Global Society

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/cgsj20

Innovating Algorithmic Warfare: Experimentation with Information Manoeuvre beyond the Boundaries of the Law

Lauren Gould, Marijn Hoijtink, Martine Jaarsma & Jack Davies

To cite this article: Lauren Gould, Marijn Hoijtink, Martine Jaarsma & Jack Davies (2024) Innovating Algorithmic Warfare: Experimentation with Information Manoeuvre beyond the Boundaries of the Law, Global Society, 38:1, 49-66, DOI: 10.1080/13600826.2023.2261466

To link to this article: https://doi.org/10.1080/13600826.2023.2261466

GLOBAL SOCIETY
2024, VOL. 38, NO. 1, 49–66
https://doi.org/10.1080/13600826.2023.2261466

Routledge
Taylor & Francis Group

Innovating Algorithmic Warfare: Experimentation with Information Manoeuvre beyond the Boundaries of the Law

Lauren Gould[a], Marijn Hoijtink [b], Martine Jaarsma[c] and Jack Davies[a]

[a]Utrecht University, Netherlands; [b]University of Antwerp, Belgium; [c]Independent Researcher, Netherlands

ABSTRACT

This article analyses how algorithmic innovation in contemporary warfare unfolds through new alliances and contestations among civil and military actors in the face of an overarching rhetoric around the need to lead in "information manoeuvre". Drawing on assemblage thinking and applying it to the case of the Land Information Manoeuvre Centre (LIMC)—a data centre founded by the Dutch Army that unlawfully tracked and algorithmically predicted its citizen's sentiment and behaviour during the COVID-19 pandemic—the authors identify three logics that held this centre together and helped ward off critique: entrepreneurialism, informality, and experimentation. Emulating innovation practices elsewhere, together, these logics have important political repercussions beyond the Dutch case, pushing the expansion of military surveillance, pattern-finding and targeting, while undermining the rule of law and democratic accountability within algorithmic warfare.

ARTICLE HISTORY
Received 17 July 2023
Accepted 12 September 2023

KEYWORDS
Military technology; innovation; assemblage; algorithms; warfare; information manoeuvre

Introduction

One week after the Dutch government announced the first national lockdown of the 2020 COVID-19 pandemic, a group of military data scientists, programmers and behavioural analysts met on a military base in the centre of the Netherlands. They were welcomed by their new commander, who instructed them on their task: to collect and assess all relevant online information about the pandemic in order to inform military and civilian decision making during the unfolding crisis. The commander informed the group that their work charted new territory. "Prepare yourself for experiments", he said, because "we are reinventing ourselves" (as quoted in a later article published on 16th November in *NRC Handelsblad* titled "How the Ministry of Defence is spying on its own citizens").[1]

The "experiments" in question took place within the Land Information Manoeuvre Centre (LIMC), a new data centre founded by the Dutch Royal Army to develop novel algorithmic capabilities, such as trend and sentiment analysis. While LIMC was established immediately after the outbreak of the pandemic, and despite its official task

CONTACT Lauren Gould l.m.gould@uu.nl Centre for Conflict Studies/ History of International Relations, History Department, Faculty of Humanities, Utrecht University, Drift 6, room 1.03, 3512 BS Utrecht, Netherlands

[1]Our analysis is based on data originally published in Dutch. This has been translated into English by the authors, who are native speakers.

being "to generate in an experimental form Situational Awareness […] and Situational Understanding […] about the COVID-19 crisis" (Rijksoverheid 2021, part 4, 89), from the very beginning its purpose was much broader. LIMC was envisioned as a vehicle to experiment and gain "real world" experience with new information capabilities and to accelerate the implementation of what the Dutch military defines as "information manoeuvre" to counter (hybrid) threats posed by adversaries both within and across its borders (MoD 2020a). According to the Dutch Ministry of Defence (MoD), the concept of information manoeuvre refers to the ability to "filter, process, and analyse all information" through data gathering and predictive algorithms (MoD 2020a, 17). Importantly, the purpose of "information manoeuvre" is to "ultimately use it quickly and decisively to *act* and *fight*, from the strategic level to the level of individual military personnel *in the field*" (own emphasis added, MoD 2020a, 23).

However, the establishment of LIMC was not uncontested. In the previously mentioned 16th November *NRC Handelsblad* article journalists revealed how LIMC had been involved in the widespread collection of data on Dutch citizens without a legal basis, and how it had shared assessments on disinformation and specific networks with external institutions, such as the National Coordinator for Counter Terrorism and Security (NCTV) and the National Police. This reporting forced the then Minister of Defence Ank Bijleveld to halt all activities at LIMC and order an investigation into its possible privacy violations. After the completion of this investigation and a subsequent freedom of information (FOI) access request on behalf of *NRC Handelsblad*, a collection of more than 400 emails, minutes and orders was released (Rijksoverheid 2021).[2] These materials offer us a detailed understanding of how military commanders, lawyers, data scientists, behavioural scientists, and intelligence officers came together and seized the context of the COVID-19 pandemic to experiment with data, algorithms and information manoeuvre; and how, in spite of concerns over civil rights violations and considerable pushback from lawyers and civil servants at the MoD, in The Hague and even LIMC members themselves, these actors continued to move ahead, driven by a perceived urgent need to build "an authoritative information position" to counter threats both within and across their borders (MoD 2020a, 23).

Speaking more directly to the focus of this special issue and the wider literature on "algorithmic warfare" (see e.g. Amoore and Raley 2017; Bellanova et al. 2021; Gonzalez 2021; Suchman 2020; Wilcox 2017), the case of LIMC and the available material give us a unique and detailed insight into how the Dutch military develops and assembles algorithmic technology in the face of internal and external contestation; and how those contestations are in turn negotiated and reassembled in the face of an overarching and highly performative rhetoric around the need to experiment, engage and lead in information manoeuvre. Inspired by Science & Technology Studies (STS) scholarship (e.g. Gusterson 1998; Mackenzie 1990), we consider those alliances and contestations among civil and military actors as vital for the ways in which algorithmic capabilities in warfare are actually innovated, diffused and put to use in today's theatres of war.

In studying these collaborations and contestations, we analyse the case of LIMC by adopting an "assemblage" approach (Li 2007; see also Allen 2011; Collier and Ong

[2]Freedom of Information Act, otherwise known in the Netherlands as the Law Open Government, is a law that provides individuals or any organization the ability to request access to government information from the public record.

2005; Demmers and Gould 2018). Through applying the assemblage as a heuristic device, we examine how a heterogeneous group of actors were drawn together to cohere and allow for information manoeuvre within LIMC and the Dutch military context. We inductively identify three elements that hold the LIMC assemblage together and ward off critique (Li 2007, 268). These are: (1) an entrepreneurial vision of warfare, which is driving investment in algorithmic technology and civil–military integration; (2) a growing engagement in informal networks and consent, which are increasingly undertaken outside of the formal structures and hierarchies of the military; and (3) a growing reliance on discourses and practices of experimentation.

Politically, much is at stake in these developments. First, as we show in our analysis, LIMC was informed by, but also further pushes the logic that future threats and conflicts are knowable, predictable, and governable through data collection, algorithms, and pattern finding. While LIMC was limited to the domestic context of the COVID-19 crisis, the primary rationale for establishing the centre was to operationalise these capabilities so they could later also be used in actual combat situations. While LIMC was eventually contested for collecting and assessing personal data of its own citizens without a legal basis, its main underlying rationale—that of experimenting with information manoeuvre and the need to invest in algorithmic technology—was never questioned. In fact, a commission that was tasked with evaluating the legal basis of LIMC recently suggested that the contestations over LIMC merely showed that there is a need to adopt a new legal and policy framework in the light of today's "hybrid" threat environment (Brouwer 2022).

Second, then, we show how LIMC served as a performative space in which Dutch Army commanders were not only allowed to innovate and experiment with new algorithmic capabilities, but also advanced their understanding of how to work around political tensions, legal constraints and parliamentary control. In the process of assembling LIMC, each of the three interacting elements of the assemblage that we identify provided the Dutch Army with the space to navigate and work beyond both the existing hierarchical structures of the military and the checks and balances of democratic control and the law. While this was only partially successful as LIMC eventually did lead to public contestation, the logics, networks and "best practices" that were established in the very process of assembling remain intact. We suggest that these networks and practices will further diffuse lines of responsibility and lead to a weakening of transparency and legal and democratic accountability in algorithmic warfare.

While our analysis is embedded in the case of LIMC and the wider military/innovation landscape of the Dutch military, our insights are also relevant beyond this context. The US, UK, and NATO are also developing information manoeuvre capabilities, often through similar kinds of experimental projects and civil–military cooperation, including in the context of the COVID-19 pandemic (Miller 2018; Young 2023). These militaries can, and some already do, use these capabilities not only for surveillance, to reconstruct social networks and engage in what Roberto Gonzalez (2021, 2) calls "human engineering", but also to lethally target individuals. A few of these projects have received considerable scholarly attention and concern, such as the Pentagon's Project Maven (Suchman 2020; Hoijtink and Planqué-van Hardeveld 2022). Formally known as the Algorithmic Warfare Cross-Functional Team, just eight months after its launch in 2017 it was using algorithms to sift through large amounts of drone footage to produce actionable

intelligence in support of drone missions against ISIS (Gonzalez 2021, 63; Pellerin 2017). However, due to secrecy, detailed empirical analysis of such projects has been rare. LIMC provides us with a unique case to study the assembling of information manoeuvre capabilities and algorithmic technologies due to access to the documents made available through the FOI request.

Our argument proceeds as follows. First, we discuss existing scholarship on algorithmic warfare and link it to the concept of information manoeuvre, which we argue is doing important mobilising work to promote the role of data, data processing and predictive algorithms across militaries. Second, we outline our assemblage approach, which we adopt to study and map the new alliances and contestations that are driving information manoeuvre and the case of LIMC. Third, we identify the three interacting elements that hold LIMC and the broader military/innovation assemblage together: entrepreneurialism, informality and experimentation. We conclude by arguing that these elements of the assemblage do not only shape how war is imagined, practiced and institutionalised, but also have crucial implications for how we can know about warfare, contest war, and hold military actors to account.

Algorithmic warfare and the assembling work of information manoeuvre

A growing body of scholarship in International Relations and Security Studies has become concerned with the role of data, data processing and predictive algorithms in the conduct of warfare, especially in relation to lethal targeting. Much of this literature centres around the transformative potential of algorithms in what is increasingly coined "algorithmic warfare" (Amoore and Raley 2017; Bellanova et al. 2021). Existing literature examines, for instance, how algorithms provide the technological foundations for pattern-of-life analysis and so-called signature strikes, driving logics of surveillance, prediction and targeting on today's battlefields (Gonzalez 2021; Gregory 2011); or how they are implicated in the growing automation of military decision-making and the shrinking of human control and accountability, including in relation to critical lethal decisions (Bode and Huelss 2022). This literature has also drawn attention to how algorithmic warfare works or is made to work as part of broader social processes or longer historical trajectories; e.g. how it intersects with existing gendered and racialised assumptions about who constitutes a "legitimate" target in the first place (Suchman 2020; Wilcox 2017), relies on ideas about techno-solutionism (Suchman 2022), or is embedded in a broader turn to "remote" interventions as a form of risk aversion (Demmers and Gould 2020).

Our article contributes to this literature by analysing in more detail how the turn to data and algorithmic analysis in contemporary warfare unfolds through new alliances and contestations among a heterogeneous group of actors. We argue that there is a need to understand these collaborations and contestations in military innovation as vital for the ways in which algorithmic capabilities in warfare are actually developed, diffused and put to use (see also Elish 2017; Gusterson 1998; Mackenzie 1990).[3] Such a focus on the politics of technology development has often been neglected within classical International Relations and Security Studies scholarship, where technology and

[3]In the spirit of the work of Donald Mackenzie (1990), such a perspective could then also give us more insights into how these algorithmic applications in the military can be "unmade".

weaponry are usually treated as the straightforward outcome of technological development or as "'ready-made' objects available for use" (Shah 2017, 89; Hoijtink & Leese 2019). At the same time, there has been sustained examination of practices of military innovation in other academic fields, such as in STS and military anthropology, in relation to the development of nuclear weapons (Gusterson 1998; Mackenzie 1990). Focusing on nuclear weapons research during the 1980s and studying practices of military innovation through qualitative, fieldwork-based research, these scholars showed how nuclear weapons were not an inevitable outcome of technological change; nor were they simply acquired by military strategists. Instead, nuclear weapons developed through processes of conflict and collaboration between a range of social actors who were implicated in their design (Mackenzie 1990, 3). Those sociotechnical processes of military innovation were obviously shaped by the Cold War context, but they were also themselves an important shaping force and thus vital to the analysis of nuclear power and politics (Gusterson 1998, 5).

Across the contemporary military innovation networks that we study, "information manoeuvre" has emerged as a central concept that does important discursive and mobilising work when it comes to operationalising algorithmic warfare. In the many strategic documents and academic publications that popularise the concept, information manoeuvre is often defined in rather broad terms, as

> a way of exerting power and achieving effects by using information in any cognitive, virtual or physical form to shape the operational environment in an advantageous manner, but moreover to use information as a weapon, i.e. a means of influence. (Ducheine, Pijpers, and Pouw 2022, 4–5).

Such definitions of information manoeuvre encompass broader conceptions and strategies of "information warfare", which include disinformation and manipulation campaigns, and which, according to much of the information warfare literature, increasingly refers to international competition "short of war" (e.g. Maschmeyer 2022; Nakayama 2022).

We, however, take issue with the idea that information manoeuvre/warfare often, or increasingly, operates "short of war". Partly, because of how the Dutch MoD defines information manoeuvre in more narrow terms as the ability to "gather, process and analyse reliable information and ultimately use it to quickly and decisively act and fight, from the strategic level to the level of individual military personnel in the field" (MoD 2020a, 23). But, more fundamentally, as critical literature on algorithmic warfare points out, the data collected and the algorithmic capabilities developed in such "short of war" situations increasingly inform warfighting decisions, including lethal ones. In other words, whether the data and algorithms are used for surveillance, manipulation or targeting purposes is not a concern within information manoeuvre. The explicit assumption being that all data is potentially relevant and should be processed to inform a whole range of military decisions and operations (Aradau and Blanke 2017).

Methodology: assembling LIMC

In studying the new alliances and contestations that are mobilised by the turn to information manoeuvre in the Dutch military we adopt the conceptual device of the

"assemblage". Through this lens we understand LIMC as a practice of *assembling*, related to the continuous work of pulling disparate parties (at different "levels" and with different motivations, interests, identities) and elements (discourses, technologies, doctrines, laws, resources) together (Li 2007). In studying LIMC as an assemblage, we have adapted Li's (2007, 264) six "practices of assemblage" to guide our analysis, related to practices of: (1) *forging alignments*: the work of linking together the objectives of the parties to an assemblage by means of a joint problem definition and threat perception; (2) *rendering technical*: extracting from the messiness of the social world, with all the processes that run through it, a set of relations that can be formulated as a diagram in which problem (a) plus intervention (b) will produce (c), a beneficial result; (3) *authorising knowledge*: specifying and limiting the requisite body of "expert knowledge"; containing critiques; (4) *managing failures and contradictions*: presenting failure as the outcome of rectifiable deficiencies; smoothing out contradictions; devising compromises; (5) *anti-politics*: reposing political questions as matters of technique; closing down debate or limiting the agenda; (6) *reassembling*: grafting on new elements and reworking old ones; deploying existing discourses, legal instruments, and doctrines to new ends.

Based on this approach, we pay specific attention to the internal and external contestations that define the LIMC case, but also, crucially, to the ways in which those contestations are negotiated or "reassembled" (Li 2007, 265). Together, Li's practices help us to examine how the parties and elements of LIMC and the wider military/innovation assemblage might—or might not—be made to cohere and allow for information manoeuvre and the use of predictive algorithms; and, crucially, how the process of assembling has important repercussions related to the preservation of democratic control within contemporary military activity.

Our analysis of LIMC as an assemblage is based on the detailed coding of 1600 pages of documents released by the FOI request. These documents include emails, minutes and orders containing communications between the various actors involved in assembling and contesting LIMC between December 2019 and March 2021 (Rijksoverheid 2021). These documents were supplemented by desk research of other publicly available sources, such as official policy documents, newspaper articles, blogs, MoD letters to the Parliament, and committee reports on LIMC. In investigating the case of LIMC, we take a broad approach, starting our analysis some years before LIMC was founded when the concept of information manoeuvre began to gain traction across the Dutch MoD, and also reflecting on its longer aftermath.

Entrepreneurialism: assembling an innovative and information-driven military in response to a hybrid threat

In recent years, the concept of information manoeuvre has gained considerable traction across the Dutch MoD. While originating in the US (Elder 2021), information manoeuvre has been adopted more explicitly within the Dutch military for two reasons.[4] First, it is pushed as an alternative way to protect national interests and maintain credibility and relevance within international alliances against the backdrop of declining military spending. Second, the Dutch military gained battlefield experience

[4]We found similar reasoning for the mainstreaming of information manoeuvre in the UK military.

with information manoeuvre in Iraq, Afghanistan and Mali, where the Dutch forces specialised in intelligence, surveillance and target assessment capabilities (Boeke 2014). Following those experiences, information manoeuvre began to circulate in a series of blog posts and contributions by Army commanders (e.g. Van Dalen & Dekkers, n.d.; Van Dalen 2020), after which it trickled up into more official policy. The MOD's *Defence Vision 2035* defines information manoeuvre as one of the three main priorities for the future Dutch military (MoD 2020a, 9).

In line with Li's first practice of the assemblage—forging alliances in the face of a shared threat perception (Li 2007, 264)—the rise of information manoeuvre as a central concept is strongly linked to an understanding of the current threat environment as being "hybrid". This threat perception is clearly articulated by the most senior commander of the Dutch armed forces in a memorandum to the Minister of Defence:

> While war at its core has not changed, the environment within which the armed forces operate has become increasingly complex. Clear boundaries between war and peace, internal and external security and state and non-state actors are disappearing (Rijksoverheid 2021, part 9, 116).

In this hybrid threat environment, the rise of new information technologies such as big data analysis, artificial intelligence (AI) and predictive modelling is seen as a source of instability, for example, because they are thought to enable external adversaries to manipulate and mobilise citizens against their own state through disinformation campaigns. The assumption is that hybrid threats are always latent, and that the hybrid enemy is always active and thereby the military finds itself in "a permanent state of conflict" (Rijksoverheid 2021, part 10, 120). Therefore, the military needs to be constantly prepared and cannot afford to distinguish between wartime and peacetime or between interventions at home or abroad, and must not be restricted to solely operating across its borders or during wartime.

At the same time, and following Li's second practice of the assemblage—rendering technical—these same capabilities are also presented as the main technical solution to hybrid conflict, as they appear to enhance "situational awareness", prediction and control (Suchman 2020). Crucially, the Dutch MoD presumes here that as most innovative concepts, ideas and technologies originate outside of military settings and at a rapidly accelerating pace, the military needs to continuously anticipate which of these emerging information technologies it can "absorb" into the organisation (MoD 2018, 8). However, the MoD simultaneously asserts that it is not properly equipped to absorb the information technologies required to counter these hybrid threats, as its traditional procedures, hierarchies and bureaucracies impede flexibility. As these technologies are perceived as becoming more readily available to competitors, including China, Russia and non-state actors (who are less constricted by "red-tape"), the technological advantages previously enjoyed over opponents is supposedly shrinking (HCSS 2020).

Within this context, the Dutch MoD not only emphasises information manoeuvre as a technical solution to multiple threat perceptions, but also—in line with Li's third practice of assemblage—it authorises a specific type of "expert knowledge" on how the process of innovation herein should be organised differently (Li 2007, 264). This vision, which we refer to here as "entrepreneurialism", favours creation, flexible collaboration and rapid scaling of prototypes, with slow-moving bureaucracies being perceived as antithetical

to innovation. Across the Western world we see militaries responding to this vision, establishing projects and institutions outside of traditional bureaucratic structures in order to bypass this red tape and unleash innovation (Gould, Arentze, and Hoijtink forthcoming; Hoijtink 2022).

Within the context of the Dutch military, this reassembling of military innovation through an entrepreneurial vision and the prioritisation of a specific type of technical expert knowledge takes the form of what the MoD calls short-cyclical innovation (Bekkers, Bolder, and Rademaker 2020), which is characterised by the "scaling up" of bottom-up initiatives that proved successful after small-scale experimentation. The MoD encourages such short-cyclical innovation through the setup of so-called field labs, in which the military assembles new alliances with private partners, such as start-ups and (technical) universities, to experiment with new ideas (Gould, Arentze, and Hoijtink forthcoming). These field labs operate as "safe" spaces in which the military is encouraged to innovate on a constant basis, and where failure is managed by embracing it as a productive force.

The Army has positioned itself as a primary driver of this kind of rapid innovation and entrepreneurialism. As described in the Army magazine "Landmacht", since 2017 it has a dedicated unit called Concept Development & Experimentation (CD&E), which grew rapidly from an initial budget of €250,000 in 2017 to €20 million in 2019 (Hartog 2019). The CD&E aims to connect, accelerate, and market technology development, and operates around 10 "field labs". Herein, one of its goals was to build its own in-house intelligence capabilities and experiment with information manoeuvre. This grew out of the Army's ongoing frustrations with the workings of the separate military intelligence branch and its non-military counterpart, both of which were perceived as being too focused on strategic and political intelligence to be an effective aid to Army commanders in making operational decisions (Van Daalen 2017).

To achieve this goal, the army first turned to its own intelligence wing JISTARC (Joint Intelligence, Surveillance, Target Acquisition & Reconnaissance Command) for a solution. In December 2019 JISTARC established unit 109 with the intent to train soldiers to conduct open-source data collection and analysis on the "live" internet (including, for example, social media sites). However, a request by the JISTARC 109 commander to organise a launch-event in order to "seize the publicity opportunity to demonstrate that the Army keeps up with the times and is worth investing in" (Rijksoverheid 2021, part 4, 7) immediately ran into external and internal contestation. Against the backdrop of an *NRC Handelsblad* article asking questions about information manoeuvre in the Dutch military, the Department of Legal Affairs in The Hague stressed that the "societal sensitivities around the establishment of the intelligence cell – which was initiated by the Army – are ever-present" (Rijksoverheid 2021, part 4, 13). They emphasised that "the gathering of intelligence takes place on the basis of the law (what is allowed) rather than based on what individuals within our armed forces can or want to do" (1) and "the consequences of gathering intelligence at your own initiative and without a legal basis can be serious" (1).

The lawyers were referring to the fact that, while the Dutch Army has a broad mandate for expansive open-source data collection and analysis during operations abroad, the same is not true during times of peace and within Dutch territory. Here, the General Data Protection Regulation (GDPR) constrains such uses of personal data (including

data held in publicly available/open-source data sets such as social media). As such, the Army is only permitted to conduct these activities domestically upon a formal request to assist other state institutions—such as the police, ministries or general intelligence services—and after having received a formal exemption from the rules around privacy and personal data. Lacking both a request and exemption, JISTARC 109's attempt to train in information manoeuvre on the "live" internet thus quickly ran up against the regulatory "red tape" that the MoD identifies as hampering the military's entrepreneurial endeavour.

Re-assembling LIMC as a technical solution to a new threat

The onset of the COVID-19 pandemic in March 2020, however, offered JISTARC 109 an opportunity to move forward in information manoeuvre. On Thursday the 19th of March (7 days after the first lockdowns were announced), the highest Commander of the Armed Forces authorised the "immediate establishment" of LIMC to:

> Evaluate all available and relevant information, from open and semi-closed sources, about the Covid crisis, to generate situational awareness and understanding […] Hereby, military and civil decision-making processes will be informed by insights and where possible an action perspective (Rijksoverheid 2021, part 4, 89):

In line with Li's second practice of assemblage—rendering technical—we thus see here that LIMC is framed as an "intervention" that will "produce" situational awareness and thereby create order and predictability in the threat that the pandemic is posing to Dutch society. This will "benefit" military and civil decision-making processes and thus their ability to govern. From the Commander's subsequent order, however, it is clear that his ambitions for LIMC stretched far beyond the COVID-crisis and the domestic context of the Netherlands:

> [LIMC] fits in with our further development towards an Information-Based Armed Forces, to improve military operations with the aid of new technologies and better use of information. This also means that new threats can be countered. With LIMC, the Royal Netherlands Army can gain experience in bringing together information manoeuvre capabilities that offer insight, foresight and continuous action perspective in three dimensions (cognitive, virtual, physical) (Rijksoverheid 2021, part 5, 219).

Under this new "threat perception" and "technical solution", twenty-five LIMC members were assembled—quite literately—over the course of the weekend. By Monday the 23rd of March, all JISTARC 109 members and some additional staff from other Army units were recruited. This allowed JISTARC 109 to "re-assemble" (Li's sixth practice of assemblage) under the new flag of LIMC, while it was staffed by the same individuals, aimed to engage in the same activities, and was based in the same military barracks.

The new LIMC commander, nonetheless, was still in need of data to experiment with and required an inter-agency request in order to begin processing personal data. Still using his JISTARC e-mail address, he approached the Territorial Operation Centre (TOC) to offer LIMC's services. In the face of the COVID-pandemic, the TOC had been established as a centre for various government agencies to cooperate on an ad-hoc basis to deal with the growing shortages of nurses, respirators and masks. LIMC subsequently held a presentation about its capabilities at the TOC and offered to make

predictions and write out scenarios in exchange for access to (non-personal) data on health care capacities in the Netherlands. Soon, LIMC received multiple requests from the TOC to use its skills to make predictions using "rudimentary" data science to help manage COVID-related activities. This entailed LIMC gathering and analysing open-source intelligence as well as data from so-called semi-closed sources, including information from military liaisons within hospitals and nursing homes, as well as confidential sources. This was used to predict tactical logistical challenges, such as which hospitals would require additional respirators and masks in the coming weeks.

Informality: forging new alliances and containing dissent through compromise

The LIMC commander, however, did not just want his team to predict material shortages in hospitals; he wanted them to train in analysing and predicting sentiment and behaviour among citizens. A significant back-and-forth ensued between the LIMC commander, the Army lawyers and the governmental lawyers in The Hague, with the first seeking to find an institutional request and legal mandate for such activities. The lawyers (both civilian and Army, having separately reached the same conclusions), reiterated that the legal basis for "the Covid activities of LIMC is razor thin at best" (Rijksoverheid 2021, part 4, 40) and "unlike other intelligence agencies LIMC is not adequately regulated and supervised" (38), and that it should be remembered that "the military protects what is dear to us, including most definitely our constitutional democracy. We should not mess with that" (39). The civilian lawyers voicing these criticisms are then asked by increasingly higher-ranked military commanders to "please adopt a constructive attitude" (Rijksoverheid 2021, part 8, 91) and are urged to find within themselves "a desire to cooperate for national security and the protection of vital interests" (102). Even the Commander of the Armed Forces exerts pressure by suggesting that the normal constraints on the processing of personal data may not apply in the COVID-crisis:

> […] gathering information inherently violates privacy. This is a problem we frequently encounter in fighting hybrid wars … nevertheless, we must push these boundaries. As long as LIMC only checks public social media and deletes everything after this crisis … it should certainly be possible given the disruption caused by this crisis (Rijksoverheid 2021, part 5, 6).

Shortly after, senior government officials agree to adopt a more constructive attitude and seek various legal solutions for the military commanders. The communication among the military lawyers also turns to the ways in which a legal mandate could be obtained, noting that "a little bit of time pressure in a period of crisis can perhaps speed things along 😉" (Rijksoverheid 2021, part 4, 137).

One suggestion made is that the National Coordinator for Counter Terrorism and Security (NCTV) could request intelligence support from LIMC in order to provide a mandate for the processing of personal data. Notably, this attempt to forge a new alliance with the NCTV appears to have originated in interpersonal relationships between LIMC members and individuals working for the NCTV, rather than through formal channels. The NCTV immediately agrees to submit such an inter-agency request, after which

LIMC—assuming that it is just a matter of time before the lawyers formalise the NCTV request and process the paperwork—starts its operations. The military lawyers instruct LIMC to avoid processing personal data while the inter-agency request is being processed.

LIMC and the Army's commanders are thus initially able to manage tensions and smooth out dissent by both appealing to the joint problem definition and shared mission of combatting the COVID-crisis, as well as encouraging critical voices to compromise in name of achieving this common goal and being loyal to the cause. Throughout this process, we observe a recurring pattern of informality. Informality or informalisation refers to the explicit attempt to develop responses outside of formal institutions and their rules (Bueger and Edmunds 2021). Our data repeatedly refers to apparent first-time communications referring to previous, presumably in-person conversations between collaborating individuals, such as the initial communications between LIMC and the TOC, as well as a subsequent set of communications between LIMC and the NCTV. In addition, once alliances are forged, LIMC employees, Army officers, and civilian government agencies combating COVID regularly attend informal ad-hoc in-person meetings in each other's headquarters. Such meetings allowed them to share their ideas, discuss plans and in some cases agree on a course of action while everyone else was at home in lockdown and they were far away from the dissenting voices in The Hague. This played a key role in increasing the coherence of the assemblage and smoothing out internal contestations.

Finally, a recurring pattern of informal deal-making and consent takes place. Initially, in allowing LIMC to get started without processing personal data while awaiting the formalisation of the NCTV inter-agency request. Soon, however, LIMC comes to understand that even though they work with data that is freely available on the internet (open-source intelligence), it is almost impossible to do the types of analyses it wants to do without processing personal data. Requests posed by LIMC employees to the military lawyers, such as "is it possible to integrate the text of a tweet into the analysis, since it refers to a twitter page and not to a specific person?" (Rijksoverheid 2021, part 9, 34) and "are we allowed to monitor open-access Facebook groups that cannot be traced to a specific person?" (34), are repeatedly declined. LIMC feels that its hands are tied, with one LIMC employee remarking with clear frustration that "the GDPR is so rigid that I can't even read the newspaper anymore!" (Rijksoverheid 2021, part 8, 136).

LIMC then proceeds to once again look for ways around these legal constraints. One LIMC employee explores whether the collection and analysis of personal data could be carried out through a private actor instead. In an email referring to yet another informal in-person conversation, the Dutch think tank The Hague Center for Strategic Studies (HCSS) responds to this LIMC employee that the Army could "use its [HCSS's] datalab to collect data" even "without a quote or against payment", although HCSS might "ask the Army to include it in the general support fund later on" (Rijksoverheid 2021, part 4, 169).

Another LIMC employee suggests Meltwater, "a commercial service that performs a sentiment analysis on tweets, which would then provide us with a report without personal data" (Rijksoverheid 2021, part 4, 123). Advertised on its website as a tool to monitor, assess and influence society, Meltwater is a marketing tool developed by a Norwegian corporation. Although it was originally designed to track sentiments on products

amongst customers, Dutch military anthropologists have been using it since 2018 to monitor public sentiment in relation to Army operations (Rijksoverheid 2021, part 9, 38). As several of these military anthropologists were assembled into LIMC, the tool was soon identified as a way to track public sentiment without directly consulting social media profiles. Meltwater is an AI driven search tool that can be used to trace news media and/or social media for a combination of term(s) such as "Anti-Vaccination"—"Lockdown"—"Prime Minister". It then generates a diagram of associated words (such as "protest" or "legislation") and calculates whether the general sentiment related to the terms is negative or positive. Through Meltwater, LIMC believed it had finally found its "workaround": it was able to monitor public sentiment and behaviour without directly processing Tweets and Facebook posts (Rijksoverheid 2021, part 9, 37).

Experimentation: normalising algorithmic warfare through "Trial and Error"

In the face of the COVID-pandemic, JISTARC 109 was thus able to re-assemble under the new name of LIMC, manage tensions by emphasising the joint goal of combating the virus, and navigate red tape through relying on informal networks, meetings, and consent, and drawing in commercial technologies. As Bueger and Edmunds (2021) explain "informality provides the basis for experimental politics and inquiry. It provides space to try out new responses […]" (178). They add: "experimentalism is […] a distinct mode of practice in international relations, characterised by tinkering, testing, and knowledge production" (178).

Informality allowed LIMC to start experimenting with information manoeuvre and algorithmic technologies outside of existing military structures, democratic checks and balances, and the law. In this space, LIMC tinkered and tested their ability to track public behaviour and sentiment, most notably on the spread of anti-vaccination and other protest movements amongst Dutch citizens, such as Black Lives Matters, 5G and QAnon. The knowledge produced was used by LIMC to prepare briefing materials which came to be known as "Disinformation Weekly Reports". Formatted as an intelligence product, these reports were sent, without formal request, to civilian government institutions including the NCTV, the Ministry of Justice and Security, and the National Police. They were supplemented by "Spotrep" reports that highlighted particular urgent matters, such as planned public demonstrations:

> Attached you find a so-called "Spotrep". In this product, LIMC analyses a situation that is potentially urgent. In this Spotrep you find more information about a planned demonstration in The Hague on 21 June 2020, based on open-source data (Rijksoverheid 2021, part 9, 2).

In this case, the National Police appear to immediately recognise the potential value of the insights LIMC is generating, and forge a new alliance with LIMC thereafter:

> Thank you for sending us the spotrep last Friday. It was the first time I received one and I am very impressed. One question: could you add my colleague XXXX to the email list? Her email address: XXXX@police.nl (Rijksoverheid 2021, part 9, 1).

As the demand for LIMC's reports grows, LIMC itself expands in tandem. By the end of June 2020, LIMC employs 23 people from JISTARC, 10 military anthropologists, two students studying data-science, two people from CD&E, one person from the Defence Cyber

Command, two people from the Army's special forces trained in influencing and counter terrorism, and one civilian who was hired externally (6). Witnessing the success of LIMC, the Army's senior command commits to establishing a permanent LIMC. It orders its staff to start writing a doctrine and plan the logistics to promote LIMC from its "experimental phase" to a formally established Army-unit with its own personnel and budget (3).

The demise of LIMC: failure, anti-politics, dis-assembling or reassembling?

In July 2020, however, LIMC became a victim of its own success when its products were spread and cited so widely that employees at the MoD Policy Department receive a phone call about them from the Ministry of Internal Affairs (43). Just weeks before, the Policy Department had decided *not* to sign off on the until then still pending inter-agency request of the NCTV because it resented the way that "it happens regularly, we believe, that a military capability is offered to a partner *informally*, and that the formal legal process is started only after the fact" (Rijksoverheid 2021, part 8, 79; emphasis added). The employees of the MoD Policy and Legal Departments are confused and concerned, and start to investigate: if the NCTV's inter-agency request was denied, then where did the mandate to distribute these intelligence reports stem from? Soon they realise that there is no such mandate and decide that the only way forward is to "immediately halt LIMC's activities, inform the minister, chief of the policy department and the commander of the armed forces as soon as possible and emphatically point out to them the dangers of this go-it-alone by the military" (Rijksoverheid 2021, part 9, 47). In a highly contentious meeting on the 25th of August 2020, senior officials within the MoD finally ask LIMC to cease sending "Disinformation Weekly's" and other LIMC products to external partners.

This, however, does not hamper LIMC's entrepreneurial spirit. On the 4th of September 2020 both the Commander of the Armed Forces and the Army submit a memorandum to the Minister of Defence stressing that "in a state of permanent competition" with "opponents that try to influence us in countless ways" information is essential to the new way of warfare (113). They impart on the minister that "LIMC has shown remarkably promising results" and has proven to be of value for an information-driven Army and the operationalisation of information manoeuvre within the Dutch Army (113). They inform her that a permanent LIMC will therefore soon be established. A subsequent memorandum published on September 18th entitled "continuation LIMC" does not address the controversy around LIMC, nor the lack of a legal mandate. Instead, it asserts that LIMC is "here to stay" and proceeds to explore at length the practical and logistical aspects of making LIMC into a permanent Army unit (45). On October 20th, the Army commander approves the memorandum in full and allocates the resources to build a permanent LIMC. The Army's lawyers share the impression that LIMC's commanders will do "anything and everything to prove the usefulness of and need for LIMC" (Rijksoverheid 2021, part 10, 33).

While the Army lawyers are still discussing amongst themselves how to best go about confronting the LIMC commander about an enduring absence of a legal mandate, the Minister of Defence receives an alarming e-mail, warning her that *NRC Handelsblad* is about to publish a critical article on LIMC that is bound to generate political debate. This article is the previously noted 16th November 2020 piece titled "How the Ministry of Defence is spying on its own citizens". In it, investigative journalists exposed the

actors, technologies and outputs being drawn together under LIMC, indeed sparking public and policymaker outcry. LIMC and the MoD's department of communications immediately move to deflect this criticism by publishing a promo-piece stressing the importance of LIMC in helping the military to "anticipate" and permanently operate and insisting that any activities of LIMC have always remained within the boundaries of the law (MoD 2020b). In the subsequent period of damage control, the experimental character of LIMC was once again placed front and centre, with official documentation consistently adopting the title "the experimental LIMC" to describe the centre (for example, Bijleveld-Schouten 2021, 1). In a letter to Parliament, the Minister of Defence highlighted:

> The sense of urgency to assist the civil authorities in this national COVID-crisis, combined with the importance of experimenting with information-driven action, explains why the Army used this crisis to set up LIMC as an experimental environment. The aim of LIMC was to work with modern data analysis of open sources in an experimental environment to provide military and civilian decision-making with insight and perspective (Bijleveld-Schouten 2021, 3).

The appeal to LIMC as an experiment with lessons learnt can be seen as a means through which to insulate the initiative, and perhaps more importantly the concept and practices behind it, from criticism. In line with Li's fifth practice of assemblage "anti-politics" (2007, 3), by framing the data collection and analysis that took place within LIMC as part of a process involving trial and error, these activities are implicitly excused, their importance diminished, and political questions and debate closed down.

This framing was only partly successful in reducing the public backlash: the fallout continued within public media and through parliamentary inquiries, with potential lasting impacts on civil–military trust. The debate on LIMC is concluded with a memo written in February 2021 by the MoD's own legal department, which concludes that LIMC had not stayed within the boundaries of the law in conducting its experiments (Rijksoverheid 2021, part 11, 59).

A final report on LIMC, released in December 2022, and written by an independent commission tasked by the MoD, underwrites this conclusion (Brouwer 2022). Yet, in a final twist to this story, the commission suggests that the fallout over LIMC merely shows that there is a need to readjust the legal frameworks in the light of "hybrid conflict" (7). Very much in line with the shared problem and threat definition of the actors of the assemblage, the commission writes that in the "grey zone between war and peace", the military has a lack of capabilities to deal with international competition "below the threshold of armed conflict" (7). This leads to a "stalemate" between existing legal frameworks and new hybrid threats, which the commission suggests solving by more flexibility on the on the part of the law, rather than by more constraint on the part of the military (7). As such, the report shows the success of reassembling and the circulation of information manoeuvre well beyond the context of the LIMC assemblage, in spite of—or perhaps because of—its contestations.

Conclusions

Through applying the assemblage approach, our analysis has illustrated how different actors, discourses, technologies, and practices were drawn together to allow LIMC to engage in information manoeuvre and experimentation with algorithmic technology.

Herein, we have paid specific attention to the frictions and contestations that have emerged in the context of the Dutch military's ambitions concerning information manoeuvre, and to how those frictions had to be constantly negotiated to hold LIMC and the broader military/innovation assemblage together. We identified three logics underlining the hard work of pulling the heterogeneous elements of the assemblage together and warding off critique. These were, one, the foregrounding of the logic of entrepreneurialism, in which flexible civil–military collaboration and scaling is favoured, with slow-moving military bureaucracies being perceived as antithetical to this. Two, the drawing in of commercial technologies and the forging of informal alliances, maintained in ad-hoc locations and through informal consent as a way to evade red tape. Three, the creation of a space to engage in practices of experimentation, as ways of accelerating the implementation of information manoeuvre and algorithmic technologies. While we distinguished between these three logics analytically, they exist and operate interchangeably and together shape the Dutch military/innovation assemblage in its current form.

This way, LIMC served a broader and performative purpose beyond the specific context of the case and the collection and assessment of data following the outbreak of the COVID-19 crisis. In the very process of assembling LIMC, various actors were brought together and encouraged to cohere with the strategic narrative of information manoeuvre. We have seen how, in this context, new Army recruits—along with military and civil lawyers, data scientists, behavioural scientists, and intelligence officers—are trained to think that all civilians, within and across domestic borders, are potential threats, and that their behaviour is knowable, predictable, targetable and preventable through data, algorithms, pattern finding and "disciplinary action". In addition, the actors involved are conditioned to organise and work outside established military structures, democratic checks and balances and the law. This decentralises formal decision-making procedures and renders them increasingly non-transparent and unaccountable. Our analysis shows that this can amount to the (sometimes unlawful) expansion of digital state surveillance practices in the context of warfare, but also beyond.

While further research is required to study how the Dutch police and counterterrorism coordinator used LIMC's predictions to inform their governance practices, beyond this context we do know that data processing and algorithmic analysis is already used to inform arrests, influence or modify behaviour, and inform targeting decisions. From other fields, such as policing and law enforcement, we also know that these same algorithmic technologies raise important concerns related to bias and error, and to principles of fair treatment, equality, accountability, transparency, and democratic control (e.g. AI Now Institute 2018). Within warfare, those concerns are further amplified, especially when they have direct consequences for life and death. How data is made actionable in information manoeuvre, and at what costs to civilians, hence demands further research.

Finally, while LIMC was constantly framed as "just" an experiment to ward off criticism, our analysis suggests that LIMC should be understood as representative of a wider phenomenon across Western militaries related to the rollout of information manoeuvre and algorithmic capabilities. We have seen how through the constant (re-)assembling of these capabilities and their underlying logics and practices, the distinction between the civil and military domain, inside and outside of combat, and crisis and combat operations become further blurred. The implications this has for how we can know about

warfare, contest war, and hold military actors to account will similarly need to be constantly (re-)assessed.

Acknowledgements

We would like to thank to thank the editors of the special issue and two anonymous reviewers for their helpful comments. We would also like to thank Caroline Holmqvist, Sofie van der Maarel, Jolle Demmers, Jorg Kustermans, Fabio Christiano and Dennis Jansen for their valuable feedback on earlier versions of this article.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the Dutch Research Council (NWO), grant number 16.Veni.195.3816845.

ORCID

Marijn Hoijtink http://orcid.org/0000-0002-8816-3351

References[5]

AI Now Institute. 2018. "AI Now Report 2018". https://ainowinstitute.org/publication/ai-now-2018-report-2.

Allen, J. 2011. "Powerful Assemblages?" *Area* 43 (2): 124–127. https://doi.org/10.1111/j.1475-4762.2011.01005.x.

Amoore, L., and R. Raley. 2017. "Securing With Algorithms: Knowledge, Decision, Sovereignty." *Security Dialogue* 48 (1): 3–10. https://doi.org/10.1177/0967010616680753.

Aradau, C., and T. Blanke. 2017. "Politics of Prediction: Security and the Time/Space of Governmentality in the Age of Big Data." *European Journal of Social Theory* 20 (3): 373–391. https://doi.org/10.1177/1368431016667623

Bekkers, F., P. Bolder, and M. Rademaker. 2020. "(Kortcyclisch) Innoveren Binnen Defensie: RAS-Casus." Hague Centre for Strategic Studies. https://hcss.nl/wp-content/uploads/2020/12/RAS-CDE.pdf.

Bellanova, R., K. Irion, K. Lindskov Jacobsen, F. Ragazzi, R. Saugmann, and L. Suchman. 2021. "Toward a Critique of Algorithmic Violence." *International Political Sociology* 15 (1): 121–150. https://doi.org/10.1093/ips/olab003.

Bijleveld-Schouten, A.Th.B. 2021. *Kamerbrief: Aanbieding onderzoeksrapport over experimentele LIMC*.

Bode, I., and H. Huelss. 2022. *Autonomous Weapons Systems and International Norms*. Montreal: McGill-Queen's Press-MQUP.

Boeke, S. 2014. "Nederlandse Oren en Ogen in Mali." *Atlantisch Perspectief* 38 (1): 1–5.

Brouwer, H. 2022. "Grondslag gezocht: Onderzoekscommissie Land Information Manoeuvre Centre (LIMC)." https://open.overheid.nl/documenten/ronl-72df34050463390a161d0e2b255aa1ca1683cedc/pdf.

[5]All references last accessed 24th November 2022.

Bueger, C., and T. Edmunds. 2021. "Pragmatic Ordering: Informality Experimentation and the Maritime Security Agenda." *Review of International Studies* 7 (2): 171–191. https://doi.org/10.1017/S0260210520000479.

Collier, S. J., and A. Ong. 2005. *Global Assemblages*. Oxford: Blackwell.

Demmers, J., and L. Gould. 2018. "An Assemblage Approach to Liquid Warfare: AFRICOM and the 'hunt' for Joseph Kony." *Security Dialogue* 49 (5): 364–381. https://doi.org/10.1177/0967010618777890

Demmers, J., and L. Gould. 2020. "The Remote Warfare Paradox: Democracies, Risk Aversion and Military Engagement." In *Remote Warfare: Interdisciplinary Perspectives*, edited by A. McKay, A. Watson, and M. Karlshøj-Pedersen, 34–47. Bristol: E-International Relations Publishing. https://www.e-ir.info/publication/remote-warfare-interdisciplinary-perspectives/.

Ducheine, P. A. L., P. Pijpers, and E. Pouw. 2022. "Information Manoeuvre and the Netherlands Armed Forces: Legal Challenges Ahead". Amsterdam Law School Research Paper No. 2022-12, Amsterdam Center for International Law No. 2022-07. SSRN: https://ssrn.com/abstract = 4113046.

Elder, R. J. 2021. "Information Manoeuvre in Military Operations". https://nsiteam.com/social/wp-content/uploads/2021/08/IIJO-Invited-Perspective_Info-Maneuver-in-Mil-Ops_FINAL-2.pdf.

Elish, M. C. 2017. ""Remote Split: A History of US Drone Operations and the Distributed Labor of War." *Science, Technology, & Human Values* 42 (6): 1100–1131. https://doi.org/10.1177/0162243917731523.

Gonzalez, R. J. 2021. *War Virtually. The Quest to Automate Conflict, Militarize Data, and Predict the Future.*. Oakland: University of California.

Gould, L., L. Arentze, and M. Hoijtink. Forthcoming. "Assembling the Future of Warfare: Innovating Swarm Technology within the Dutch Military-Industrial-Commercial Complex." In *Beyond Ukraine – Debating the Future of War*, edited by T. Sweijs and J. Michaels. London: Hurts.

Gregory, D. 2011. "The Everywhere War." *The Geographical Journal* 177 (3), https://doi.org/10.1111/j.1475-4959.2011.00426.x.

Gusterson, H. 1998. *Nuclear Rites: A Weapons Laboratory at the End of the Cold War*. Berkeley: University of California Press.

Hartog, R. D. 2019. "Snelle Innovaties Specialiteit van CD&E (Rapid Innovations are the Speciality of CD&E)." Landmacht 07. https://magazines.defensie.nl/landmacht/2019/07/09_snelle_innovaties_specialiteit_van_cde_07-2019.

HCSS (Hague Centre for Strategic Studies). 2020. "Documentaire: Robotisering bij de Nederlandse Landmacht." https://hcss.nl/news/documentaire-robotisering-bij-de-nederlandse-landmacht/.

Hoijtink, M. 2022. "'Prototype Warfare': Innovation, Optimisation, and the Experimental Way of Warfare." *European Journal of International Security* 7 (3): 322–336. https://doi.org/10.1017/eis.2022.12

Hoijtink, M., and M. Leese. 2019. Technology and Agency in International Relations. London: Routledge.

Hoijtink, M., and A. Planqué-van Hardeveld. 2022. "Machine Learning and the Platformization of the Military: A Study of Google's Machine Learning Platform TensorFlow." *International Political Sociology* 16 (2): 1–19. https://doi.org/10.1093/ips/olab036

Li, T. M. 2007. "Practices of Assemblage and Community Forest Management." *Economy and Society* 36 (2): 263–293. https://doi.org/10.1080/03085140701254308.

Mackenzie, D. A. 1990. *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance*. Cambridge, MA: MIT Press.

Maschmeyer, L. 2022. "A New and Better Quiet Option? Strategies of Subversion and Cyber Conflict." *Journal of Strategic Studies* 46 (3): 1–25.

Miller, C. 2018. "Inside the British Army's Secret Information Warfare Machine." WIRED, November 14, 2018. https://www.wired.co.uk/article/inside-the-77th-brigade-britains-information-warfare-military.

MoD. 2020a. "Defensie Visie 2035: Vechten voor een veilige toekomst." https://www.defensie.nl/downloads/publicaties/2020/10/15/defensievisie-2035.
MoD. 2020b. "Land Information Maneouvre Centre helpt Defensie Anticiperen." https://www.defensie.nl/actueel/nieuws/2020/11/16/land-information-manoeuvre-centre-helpt-defensie-anticiperen.
MoD. 2018. Defensie Innovatie Strategie: Samen Sneller Innoveren. https://www.defensie.nl/downloads/publicaties/2018/11/16/defensie-innovatie-strategie-2018
Nakayama, B. J. 2022. "Information vs the Cyberspace Domain." *Journal of Cyber Policy* 7 (2): 213–229. https://doi.org/10.1080/23738871.2022.2083976
Pellerin, C. 2017, July 21. "Project Maven to Deploy Computer Algorithms to War Zone by Year's End." US Department of Defense. https://www.defense.gov/News/News Stories/Article/Article/1254719/project-maven-to-deploy-computeralgorithms-to-war-zone by-years-end/.
Rijksoverheid. 2021. "Besluit op WoB-verzoek over Land Information Maneouvre Centre (LIMC): Openbaar gemaakte documenten." Deel 4, 5, 8, 9, 10, 11. https://www.rijksoverheid.nl/documenten/wob-verzoeken/2021/10/26/besluit-op-wob-verzoek-over-land-information-manoeuvre-centre-limc.
Shah, N. 2017. "Gunning for war: infantry rifles and the calibration of lethal force." *Critical Studies on Security* 5 (1): 81–104. https://doi.org/10.1080/21624887.2017.1330600.
Suchman, L. 2020. "Algorithmic Warfare and the Reinvention of Accuracy." *Critical Studies on Security* 8 (2): 175–182. https://doi.org/10.1080/21624887.2020.1760587.
Suchman, L. 2022. "Imaginaries of Omniscience: Automating Intelligence in the US Department of Defense." *Social studies of science* 0 (0), https://doi.org/10.1177/03063127221104938.
Van Daalen, A. F. 2017. "NetForce: een Nieuw model voor toekomstige Defensie." Militaire Spectator. https://www.militairespectator.nl/thema/strategie-operaties/artikel/netforce-een-nieuw-model-voor-toekomstige-defensie#:~:text = Als20basismodel20voor20de20toekomstige, mogelijkheden20die20mondiale20hyperconnectiviteit20bieden.
Van Dalen, J. A. 2020. "On Mind War". Militaire Spectator. https://militairespectator.nl/artikelen/mind-war.
Van Dalen, J. A., and P. A. P. Dekkers. n.d.. "Information Manoeuvre – Het Gebruik van Informatie als Wapen". https://nederlandseofficierenvereniging.nl/information-manoeuvre/.
Wilcox, L. 2017. "Embodying Algorithmic War: Gender, Race, and the Posthuman in Drone Warfare." *Security Dialogue* 48 (1): 11–28. https://doi.org/10.1177/0967010616657947.
Young, G. 2023. "Probe to Look into 77th Brigade Monitoring of UK Social Media Posts." The National, January 30, 2023. https://www.thenational.scot/news/23286961.probe-look-77th-brigade-monitoring-uk-social-media-posts/.