contradict the concept of "meaningful human control," in which humans are supposed to retain meaningful control, and this, according to initial intuition, should include control over compliance with legal requirements. At the same time, human control mechanisms are facing increasing difficulties in the context of autonomous weapon systems, as the cognitive abilities of operators can be significantly strained. This applies especially when they are required to control not just a single weapon system, but a swarm. To counteract the potential overload in target decision-making, so-called impossibility structures could be integrated into the programming of drone swarms as standard rules of conduct. This could be supported by the fact that at least certain legal requirements in this context appear to be programmable, and that concerns about impossibility structures (risk of overblocking; necessity of legal development through deviance) do not arise to the same extent in the context of war and regarding the question of compliance with international humanitarian law and international criminal law as they do in other areas of life. Humans could then concentrate on specific questions of deployment and the less clear-cut legal aspects, and would be assured that they cannot commit any legal violations with regard to other decisions. This article examines various aspects of this issue, in particular the question of whether it is even possible to speak of meaningful control if the machine presets certain legal limits which cannot be exceeded by humans under any circumstances. This leads to the consideration of what effects the use of impossibility structures has on the attribution of individual responsibility.

Biographical Note:

Susanne Beck is a professor and the chair of criminal law, criminal procedure, comparative criminal law and legal Philosophy at the University of Hannover. She is leading a sub-project within the research group "Meaningful Human Control. Autonomous Weapon Systems between Regulation and Reflection". She specialises in criminal law, technology law and legal philosophy.

→ Government, Control & Responsibility in Algorithmic Warfare

Friday, 09:30 – 11:30

Can Şimşek

Governing the Algorithmic Battlefield: Law, Responsibility, and the Militarisation of Artificial Intelligence

The rise of algorithmic warfare, characterised by the integration of artificial intelligence (AI) into weapon systems, target selection, and surveillance architectures, is transforming both the conduct and regulation of armed conflict. Advocates present these technologies as instruments of enhanced precision, efficiency, and ethical restraint. Such claims frame automation as an objective mechanism capable of upholding the principles of distinction and proportionality under international humanitarian law (IHL) by eliminating emotional and cognitive bias from decision-making. In practice, however, these expectations are rarely fulfilled. Algorithmic systems generate legal and ethical ambiguities that undermine humanitarian principles and erode human oversight and accountability (Şimşek, 2016; Şimşek & Yaşar, 2025).

The early deployment of autonomous weapon systems, including drones and semi-autonomous platforms, revealed how automation can lower the threshold for the use of force and weaken both *jus ad bellum* and *jus in bello* constraints (Şimşek, 2016). Such systems risk normalising continuous, low-cost warfare and destabilising the foundational principles of IHL. Through the datafication of warfare, legality is recast as algorithmic optimisation, reducing individuals to data points and operational variables and enabling forms of digital dehumanisation that undermine human dignity and moral reasoning (Schultz et al., 2024; Human Rights Watch, 2025). Algorithmic target selection extends this logic by relying on large-scale surveillance and predictive analytics to identify potential combatants. Systems reportedly deployed in recent conflicts, such as the predictive model Lavender, demonstrate how algorithmic categorisation can misidentify civilians, eroding the principle of
distinction and weakening humanitarian protections (Human Rights Watch, 2024). The surveillance infrastructures that enable these systems collapse the boundary between intelligence gathering and combat operations, extending warfare into civilian spaces and institutionalising continuous monitoring as a mode of control.

The militarisation of civilian AI deepens existing legal complexities, as the repurposing of commercial systems for military use diffuses responsibility between state and corporate actors and generates internal resistance within the technology sector (Şimşek & Yaşar, 2025). A recent example is Microsoft's termination of services to certain Israeli military units following reports that its cloud and artificial intelligence infrastructure had been used to support mass surveillance and targeting operations (Reuters, 2025).

Against this backdrop, this paper re-examines accountability in international law within the context of algorithmic warfare, arguing that IHL must integrate surveillance governance and corporate responsibility while redefining human agency and legal intention in distributed systems of technological violence.

Biographical Note:

Can Şimşek is a lawyer and technology policy researcher specializing in the governance of emerging technologies, with a particular focus on artificial intelligence. He is a Research Fellow at the Alexander von Humboldt Institute for Internet and Society and currently serves as an external consultant for UNESCO, where he contributes to the implementation of the Recommendation on the Ethics of Artificial Intelligence. His research interests include AI governance, algorithmic transparency, human oversight, AI ethics, personal data protection, and the application of international human rights and humanitarian law in the context of cutting-edge technologies. He holds an LL.M. from the University of Copenhagen and an MPP in Digitalization, New Technologies, and Public Policy from Sciences Po. He is also a member of the Istanbul Bar Association.

→ Resistance, Alternatives & Options

Friday, 12:00 – 13:00

Nil Uzun

"Our Code kills Kids": Mapping Resistance to Military-Technological Power

This paper presents preliminary findings from the *FairComp* research project, which explores international initiatives mobilizing against the militarization of computational technologies. As artificial intelligence, computing power, data infrastructures, and autonomous systems increasingly shape contemporary warfare, promising speed and precision, the project investigates how such promises travel and how they are contested in multiple domains. The analysis maps a constellation of actors, including tech workers, whistleblowers, artistic initiatives, advocacy groups, campaigns, and expert networks, who raise concerns about the military applications of emerging technologies, such as autonomous weapons, algorithmic warfare, and so-called killer robots, and their political, discursive, and organizational strategies through which resistance to these developments is articulated.

The paper identifies key debates surrounding military-technological development, particularly in terms of novelties and continuities, and traces the socio-material practices of counter-mobilization across different organizational forms. Additionally, it explores how these actors frame the problem, envision alternative futures, and articulate notions of justice, accountability, and peace. Empirically, the paper draws on qualitative data from participant observation, document analysis, and informative interviews; conceptually, it engages frameworks from social movement theory, global sociology, and STS. The primary goal of this presentation is to expand critical debates on algorithmic warfare beyond regulation of an assumed trajectory, toward understanding the contentious politics that actively question what these systems are for, who sets the terms, and which futures they make possible or foreclose.

Biographical Note:

Nil Uzun is a postdoctoral research associate with the Technology and Diversity Research Group at the Institute of Sociology, RWTH Aachen University. She holds degrees in economics, cultural studies, and social anthropology and earned her Ph.D. in sociology from Rutgers University. She has conducted research on the global politics of knowledge, science, and technology, including studies of human rights networks in Argentina and Turkey, artistic and scholarly representations of the "Middle East," and the geopolitics of computing speed in the global race for the fastest supercomputers. Her current project, funded by RWTH Exploratory Research Space, examines international initiatives mobilizing against the militarization of computational technologies and the alternative technoscientific futures that emerge within these contestations.

Jürgen Altmann (TU Dortmund Universtiy)

Human Control in AI Warfare at Machine Speed – Quadrature of the Circle?

Armed Forces are increasingly interested in using artificial intelligence (AI) in warfare because it allows inclusion of much more information in decisions as well as faster action and reaction, AI is seen as essential for superiority in combat. This trend is intensifying dramatically due to the Russia-Ukraine war. The German Army Concepts and Capabilities Development Centre (Amt für Heeresentwicklung) mentioned „Hyperwar" and "Fight-at-Machine-Speed", the Segment for Defense and Security of the German Fraunhofer Institutes (VVS) noted acceleration of the „sensor-to-shooter loop". However, official statements and many future extrapolations still emphasise that the human remains fully responsible and must be capable of understanding and assessing the situation. It is easy to state the requirements, e.g., compliance with international humantarian law, or explainable and understandable AI. But there are fundamental problems. Machine learning up to now is incapable of understanding a situation and a context, demonstrated by spectacular misclassifications. The recent successes are based on very large amounts of training data that exist in the internet or at service providers, or, in case of games, can be produced in the computer. For military AI systems one can run extensive simulations, but in actual war against a competent enemy many unforeseen actions are to be expected. Real data from armed conflicts will be scarce. It is to be feared that a significant part of the testing of algorithms and systems will occur in real operations and thus will come at the expense of non-combatants – or possibly one's own forces.

A major problem exists with the military stability in a severe crisis, in particular between nuclear powers. AI could lead to the localisation of submarines and land-mobile ballistic missiles and endanger the second-strike capability which nuclear-weapon states find central for deterrence, creating pressure to pre-empt. Autonomous weapon systems and swarms thereof could make surprise attacks more probable. At short mutual distance one has to expect pressure to react in seconds, the same holds for cyber attacks. In such situations, AI algorithms need to react considerably faster than possible for humans.

Such questions should be simulated and researched in depth. It is possible that honest consideration will produce the result that reliable control of crisis and combat events cannot be ensured by AI, and that the sequence of operations would be to fast for human control. Are co-operative solutions to this problem conceivable?

Biographical Note:

Jürgen Altmann, PhD, is a physicist and peace researcher (retired) at TU Dortmund University, Germany. Since 1985 he has studied scientific-technical problems of disarmament. An experimental focus is automatic sensor systems for co-operative verification of disarmament and peace agreements and for IAEA safeguards for an underground final repository. The second focus is assessment of new military technologies and preventive arms control, including verification. Studies have dealt with "non-lethal" weapons, civilian and military technologies in aviation, military uses of microsystems technology and of nanotechnology, confidence and security building measures for cyber forces, armed uncrewed vehicles and autonomous weapon systems. He co-founded and chairs the German Research Association for Science, Disarmament and International Security (FONAS) and has authored book chapters on the relationship of natural science, armament and disarmament.

Andreas Schüller

AI and Future Warfare: Data, Targeting, and Death

More precision, more civilian protection through artificial intelligence – that`s the military promise when it comes to targeting procedures in war. It`s not a new promise, it came with drone warfare in the early 2000s, and with many other types of weapons before. The reality looks quite different – accelerated targeting procedures, unbound data collection and processing, loosening of rules concerning targetable military objectives and collateral damage body counts, lack of accountability and impunity.

In my presentation, drawing on legal expertise and work with directly affected people, I seek to examine the consequences of the growing use of artificial intelligence in warfare with respect to its regulation and legal accountability especially within the international humanitarian law and human rights law frameworks.

Artificial intelligence technologies are integral parts in decision-making processes for targeting in warfare. Even if a human operator takes the final strike decision, the target selection process is automated and the results outside review capacities of operators. In my presentation, I will examine discrepancies between artificial intelligence targeting processes and legal requirements relating to technology which collects, analyses and processes information that lead to human decisions about consequent attacks. Apart from examining the criteria which determine the (un-)lawfulness of targets, I will explore the technological fallacies and cultural biases found in the design and execution of algorithms for target identification. The data thus gathered and processed by artificial intelligence technology perpetuates the illusion of conveying the "truth" while often suffering from the flaw of incorrectly distinguishing between civilian and military targets. I will probe into the implication of decision making based on such data and the accountability conundrum thus posed.

Addressing the enforcement gap of international law, I`ll come up with ideas to strengthen and better enforce existing laws, regulating the use of artificial intelligence in targeting operations as well as ways to hold those committing crimes to account. The presentation will not only address legal loopholes and enforcement mechanisms, but also options for policymakers to uphold human dignity and limit the use of artificial intelligence in warfare.

Biographical note:

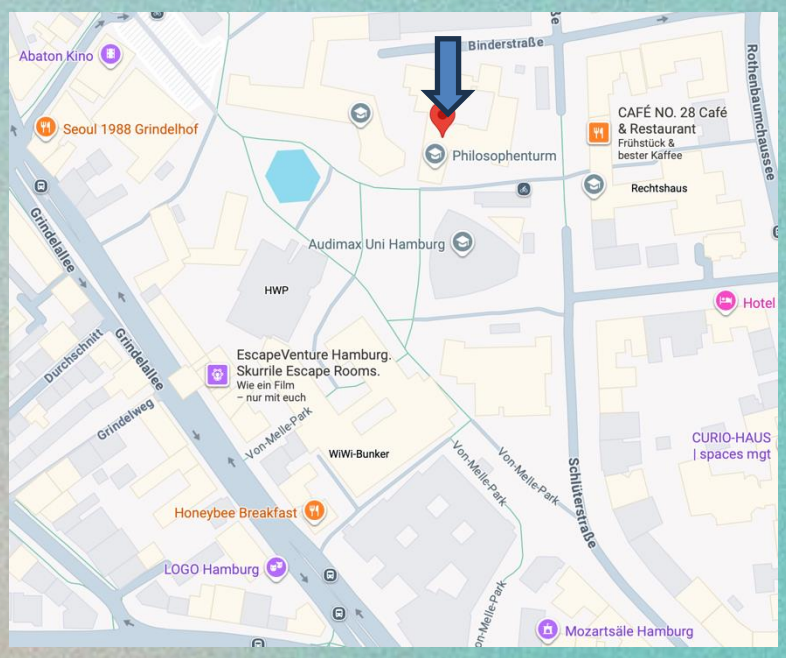
Andreas Schueller leads the International Crimes and Accountability Program at the European Center for Constitutional and Human Rights (ECCHR), a Berlin-based human rights NGO. As an international lawyer, he litigated cases before the European Court of Human Rights, the International Criminal Court or the German Federal Constitutional Court. Andreas Schueller focussed on armed drones' attacks and post 9/11 casework for almost two decades. His work includes seeking accountability for serious human rights violations in Afghanistan, Iraq, Syria, Palestine, Sri Lanka, Ukraine, Argentina and Colombia. He is associated partner of the MEHUCO project as well as member of the advisory board of the Disruption Network Institute.

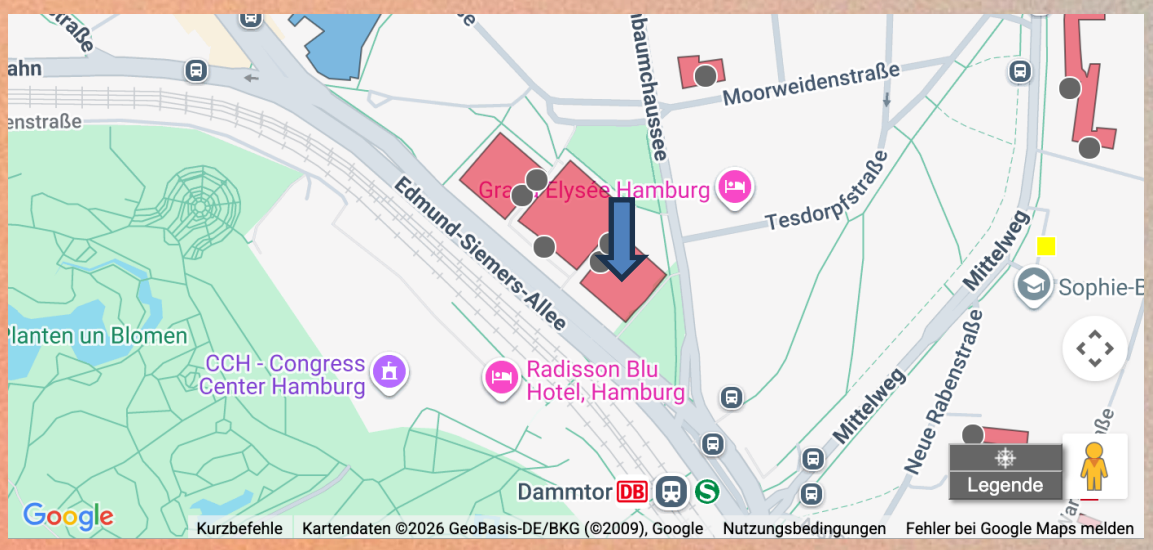
Locations

Keynote, Lecture Room F

Von-Melle-Park 6, 20146 Hamburg
Philosophenturm, University of Hamburg

The easiest way to reach the venue by public transport is to take the S-Bahn (S2, S21, S31) or to Hamburg Dammtor station. From there, it is about a 5–10 minute walk to Von-Melle-Park 6. Alternatively, you can take bus lines 4, 5, or 114 to the stops Grindelhof or Universität/Staatsbibliothek, both of which are within a 3-5 minute walk of the building.





ESA East 221

Edmund-Siemers-Allee 1, East Wing, Room 221

The easiest way to reach the venue by public transport is to take the U-Bahn lines U1 or U3 to the Stephansplatz or the S-Bahn lines S2 or S5 to Dammtor. From either station, it is about a 5-7 minute walk to the University of Hambugs's main building at Edmund-Siemers-Allee 1. The venue is located in the East Wing, Room 221 (not in the main building!) Several bus lines stop nearby.

Kino 3001

Schanzenstraße 75, 20357 Hamburg

Kino 3001 is located in the inner courtyard of the Schanzenhof. The easiest way to reach the cinema by public transport is to take the S-Bahn (S11, S21, S31) or U-Bahn line U3 to Sternschanze station; from there it is about a 5-minute walk to Schanzenstraße 75. Alternatively, you can take bus line 15 to „Weidenallee"or bus lines 3, 181/181 to „Sternschanze" or „Neuer Pferdemarkt", each of which is within a 5-minute walk of the cinema.