

TARTU UNIVERSITY
Faculty of Social Sciences
Johan Skytte Institute of Political Studies

Kai Pascal Beerlink

Multi-Layered Discourse Shaping Military AI: The Cases of Germany
and the UK

MA thesis

Supervisor: Thomas Michael Linsenmaier

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Authorship Declaration

I have prepared this thesis independently. All the views of other authors, as well as data from literary sources and elsewhere, have been cited.

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A handwritten signature in black ink, reading 'Kai Beerlink'. The signature is written in a cursive style with a large 'K' and a stylized 'B'.

Kai Pascal Beerlink, 09.05.2023

Abstract

Artificial intelligence (AI) is being increasingly utilized by militaries across the globe, with major powers like the USA and China leading the way. Indeed, from the perspective of various realist theories, it can be expected that all countries with sufficient resources for developing military AI capabilities will do so. However, there are instances of countries with sufficient resources not showing any substantial military AI practices, defying realist expectations. This study proposes an alternative explanation to realist theories for the differences in the scope of military AI practices by states, arguing that ideational conditions like norms, ethics, and identity are decisive rather than structural pressures. To answer the research question “What explains difference in the scope of military AI practices by states?”, the study formulates a theoretical framework integrating Strategic Culture and Sociotechnical Imaginaries as a country’s deeper discourse layers within Ole Wæver’s multi-layered discourse analysis model. This framework is then applied within a most similar systems design, controlling for realist conditions and selecting Germany and the UK as case studies with differing dominant discourses on military AI. Thereafter, detailed discourse analysis on dominant discourses on military AI is conducted for both cases, and their scope of military AI practices is determined based on the number of military AI applications, expert assessments, and specific instructions, policies, and doctrines for military AI. Germany showed a cautious dominant discourse on military AI and a limited scope of military AI practices, while the UK showed an embracing dominant discourse on military AI and a comprehensive scope of military AI practices. Hence, the discourse-theoretical framework developed in this study offers an explanation superior to realist accounts and contributes to the literature on military and security studies more broadly by offering an innovative approach to studying general enabling technologies. It also has important policy implications for AI arms control and diplomacy.

Keywords: artificial intelligence, military, Sociotechnical Imaginaries, Strategic Culture, discourse analysis, Germany, UK.

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1. Introduction

Artificial intelligence's (AI) importance for international security is constantly increasing. As noted by a growing body of literature, AI is widely expected to drastically change the nature of warfare due to its ability to process massive data amounts in a short time and find highly efficient but also unpredictable solutions to military problems, including autonomous killing (Payne 2018; Bartneck et al. 2020; Steff & Abbasi 2020; Kissinger & Schmidt & Huttenlocher 2021: 135-179; Sauer 2022). Hence, it is not surprising that great powers like the USA and China invest enormous sums in military AI (Johnson 2021). While estimates vary, the Pentagon and the Chinese army are assumed to each spend close to \$1 billion on military AI annually, and spending levels are rapidly growing (Harper 2022). But the spread of military AI is not limited to great powers. Since AI is software, it can quickly proliferate, so that smaller states can adopt the technology too (Altmann & Sauer 2017: 122-128). Indeed, in countries that are not world leaders but still economically and militarily capable, such as the UK and France, military AI applications are adopted on a larger scale (Franke 2019).

These proliferation dynamics of military AI have also been reflected from the perspective of International Relations theory. In particular, proponents of realist paradigms expect the super-powers' deployment of military AI to exert systemic pressures on other states to follow suit and enter a security dilemma. Following the logic of Offensive Realism, Maurizio Tinnirello (2018) argues that AI-enabled autonomous military capabilities will dramatically reduce the number of human deaths, require less human workforce, and overcome geographic barriers, thereby making military aggression more attractive and forcing all major powers to comprehensively embrace AI in their armed forces to effectively compete. Paul Scharre (2021) describes how speed superiority through AI leads to a security dilemma and a "race to the bottom" regarding safety standards. And Allen, Hodges, and Lindley-French (2021) point out that small and mid-sized countries like the European nation-states have a strong incentive to develop military AI capabilities to offset their limited military personnel and budgets and narrow the gap with powers like Russia. In short, from the angle of various realist positions, it can be expected that *all* countries with sufficient resources for developing military AI capabilities will do so. Only countries with insufficient resources will refrain from implementing this new technology in their militaries.

However, observable differences in the scope of military AI practices by states seem to refute these realist predictions. While some states with sufficient resources for developing military

AI capabilities like the UK follow the realist logic, others which also boast such resources defy the expectations, like Germany as a prime example. As this study will demonstrate, Germany and the UK have substantial AI expertise available and do not diverge strongly in terms of GDP, military expenditure, or major rivals in geographic proximity, all of which are relevant variables for major realist theories (Walt 1990: 22-25; Waltz 2010; Mearsheimer 2014: 43). However, the scopes of military AI practices differ substantially between the UK and Germany (Payne 2022; Borchert & Schütz & Verbovszky 2023), which contradicts the realist expectations outlined above. While realists might argue that structural pressures from the international system are not to be understood as strictly deterministic and domestic factors can lead to state behavior that is “irrational” from a realist perspective (Freire 2019), their theories do not offer a satisfactory and comprehensive explanation for outliers such as Germany. Moreover, other countries like Italy and Poland are reluctant regarding military AI too despite substantial technological and economic resources (Franke 2019; OECD 2022a; OECD 2022b), adding to a list of outliers from realist perspectives. Hence, if differences in the scope of military AI practices cannot be traced back to the factors considered decisive by realists, what explains the former?

Alternative explanation approaches for differing scopes of military AI practice are scarce in the academic literature. Some scholars focus on domestic rational choice perspectives, arguing that regime types and pressure groups like the military, the defense industry, and other political coalitions are decisive (Maas 2018, Maas 2019; Carlo 2021; Sauer 2022). Other authors explore military AI issues from constructivist and discourse-theoretical perspectives (Jones 2018; Zeng 2021; Bareis & Katzenbach 2022). Indeed, ideational conditions, such as a country’s dominant discourse, are a more promising starting point for investigating differences in the scope of military AI practices by states than rational choice perspectives, as military AI raises far-reaching questions regarding ethics as well as human and political identity (Kissinger & Schmidt & Huttenlocher 2021: 22). However, the mentioned scholars approaching military AI with constructivism and discourse theory do not investigate in detail if and how ideational conditions are linked to actual military AI practices. Researching this link is crucial for providing an alternative to the realist approaches that fail to explain observable differences.

Formulating such an alternative to realist accounts is highly relevant from both an academic and a practical perspective. While previous academic literature on the link between ideational conditions and military practices, in particular the Strategic Culture research field, has explored how norms, culture, and ethics shape either the general strategic preferences of a country or the use and development of specific military capabilities like nuclear weapons, such literature

has rarely investigated general enabling technologies like AI that can be utilized across a wide spectrum of applications. Developing theoretical frameworks for the study of such general enabling technologies in the military, however, is becoming increasingly important with the rise not only of AI but also other enablers like blockchain or quantum computing.

Beyond the academic realm, understanding what drives military AI practices is also crucial for politics. Most of all, assumptions about the causes for comprehensive or limited military AI practices will affect negotiations for AI arms control and military AI diplomacy. Whether one assumes rigid international structural pressures or malleable discourses to define military AI practices will shape the view on the feasibility of policy options. For example, if one follows the realist assumptions, a military AI arms race might seem inevitable, so that diplomatic efforts can be neglected; if, however, ideational factors drive military AI practices, ideas and norms regarding military AI might be changed by communication, opening new avenues for arms control. Considering the rapid development of and growing uncertainties about military AI, reflecting the assumptions behind military AI diplomacy is essential.

Against this background, this M.A. thesis aims to provide an alternative to realist perspectives on military AI by developing and demonstrating the plausibility and superior explanatory power of a discourse-theoretical account of the differences in the scope of military AI practices by states. In doing so, this study answers the following research question: “What explains difference in the scope of military AI practices by states?”

Rejecting the realist explanations introduced above, this study foregrounds discursive conditions instead, demonstrating that dominant discourse explains difference in the scope of military AI practices by states. For this purpose, this study will develop a theoretical framework combining Strategic Culture (SC), meaning a country’s principles and preferences for choosing means to achieve goals in international affairs, and Sociotechnical Imaginaries (STI), meaning collective imaginations of a desirable future driven by a specific technology, with Ole Wæver’s (2002) multi-layered discourse analysis model.

More precisely, it will be argued that a country’s SC combined with its STI shape its dominant discourses on military AI, which in turn condition the scope of military AI practices by the country. Hence, it is theoretically expected that a country with an embracing dominant discourse on military AI will show a comprehensive scope of military AI practices. In contrast, a country with a cautious dominant discourse on military AI will show a limited scope of military AI practices.

The way in which SC and STI shape dominant discourses on military AI, and eventually the scope of military AI practices by states, is scrutinized within a most similar systems design (MSSD) research framework. Germany and the UK were selected as cases of military AI practices by states since the two countries do not differ substantially regarding conditions considered decisive by realists, so that the study can control for the realist security dilemma as a factor and focus on an ideational explanation instead. The German dominant discourses on military AI can be described as cautious and the British as embracing. In line with the theoretical expectations and based on a yardstick for comprehensive and limited scope of military AI practices that entails the number of military AI applications, expert assessments, and specific instructions, policies, or doctrines for military AI, Germany should therefore show a limited scope of military AI practices, while the UK should show a comprehensive scope.

To investigate the condition “dominant discourse on military AI” in a first step, poststructuralist discourse analysis will be conducted for Germany and the UK to demonstrate caution in the German case and an embrace in the British case, referring back to the countries’ SC and STI as deeply ingrained meaning resources and using official governmental policy papers, parliamentary debates, news outlets, and think tanks as sources for the data corpus. For Germany, 25 texts were analyzed, while the number for the UK was 75. After that, the scope of military AI practices in Germany and the UK will be determined based on the number of military AI capabilities, expert assessments, and a review of their instructions, policies, and doctrines for military AI.

The remainder of this study is divided into four chapters. The next chapter will introduce the theoretical framework to formulate the study's central argument. Afterward, the methodology of the study, including research design, methods of poststructuralist discourse analysis, and methods for identifying the scope of military AI practices, will be described to provide the research tools for examining the theoretical expectations empirically in the discourse and practice of Germany and the UK. Then, the two cases, Germany and the UK, will be analyzed by reconstructing their SC and STI, investigating their dominant discourses, and determining their scopes of military AI practices to scrutinize the theoretical expectations based on empirical data. Finally, a conclusion will be drawn in the last chapter, and the theoretical expectations will be evaluated.

2. Theoretical Framework: Strategic Culture and Sociotechnical Imaginaries as Discourse Shaping Innovative Military Capabilities

This chapter argues that the development and employment of innovative military capabilities in general and military AI, in particular, are shaped by discourse. More specifically, it will suggest that a country's Strategic Culture combined with its Sociotechnical Imaginaries as elements of deeper discursive layers shape its dominant discourse on military AI, which in turn conditions the scope of military AI practices. In making this argument, this chapter creates the theoretical framework for analyzing discourse about and scope of military AI practices.

To make the reasoning mentioned above plausible, this chapter develops an approach to discourse analysis tailored explicitly to military AI. In doing so, it combines the concepts of Strategic Culture and Sociotechnical Imaginaries with Ole Wæver's (2002) multi-layered discourse analysis model. More precisely, the chapter argues that the concept of Strategic Culture is essential to understand how a country's general preferences towards strategic decision-making affect the scope of military AI practices and that the concept of Sociotechnical Imaginaries is necessary to understand how a country's visions and perceptions of AI in general shape the embrace of military AI in particular. Furthermore, the chapter will argue that both concepts can be best conceptualized as deeply rooted background discourses that shape the more specific discourse on military AI, and as such eventually also the scope of military AI practices by enabling and constraining decision-making. Therefore, Ole Wæver's multi-layered discourse model will serve as the theoretical framework integrating Strategic Culture and Sociotechnical Imaginaries as a country's deeper discourses shaping the discourse on military AI on the higher discourse layer, which in turn conditions the scope of military AI practices by states.

In the first step, this chapter presents a poststructuralist perspective on the relationship between discourse and policymaking to clarify basic definitions and illustrate how discourse shapes political actions. Consequently, the concepts of Strategic Culture and Sociotechnical Imaginaries will be introduced in detail. Finally, in the last section of this chapter, Ole Wæver's multi-layered discourse analysis approach will be merged with the concepts of Strategic Culture and Sociotechnical Imaginaries to formulate the theoretical framework, which will then serve as the basis for the empirical analysis.

2.1. Discourse and Policymaking

This section briefly introduces the relationship between discourse (as understood by poststructuralist authors) and policymaking. Exploring central theoretical arguments about the dynamics between discourse and policymaking on an abstract level lays the groundwork for developing a discourse analysis approach specifically tailored to the study of military AI in the following sections.

Even though it is a widely used concept in social sciences, the definitions of “discourse” are highly divergent. One of the main assumptions uniting poststructuralist discourse analysts is that reality is socially constructed and not simply objectively given. Discourses, in this sense, are the systems by which reality is partially (or, depending on the ontological position, wholly) constituted (Dunn & Neumann 2016: 2).

What distinguishes discourse analysis from the broader constructivist research field is the focus on language as the system generating reality (Larsen 2018: 64). As the two formative authors of contemporary discourse theory, Ernesto Laclau and Chantal Mouffe, understand it, discourse is the iterative articulation of patterns of words and concepts, producing a meaningful world that allows humans to deliberately act and relate to each other (Laclau & Mouffe 1985: 104-135). Assuming that meaning is conveyed by language, discourse analysts investigate how linguistic structures arrange reality and social relationships (Larsen 2018: 64). Moreover, discourse analysts tend to regard language as inherently social, and especially poststructuralist discourse theorists such as Laclau and Mouffe concentrate not on individual agency, but larger linguistic patterns that constitute a structure and its subjects (ibid.: 65; Jacobs 2019: 4-6).

Proponents of Critical Discourse Analysis (CDA), on the other hand, set out to scrutinize and potentially criticize how individuals utilize discourses for their own goals and therefore focus their analysis on the individuum (Chouliaraki & Fairclough 1999; Howarth & Stavrakakis 2000). Moreover, while poststructuralism commonly assumes that there is no meaning outside discourse (Dunn & Neumann 2016: 33-41), CDA argues that extra-discursive factors, such as material aspects, shape meaning (ibid.: 33-41). For this study, a poststructuralist approach to discourse analysis was chosen because the thesis aims to develop a distinctive alternative to realist and materialist explanations of the differences in the scope of military AI practices by states.

Central to the poststructuralist perspective is the concept of contingency and fluid social structures (Laclau & Mouffe 1985: 1-90). Basic linguistic elements are regarded as empty vessels

filled with meaning and structured in orders that, in theory, can always change (Larsen 2018: 66). Resulting from this contingency, poststructuralist discourse analysts are typically interested in struggles over meaning and in the competition between dominant and peripheral discursive formations (Milliken 1999: 230). The dominant discourse will set the norms and “truths” within which individuals can meaningfully interact and perceive themselves.

What characterizes dominant discourses is the naturalization of an order of words and concepts: a discourse is dominant if its assumptions and content seem so obvious and self-evident that they are rarely scrutinized within the analyzed society (Dunn & Neumann 2016: 118-119). Developing this concept further, Laclau differentiates between hegemony and heterogeneity. According to him, *hegemonic* discourses always require an antagonistic discourse against which hegemony is articulated to stabilize the logical order underpinning a particular hegemony (Laclau & Mouffe 1985: 122-127). More specifically, such an antagonism occurs if the specific content of a discourse and its internal differences are equalized and collapsed into a nodal point, which Laclau calls an empty signifier, and then articulated against an “other,” which is equalized into an empty signifier too and presented as threatening (ibid.; Jacobs 2019: 7-8). A typical example of such antagonism is the discourse on terrorism in Western countries, where all internal discursive differences of Western societies are collapsed into empty signifiers such as “liberal democracy” or “open society,” which are presented as being threatened by “terrorists,” the antagonistic empty signifier which equalizes all internal complexities of terrorist organizations (Jacobs 2019: 8).

For this study, *heterogeneity*, on the other hand, also describes the presence of a naturalized discourse; however, unlike hegemony, it is not characterized by an antagonism but rather a division between the meaningful naturalized discourse and meaningless, unintelligible words and concepts (Laclau 2005: 129-153). Laclau introduces the idea with the example of Marxist theory, which includes an antagonism between the proletariat and the bourgeoisie while essentially being oblivious to groups like beggars and homeless people (ibid.: 144-152). Hence, for Laclau, Marxist discourse is heterogenous regarding such unnoticed social groups.

Laclau’s distinction is highly relevant to the topic of this study. For example, *hegemonic* discourses on military AI could articulate themselves in naturalized antagonisms against other rising military AI powers, such as China, threatening national security and justifying the development of new AI capabilities. Or *heterogeneous* discourses on military AI could be characterized by naturalized metaphors such as “Terminators,” which exclude other more technical and less anthropomorphized conceptualizations of AI, thereby leaving them essentially

meaningless and irrelevant. This way, the heterogeneous exclusion of more technical and nuanced definitions of AI can facilitate a discourse stressing dangers and antagonisms, as between humans and “Terminator” AI.

Hegemonic and heterogeneous discourses can theoretically overlap and often do in practice. Moreover, heterogeneity stands in a close relationship to hegemony as the *facilitator* of the latter. Hence, even if hegemony and heterogeneity are not necessarily linked (Jacobs 2019: 8-9), they are summarized in the term “dominant discourse” for this study and only explicitly referred to as separate categories in the actual discourse analysis.

Dominant discourses constrain and enable social interactions and order. Acts, behavior, and ideas that contest or ignore the rules set by dominant discourses will very likely be sanctioned and rejected by the largest part of the respective society and its formalized institutions (Hewitt 2009: 7). For instance, in a community whose dominant discourse predominantly regards China’s increasing military AI power as an existential threat to national security that can only be countered by the development of own AI capabilities, arguments for unilateral military AI disarmament will likely be regarded as naïve and dangerous. Within the boundaries of a heterogeneous discourse depicting military AI as amoral and inhumane “killer robots,” arguments based on a more differentiated and nuanced image of military AI, including applications such as logistics, foresight, and intelligence gathering, will likely be ignored because they do not match the common understanding of military AI.

However, it is important to stress that the constraining and enabling force of discourse does not imply a deterministic logic. Discourses are never complete or fully coherent, resulting in contradictions and discursive “blank spaces” allowing subjects to act and be innovative (Jacobs 2019: 5-6). Dominant discourses can be better understood as “background capacities” (Milliken 1999: 231) constituting the actors, objects, and events that allow us to speak of causal mechanisms in the first place, as the epistemological and normative resources for causality to happen and be understood as such. Hence, while discursive structures may result in incoherencies and thereby allow for agency and subjective creativity, general patterns of action and thought are expected to be reproduced by the “background capacities.” In this sense, discourses can be analytically treated as constitutive explanations rather than direct causes (Norman 2021: 2).

If discourses are regarded as constitutive of reality in such a fundamental way, it follows that they also constitute the available information, causal assumptions, and norms behind

policymaking (Hewitt 2009: 7). In general terms, from a discursive perspective, policies are explicit rules, objectives, and norms that are derived from and legitimized by dominant discourse and brought into practice with the creation of procedures, capabilities, and institutions (Milliken 1999; Hewitt 2009).

Just like other members of society, policy-makers cannot entirely escape the “background capacities” that shape reality, as their ability to produce and process knowledge and to frame their actions is necessarily embedded in the dominant discourses (Jones 2009: 14-15). More than that, discourses also constitute authority for specific subjects to speak and make policies and the relevant audiences and their legitimacy criteria to judge the authorities’ acts (Milliken 1999: 229). In other words, discourses set the boundaries within which decision-makers can maneuver and define the actors that can legitimately sanction authorities if they overstep these boundaries. For example, in the case of military AI, a dominant discourse might qualify heads of the Defense or Foreign Ministry and military experts as actors authorized to make decisions on AI capabilities as long as they follow a basic understanding of AI as an essential tool to counter Chinese military power. If these authorities no longer follow this basic understanding, they might be sanctioned by superiors, such as the head of state or the voters in the next election.

When struggles over discursive hegemony and heterogeneity intensify, or external shocks make established discourse structures dysfunctional, these arrangements of legitimacy between authorities and audiences can alter. However, if dominant discourses are deeply entrenched (Wæver 2002), challenging them can be difficult even in exceptional, dynamic situations (Hajer 2009). This discursive inertia is because discourses are usually institutionalized in some form. Abstract policies and definitions of relevant objects and actors do not create a complete dominant discourse. Instead, policy implementation, the creation of procedures, capabilities, and institutions to bring policies into *practice*, is the next logical and necessary step (Milliken 1999: 241). A hegemonic discourse defining Chinese military AI as an existential threat to a country will not stop at this mere articulation of an antagonism. Instead, it will lead to developing and producing the country’s own military AI capabilities and strategic doctrines for using them.

However, to avoid misunderstandings, it is important to reflect the ontological nature of military AI practices. According to poststructuralism, even the production and use of, for example, physical unmanned AI-enabled vehicles is embedded within discursive formations and not something extra-discursive. While most poststructuralist scholars do not deny the existence of

a material world, they argue that this physical environment becomes *meaningful* for us only through the prism of a discourse (Laclau & Mouffe 1985: 100-135).

Summing up, this chapter first provided a basic introduction to the concept of discourse as systems of words and ideas generating a meaningful reality. Then, it pointed out the fundamental *contingency* of all discourses and the resulting struggles for discursive *dominance*. In line with Laclau, this dominance was further differentiated between *hegemony*, a naturalized and antagonistic discourse, and *heterogeneity*, a naturalized discourse that excludes words and concepts as unintelligible or meaningless. Finally, it was argued that discourses are *background capacities* that holistically constitute (but do not determine) the conditions, actors, and content of policies and their implementation. This discussion of the relationship between discourse and policymaking will serve as the basis for developing a discourse analysis approach specifically tailored to the study of military AI policymaking in the following sections.

2.2. Strategic Culture as an Approach to Study Military Policy

This study highlights the role that discourse as an ideational condition plays in military AI practices. The concept of Strategic Culture (SC) puts the focus precisely on this linkage between ideas and military policies or actions. More specifically, SC is a concept that aims to investigate the relationship between culture, including norms and beliefs, and strategic decisions, which are choices of means to achieve a set of ends in international affairs (Neumann & Heikka 2005: 6). In other words, a country's SC describes its principles and preferences for choosing means to achieve goals in relation to other countries. Hence, a country's SC can be expected to affect the scope of military AI practices as a means to achieve goals in international relations. Only by considering a country's deep-seated strategic preferences can its non-material motivations for embracing or rejecting military AI be understood.

This section provides an in-depth introduction to and modification of the concept of SC. In the first step, it will present an overview of the historical genesis of SC by discussing the basic assumptions and recurrent theoretical and methodological issues of the first three generations of SC scholars. The section then redefines SC as discourse based on criticism from the fourth generation of SC scholars. By undertaking this re-definition of SC as discourse, this chapter also lays the groundwork for incorporating SC into Ole Wæver's multi-layered discourse analysis model later, thereby paving the way for the final theoretical framework for analyzing discourse about and scope of military AI practices.

2.2.1. The Historical Genesis of Strategic Culture

According to most authors, the starting point of SC research was the study “The Soviet Strategic Culture: Implications for Limited Nuclear Operations” by Jack Snyder (1977). While considering cultural factors' influence on military strategy traces back at least a few hundred years (Uz Zaman 2009; Freedman 2013: 3-145), Snyder was the first to coin the term “Strategic Culture” and employ it for modern academic work. Interestingly, his research aim was to investigate the implications of historical and cultural differences between the USA and the Soviet Union for their respective nuclear weapon programs. Hence, SC research started with a focus on a specific military capability instead of a country's overall strategy, while military AI is a general enabling technology – an aspect to keep in mind for later discussions.

Snyder's definition of SC as “the sum total of ideas, conditioned emotional responses, and patterns of habitual behavior that members of a national strategic community have acquired through instruction or imitation and share with each other” (Snyder 1977: 8) was formative for what Johnston (1995: 36) calls the first generation of SC research. Emerging in the early 1980s, this generation's definitions of SC typically enclosed a wide range of factors, such as historical traditions, deeply ingrained behavior and practices, psychology, political ideology, geography, and more (ibid.: 37). Snyder's definition mentioned above, including such diverse aspects as “ideas,” “emotional responses,” and “habitual behavior,” is a case in point.

These broad definitions of the first generation overloaded the concept. They made it hard to determine SC's causal effect on strategic decision-making precisely (ibid.: 37). More than that, assuming nationally homogenous and temporally stable SC, first-generation researchers tended to regard SC as a deterministic factor defining military behavior in a fixed way, which prevented early research from explaining strategic change and unexpected empirical observations (Das 2010: 475). Finally, essential methodological questions were only unsatisfactorily answered by the first generation, lacking standards for source selection and analysis (Johnston 1995: 39). These criticisms from various angles resulted in the development of a second generation of SC scholarship.

The second generation, spearheaded by Bradley Klein (1988), aimed to solve the first generation's shortcomings by conceptually disconnecting traditions and norms on strategy from actual strategic practice (ibid.: 39). From this perspective, SC was not seen as a factor shaping strategic action, but rather as a rhetorical tool utilized by political elites to generate legitimacy for their decisions, which are taken based on objective interests independently from any SC

(ibid.: 39). Interestingly, it was the second generation that explicitly linked SC and discourse for the first time (ibid.: 40), albeit in the sense of an instrumental discourse that is the outcome of interests and not the explanatory factor. In the final analysis, the second generation's approach was diametrical to the original ambition of SC research, namely, to explain strategic decisions with ideational factors (Das 2010: 475-476). Hence, it did not take long for a third generation to emerge, attempting to fulfill the promises of the first generation finally.

Picking up where the first generation left off, the third generation, with Alastair Iain Johnston as the formative author, aimed to create a sharper analytical framework by slimming and specifying the definition of SC. Some of the most important theoretical decisions were to exclude behavior from the definition to avoid tautological arguments and to regard more recent historical developments of a country as the constitutive source for SC instead of deeply ingrained traditions to better account for empirical variation and change (Johnston 1995: 41). Johnston (1995: 46) himself aimed to create a falsifiable model by defining SC as

“an integrated ‘system of symbols (e.g., argumentation structures, languages, analogies, metaphors) which acts to establish pervasive and long-lasting strategic preferences by formulating concepts of the role and efficacy of military force in interstate political affairs, and by clothing these conceptions with such an aura of factuality that the strategic preferences seem uniquely realistic and efficacious.”

Johnston's conceptualization showcases the relevance of SC for studying military AI: SC defines which military AI applications are regarded as efficacious to reach specific goals in international affairs. Hence, SC ultimately shapes how military AI applications are considered as means to achieve a set of ends in international politics. For example, the development of autonomous AI-enabled drone swarms by the USA could be seen as a valuable means to reach the end of gaining a military advantage over China; however, such swarms could also conflict with the end of ethical warfighting that requires humans to make decisions to kill. Indeed, one of the most significant issues in the academic literature and public debate on military AI is the goal conflict between military superiority and ethical standards (Nørgaard 2017). This important aspect will be picked up later for formulating the theoretical framework.

Johnston's positivist reconceptualization of SC ignited an academic debate with another highly influential SC scholar, Colin Gray. The latter conceived culture as an inescapable context influencing and being influenced by everything it encounters (Gray 1999). Following this logic, Gray argued against a clear-cut separation between SC and behavior since actors could not avoid acting within culture, thereby always affecting it (Haesebrouck 2016: 775). Furthermore,

he discarded the positivist causal logic in favor of a hermeneutic research approach aimed at understanding and interpreting SC instead of considering it an explanatory independent variable (Haglund 2004: 488).

The Johnston-Gray debate was defining not so much because it solved the perpetual issues of previous generations but because it spurred a new intensive academic engagement with SC research and helped specify the open questions that still needed to be answered. Lock (2010) notes that even after the emergence of a third generation, three fundamental shortcomings of the Strategic Culture research approach still needed to be fully resolved. First and foremost, neither Johnston nor Gray could satisfactorily explain how SCs are constituted in the first place and which sources and mechanisms bring such a culture into existence – a point also raised by Das (2010: 477) and Lantis (2002: 103). Secondly, the third generation only vaguely described how SCs operate in practice, how they are stabilized over long periods, and how they translate into concrete policy and behavior (Lantis 2002: 103; Lock 2010). Linked to this shortcoming is the lack of a precise method to analyze SC (Lock 2010). Finally, even though the third generation attempted to account for changing SCs by moving the analytical focus to more recent formative experiences, authors such as Reeves (2021: 286) demand a more detailed conceptualization of the causes, dynamics, and consequences of strategic shifts. Connected to this criticism is the need to acknowledge a pluralism of competing strategic subcultures in a given country as one driver for change (ibid.: 286).

This set of theoretical and methodological flaws inspired the fourth generation of SC researchers, relying on constructivist epistemology, post-positivist research approaches, and discourse analysis to tackle the previous generation's problems. The fourth generation's arguments ultimately lead to the re-definition of SC as discourse, as demonstrated in the following section. Undertaking this re-definition of SC as discourse not only solves the mentioned problems of previous generations but also makes it possible to incorporate SC into Ole Wæver's multi-layered discourse analysis model later to arrive at the final theoretical framework.

2.2.2. Redefining Strategic Culture as Discourse

The advent of constructivism in International Relations and Security Studies, especially in the 1990s, also left its mark on SC scholars (Lantis 2002: 113). Instead of regarding SC in a positivist manner as an independent variable with measurable causal effects, researchers of the fourth generation slowly shifted to a post-positivist logic that stressed the role of language

(Neumann & Heikka 2005; Lock 2010). Specifically, SC was increasingly conceptualized as discourse, with fundamental consequences for the whole concept (Das 2010: 479).

At the core of this reconceptualization of SC is the idea of discourse constituting social reality and, more specifically, a culture that enables and constrains military and strategic decision-making. As described in the introduction section to discourse and policymaking above, discourse is a background capacity that holistically constitutes (but not determines) the conditions, actors, and content of policies and their implementation. SC, as understood by the first three generations, is about the cultural elements that shape strategic decisions, meaning choices of means to achieve ends in international affairs. Thus, SC as discourse is a subset of the broader discourse conditioning those actors, policies, and capabilities related to strategic decisions.

In other words, the “cultural elements” are translated into discursive formations allowing actors to make strategic decisions. It is precisely those discursive formations referred to as *Strategic Culture* in this study. While this re-definition broadens the scope of “culture,” it maintains the original ambition of SC research, namely, to explain strategic decision-making with non-material, ideational factors. Moreover, by putting SC on this new ontological fundament, the fourth generation was able to solve the three major problems that were left open by the third generation: how SCs come into existence, how they operate in practice, and how they reproduce themselves or change (Neumann & Heikka 2005; Lock 2010).

Solving the first issue, discourse theory could finally provide a clearly defined origin for SCs. Instead of tracing back vague historical traditions or assuming an invariable national strategic identity, researchers could now observe the creation of SCs by analyzing broader discourses producing them in the first place.

Tackling the second issue, discourse theory also made it possible to describe coherently how SC operates in practice. By shifting from a causal to a constitutive explanatory approach, researchers no longer need to construct complex and fragmentary causal chains reaching from abstract strategic identities to specific decisions. Instead, conceptualizing SC as discursive background capacities made it possible to imagine SC operating non-deterministically as a constraining and enabling condition for strategic decision-making.

Finally, since discourse analysis characteristically focuses on struggles for and contestations of dominant discourse, the fourth generation’s approach also opened new avenues for thinking about stability and change of SCs. Following the poststructuralist assumption that discourses are, in principle, always contingent, essentialist concepts of SC could be avoided. At the same

time, however, a re-definition of SC as discourse must account for the stability of SCs. After all, a distinctive feature of SC is that it is “definitely culturally path-dependent” (Neumann & Heikka 2005: 7). If SCs could change instantaneously, there would not be much value in regarding them as a decisive factor in strategic decision-making.

Hence, for the further analysis of SC as discourse, a discourse analysis approach is needed that is not deterministic but at the same time acknowledges a historically and institutionally ingrained path that is hard to contest and typically changes incrementally rather than abruptly (Haesebrouck 2016). For this reason, Ole Wæver’s multi-layered poststructuralist approach to discourse analysis was chosen as the framework into which SC as discourse will be incorporated. The distinctive feature of Wæver’s model is the assumption that discourses are not one-dimensional but rather organized in hierarchical layers: some discourses are deeply established and institutionalized so that they are hard to challenge and can form the logical basis for more contingent, easily changeable discourse layers (Wæver 2002: 32). This multi-layered structure acknowledges the stability of strategic traditions, a core feature of SC research, without relying on a deterministic argumentation. Later in this chapter, Wæver’s approach and the integration of SC as discourse into it will be discussed in detail.

2.3. Sociotechnical Imaginaries

A growing body of literature on the relationship between discourse and AI demonstrates that artificial intelligence cannot be solely treated as a technological phenomenon (Bareis & Katzenbach 2022; Köstler & Ossewaarde 2022). Instead, how society defines what exactly AI means and how it relates to other social and political concepts profoundly shapes the design and implementation of artificial intelligence.

This idea of social visions of future technology influencing concrete technical development is the core assumption underpinning the Sociotechnical Imaginaries (STI) concept. Introduced by Sheila Jasanoff and Sang-Hyun Kim (2013), STI is defined as “collectively held, institutionally stabilized, and publicly performed visions of desired futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology” (Jasanoff 2015: 4). In other words, STIs combine intersubjective ideas about how a good social order looks like, what certain technologies are and what they are capable of if further developed, and how these technologies can help realize visions of a good society in the future. Importantly, such imaginaries are not merely rhetoric. Instead, by collectively imagining a desirable future driven by a specific technology, public and private

investments into this technology are enabled and incentivized, and political measures are implemented to realize the imaginary (Sismondo 2020: 506).

Moreover, STIs are closely related to technological innovation. Indeed, innovations are often the core feature behind STIs, producing hypes about future possibilities enabled by groundbreaking inventions (Pfotenhauer & Jasanoff 2017: 6). STIs also serve to manage uncertainty and potential risks that go along with radical innovations potentially affecting most or all social dimensions by embedding them in known narratives and ideas about social order (ibid.). However, as STI scholars have pointed out, countries enormously vary regarding the risks associated with emerging and innovative technologies. For example, the USA traditionally stresses potential benefits over risks. At the same time, Germany, informed by its history, typically worries about losing control and shows a strong risk aversion in its STIs (Jasanoff & Kim 2013: 190-192).

As a concept focusing on technological innovation and its relationship with society, STI is a formidable tool for studying AI from a non-technical perspective. Indeed, the very notion of artificial “intelligence” can already be regarded as part of a STI, implying the idea of non-natural but human-like mental capabilities, an understanding that, according to many computer scientists, does not reflect the current technological potential and is a social construction rather than a neutral description (Köstler & Ossewaarde 2022: 250). As Bareis & Katzenbach (2022) point out, national STIs for AI vary enormously, including differing linkages between AI and security issues. Thus, AI must be regarded within its social context, specifically within the context of the respective national STI. How AI is collectively defined and characterized, what risks and potentials are associated with it, and what role is ascribed to this innovative technology for the future of society will significantly affect the scope of military AI practices. For example, STIs depicting AI as unsympathetic and power-hungry superintelligence can promote visions of military AI applications as dangerous “Terminators” that must be prohibited, while STIs imagining AI as human-controlled tools with very limited and specialized applications might legitimize some forms of military AI (Jones 2018; Santos de Carvalho 2018).

As mentioned in this section's beginning, the STI concept is closely related to discourse theory. STI shares a central assumption with discourse theory by assuming that intersubjective narratives enable and constrain technological and social development. Indeed, STIs are typically investigated with discourse analysis methods (Gjesvik & Szuleski 2023: 110-111). However, STIs “need to be stable enough that they are not just read into but can be seen to have the possibility of shaping terrains of choices” (Sismondo 2020: 505). Hence, similarly to the

discussion of Strategic Culture as discourse above, STIs need to be integrated into a discourse analysis approach that can account for historically and institutionally ingrained paths. For this reason, Ole Wæver's multi-layered post-structuralist discourse model is a suitable framework for analyzing STIs as discourse.

2.4. Merging Strategic Culture and Sociotechnical Imaginaries with Ole Wæver's Discourse Model

As the previous sections have demonstrated, the concepts of Strategic Culture (SC) and Sociotechnical Imaginaries (STI) are essential for understanding how ideational factors shape the scope of military AI practices. Applied to military AI, SC describes how a country's general principles and preferences for choosing means to achieve goals in international affairs affect the country's choice of military AI capabilities as a particular means. STI focuses on how AI is collectively defined and characterized, what risks and potentials are associated with it, and what role is ascribed to this technology for the future of a society, which will all shape the perception of any military AI application.

Furthermore, the previous discussions also argued that SC and STI could best be conceptualized as discourse. However, it was also pointed out that any discourse analysis approach for SC and STI must consider that while the concepts are not deterministic, both acknowledge a historically and institutionally ingrained path that is hard to contest and typically changes incrementally rather than abruptly. In other words, a discursive conceptualization of SC and STI must take into account both their relative stability and their non-deterministic shaping of more fluid discourses. This final section of the theory chapter will argue that Ole Wæver's multi-layered discourse model is the most suitable framework for fulfilling this requirement as it assumes a hierarchy of more deeply and superficially ingrained discourse layers. Hence, this section merges Wæver's approach with the concepts of SC and STI and presents the final theoretical framework and expectations.

The ontological fundament of Wæver's theoretical perspective is a classical poststructuralist argument: language is not merely reflecting the world but rather constituting it because the meaningful elements underpinning reality are generated by language. Wæver assumes that language is a fluid web of differences between concepts, a dynamic structure that constitutes the world we can refer to and allows us to produce meaningful statements (Wæver 2002: 29). A particular web of differences arranging our world is what Wæver calls a discourse (ibid.: 30).

Hence, similar to Milliken's "background capacities," Wæver regards discourses as the epistemological resources that allow meaningful acting within the world.

To achieve this function, discourses are necessarily intersubjective; they are not limited to individual subjects but rather logical structures that permeate our world and that individuals utilize to express themselves (ibid.: 26-27). Hence, Wæver's position reflects the relationship between discourse and policymaking as introduced in the first section of this chapter: political decisions can only be taken based on intersubjectively understood and accepted discourses (ibid.: 27). While Wæver also strives the idea of dominant discourses, he does not elaborate on that aspect in detail (Wæver 2005: 37). Therefore, for this study, Ernesto Laclau's differentiation between hegemonic and heterogenous discourses, summarized in the term of "dominant discourse", will be applied to Wæver's approach.

For the analysis of military AI, this implies the argument already put forward in the first section of this chapter: *hegemonic* discourses on military AI will be naturalized ideas about military AI that articulate themselves in antagonisms against other nodal points. *Heterogeneous* discourses on military AI will be characterized by naturalized epistemological understandings of military AI that exclude others as meaningless and irrelevant. Both hegemonic and heterogenous discourses set the non-deterministic but highly influential boundaries for policymaking on military AI.

What distinguishes Wæver's approach from the general argument on discourse and policymaking is the assumption of multi-layered discourses. Wæver proposes to analyze discourses as hierarchies composed of deeply ingrained basic layers that provide the fundament for more superficial layers. While all layers are theoretically changeable, deeper layers are more stable since they have been heavily institutionalized and provide the basic logical tenets for the generation and reproduction of more shallow layers (Wæver 2005: 32). Hence, Wæver's multi-layered structure can account for both discursive change and stability at the same time by differentiating between "degrees of sedimentation" (Wæver 2002: 32). Change is provoked by pressures to dominant discourses, meaning events, arguments, or developments that create or uncover contradictions and insufficiencies within a discourse layer and its implementations in policies and measures (ibid.: 40). While the higher discourse layers are not strongly "sedimented" and can therefore be altered by pressures rather flexibly, deeper layers are more ingrained, hence more stable even if pressure builds up. Only far-reaching, extreme pressures can change the basic assumptions of the deepest layers.

Applying his model to the analysis of European integration in security politics, Wæver demonstrates how his theoretical argument translates to empirical discourses. First, on the deepest discourse layer, he identifies “state-nation core concepts” as the basic definitions of what it means for a particular country to be a state and to be a nation (Wæver 2005: 39). On the next, more fluid level, he investigates how these fundamental state-nation core concepts relate to the idea of “Europe” (ibid.: 39). Finally, on the third and most fluid level, he researches what specific visions of Europe follow from the concepts of the previous two layers (ibid.: 39). As this argument illustrates, Wæver’s multi-layered approach is about identifying and explicating the “subconscious,” deeply ingrained assumptions that inform and shape current policies and debates.

It is essential to point out that Laclau’s concepts of hegemony and heterogeneity apply to each layer. It will always be the naturalized dominant discourses that define the most relevant content of a layer. Or, as Wæver himself writes, the “concept of a ‘dominant’ discourse becomes relative” (ibid.: 36) to the discourse layer in question. Put differently, just like there is a hierarchy of discourse layers, there is also a hierarchy of dominant discourses: one at the deepest layer, constituting the next one at the more superficial layer, and so on.

In a similar logic, SC and STI conceptualized as discourse can be incorporated into Wæver’s model. Since both SC and STI are about deeply ingrained discourses being developed and reproduced over decades or even centuries, these concepts can be expected to play a role in the deepest discourse layer that is the hardest to change. On this level, SC will define a country’s abstract ends to achieve in international affairs, such as national security, supranational integration, or ethical warfighting, and the abstract types of means to achieve these ends, for example, the use of military force for defensive purposes only, for democratic interventions, or the primacy of diplomacy over the military. STI will define the general tendencies on the role of innovative technologies for imaginations of social progress in a country, for instance, a strong risk-averseness and skepticism or a pronounced risk tolerance and enthusiasm for groundbreaking inventions.

On the second, more fluid level, the abstract ends and abstract types of means defined by SC on the deepest level are translated to more specific definitions of ends and means according to the contemporary strategic situation. For example, the goal of national security might be translated to developing military high-tech applications to keep up in a technology race with a rising adversary. The general risk-averse or risk-tolerant tendencies towards innovative technologies

defined by STI on the deepest layer will shape the view on AI in general on this second layer, for example, depicting the technology as dangerously superior to human intelligence.

With both SC and STI being part of the two deeper discourse layers, it is worthwhile to point out their interrelations. While in theory, both concepts stand for themselves and are not necessarily overlapping, they often do influence each other in practice. For example, general STIs producing a hype about a specific technology, such as AI, will likely also set a focus on AI capabilities as means to achieve ends in international affairs, thereby shaping a country's SC. Vice versa, a SC portraying a technologically superior adversary as a major threat could spur a STI emphasizing specific technologies that are regarded as means to protect and advance the own social model, thereby embedding these technologies within the own social identity. Therefore, discourses on military AI sit at the intersection of SC and STI and are likely to be shaped by both.

On the third and last layer, the definition of the contemporary strategic situation and the general view on AI, informed by SC and STI on the deepest layers, will shape the current discourse on military AI. For example, suppose the SC-informed portrayal of the current strategic situation implies the development of military high-tech applications, and AI is seen more as a controllable benefit than a risk. In that case, the discourse on military AI can be expected to be embracing, meaning military AI is predominantly seen as useful and legitimate, which enables a comprehensive scope of military AI practices.

If, however, the current strategic situation implies a primacy of ethical standards and diplomacy over any military force and AI is seen as rather uncontrollable, the discourse on military AI can be expected to be cautious, meaning that the usefulness and legitimacy of military AI are predominantly questioned. Furthermore, it could be the case that military AI is regarded as useful but not legitimate, for example, when it is depicted as a formidable tool for national defense purposes but is seen as not fulfilling the requirements of ethical warfighting. Or military AI could be regarded as legitimate but not useful, for instance, when it is seen as capable of differentiating between combatants and civilians but regarded as too slow or too hardware-demanding to be used on the battlefield.

Hence, a hypothetical typology of discourses on military AI can be formulated, structured by the axes of utility and legitimacy, which in turn are shaped and informed by the deeper discourse layers of SC's means-ends relationships and STI's epistemological and social shaping of AI. Only the combination of useful and legitimate can be expected to result in an *embracing*

discourse on military AI. In contrast, at least along one axis, all other combinations are skeptical of military AI, producing *cautious* discourse on military AI.

Furthermore, Wæver differentiates his model into a synchronic and a diachronic component (Wæver 2005: 39). The synchronic part explicates the basic and abstract logical structure that constitutes and reproduces reality (ibid.: 40), or, in other words, the constellation of discourse layers. The diachronic component is about the consequences of this structure: how does it generate, enable, and limit actors, policies, procedures, institutions, capabilities, and decisions (ibid.: 40)? In other words, the diachronic part is the discursive *practice*.

Applied to this study, the synchronic component is about the three discourse layers introduced above. For the diachronic component, the scope of military AI practices by states will be examined as practice. Since AI is a general enabling technology rather than a specific military tool, assessments of military AI should focus on specific, already or nearly deployable military AI capabilities to avoid falling for overblown hypes (Horowitz 2018). Hence, the “scope of military AI practices by states” will entail any AI-enabled official military capability that is already in use or close to being used. “Close to being used” includes capabilities already in production or at an advanced stage in the research and development process. The restriction to “official” military capabilities was made to exclude dual-use AI applications developed by civilian companies as they are not primarily driven by the state, which is the primary actor for this study. Only those military capabilities produced directly by the state or as an order for the state count.

Moreover, since AI can be broadly used in many military domains, “military capabilities” includes physical tools for battlefield use, such as AI-based autonomous vehicles, and military-related software, such as AI-enabled big data intelligence gathering tools. The requirement is that the AI-based capabilities, no matter how small or big, are designed to be used in or specifically for the country’s military. Finally, since the deployment of military AI capabilities often also requires specific instructions, policies, or doctrines (ibid.), these will also be considered as part of “military AI.”

For this study, there can be two scopes of military AI practices by states: comprehensive and limited. In line with the discussion on military AI capabilities above, the categorization for either comprehensive or limited is based on three conditions: the number of military AI capabilities already in use or close to being used, expert assessments of these military AI capabilities, and a country’s specific instructions, policies, or doctrines for military AI. This approach

to determining the scope of military AI practices by states entails quantitative and qualitative aspects of military AI. Only if military AI is adopted at scale, with a substantial qualitative role for the national military as assessed by experts, and embedded in a strategy and doctrines can it be assumed that a country is ambitious about it (Horowitz 2018). A more detailed discussion and definition of the thresholds for the “comprehensive” and “limited” categories can be found in the following methodology chapter.

Against the background of poststructuralist discourse theory, it is important to note that “dominant discourses on military AI” as the condition of possibility and “scope of military AI practices by states” as the practice enabled by discourse are not ontologically distinct but merely an analytical division. This study is looking for an internal match between the explanatory condition and the outcome. If a country’s dominant discourses on military AI are embracing, a comprehensive scope of military AI practices by the country according to its own definition and characterization of AI is expected. Vice versa, if a country’s dominant discourses on military AI are cautious, a limited scope of military AI practices by the country according to its own definition and characterization of AI is expected. If this internal link can be demonstrated, the core argument of this study, namely that discourse on military AI shapes the scope of military AI practices, is plausible. If there is a mismatch, the core argument of this study is implausible, and other potential conditions must be considered decisive.

After having defined “dominant discourses on military AI,” informed by SC and STI within Wæver’s multi-layered discourse model, as the condition of possibility and “scope of military AI practices by states” as the practice enabled by discourse, the whole theoretical argument and theoretical expectations underpinning this study can be formulated.

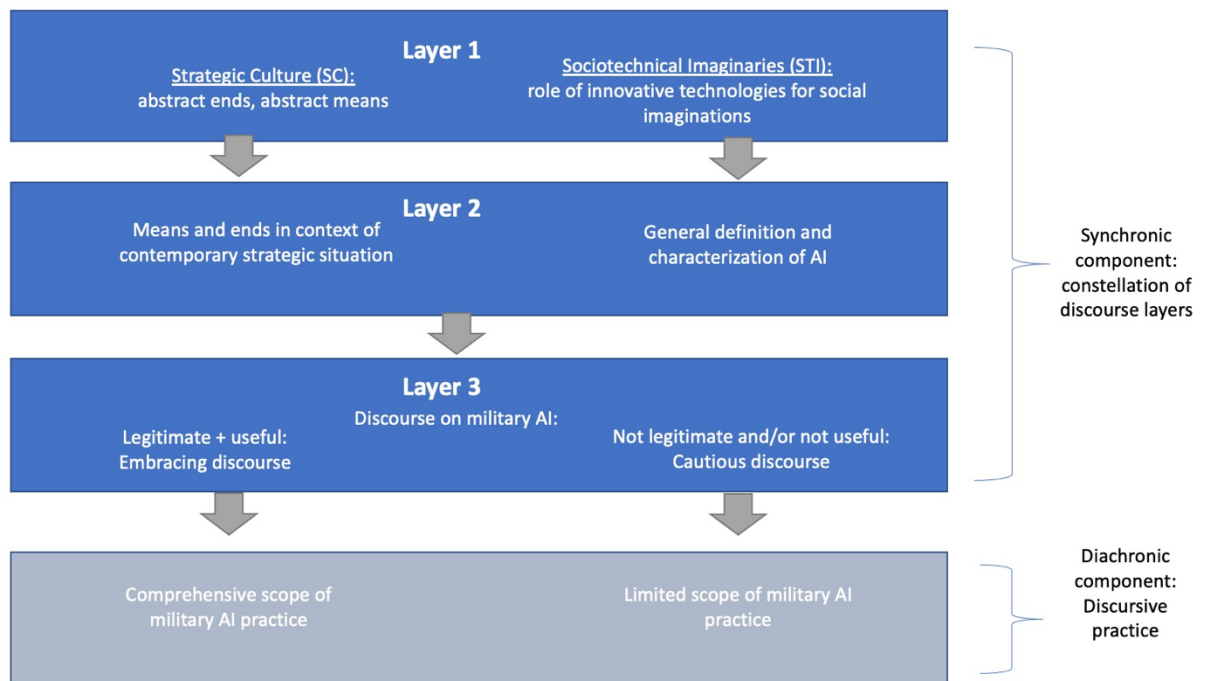


Figure 1: Layered model of Strategic Culture and Sociotechnical Imaginaries as discourse shaping military AI.

As illustrated in Figure 1, the logical point of departure is the concepts of SC and STI in their most general form as the deepest discourse layer. On this level, SC will define a country's abstract ends to achieve in international affairs. STI will determine the general tendencies regarding innovative technologies' role in the imaginations of a country's social progress. For example, the USA's general SC could set being *the* global leader, worldwide promotion of democracy, and national security as primary ends, and vast military superiority over any other country as one of the primary means to achieve these goals. These discursive formations could be organized in an antagonistic hegemony against the "enemies" of democracy and liberty. The USA's STI on the deepest layer could be characterized by a pronounced risk-tolerance and embrace of cutting-edge technologies deeply rooted in its liberal philosophy and progress-orientated vision of the future and enabled by a discourse heterogeneity that makes arguments about technology potentially leading to anti-liberal setbacks essentially meaningless.

On the second, more fluid layer, the US' SC gets specified by the contemporary strategic situation. For instance, US hegemonic discourse could regard China as an antagonist, a threat to

its global leader status, worldwide freedom, and national security. To stop China from overtaking the USA, there might be an SC-informed heterogeneous discourse that stresses the role of military superiority over China, especially in the realm of high-tech capabilities, while largely ignoring other potential avenues for keeping Beijing at bay. The STIs might translate to an AI hype on this level, characterizing this technology as a benevolent superhuman intelligence and one of the central building blocks for a prosperous future while heterogeneously excluding alternative understandings of dangerous AI.

Finally, on the third and most fluid layer, SC-informed discourse stressing military superiority over China and the STI-informed AI hype might lead to an embracing discourse on military AI. This discourse could regard AI as the only technology allowing the USA to keep a military edge over Beijing and legitimize military AI through its central role in the competition against China as a primary adversary to freedom.

Such an understanding of military AI would result in very loose boundaries for policymakers. As long as they respect the basic logic that AI is an essential tool for competing with China and thereby preserving freedom and national security, the US administration and the US military could produce and use risky and ethically controversial military AI capabilities, such as autonomous drone swarms killing combatants without human oversight. In countries with a SC prioritizing ethical warfighting over military superiority, developing capabilities such as autonomous drone swarms could spark significant protests and political opposition, raising the political costs for any decision-maker contemplating using such capabilities. However, in the hypothetical US example, such political resistance would be marginal and thus acceptable for policymakers. Hence, the USA could boast a comprehensive scope of military AI practices.

At this point, it is important to note once again that the argument laid out above does not imply a deterministic logic. Individuals and institutions can, in theory, always act in a way that contradicts the logic of a dominant discourse. However, due to the likely high political costs associated with such a decision, such outcomes are expected to be rare exceptions rather than the rule. For example, the US administration or individual US departments may resist or ignore the broader dominant discourses embracing military AI and refrain from producing substantial AI capabilities – but this will likely raise substantial criticism and pressure from oppositional political parties, voters, media, associations and so on. If such mismatches are found repeatedly in the later analysis, meaning that embracing discourses go along with a limited scope and cautious discourses go along with a comprehensive scope, factors other than SC and STI-informed discourse can be expected to be decisive for the differences in the scope of military AI

practices, for example, material and external parameters such as GDP, military expenditure, AI resources, or the absence or presence of major rivals in geographic proximity.

Having introduced the final theoretical framework, the theoretical expectations for explaining difference in the scope of military AI practices can be formulated now:

1. Embracing dominant discourses on military AI will produce a comprehensive scope of military AI practices by a state.
2. Cautious dominant discourses on military AI will produce a limited scope of military AI practices by a state.

As mentioned earlier, if a mismatch can be found, meaning an embracing dominant discourse occurring together with a limited scope or a cautious dominant discourse occurring together with a comprehensive scope, the theoretical expectations are defied, and some other explanation for difference in the scope of military AI practices must be considered. In the following chapter, the methodology for studying if these theoretical expectations hold empirically in the cases of Germany and the UK will be introduced.

3. Methodology

For the analysis of the discourse layers about military AI and the scope of military AI practices by states, this study relies on a most similar systems design (MSSD) research framework. Based on the work by John Stuart Mill, MSSD aims to isolate a condition A for an outcome B by comparing two or more cases that differ regarding A and B but are similar regarding other conditions potentially influencing B (Odell 2001: 167). In other words, MSSD attempts to eliminate alternative explanations for B and thereby substantiates the hypothesized relationship between A and B. Typically, MSSD only includes a few cases that are studied in-depth (Gerring & Thomas 2005: 11).

This approach is favorable for this study mainly because of two reasons. First, MSSD allows to directly oppose realist assumptions and the theoretical expectations brought forward by this study: it can be demonstrated that selected countries with different scopes of military AI practices do not differ substantially regarding conditions thought to be relevant by realists but do differ in terms of discourse on military AI. This way, a relationship between the discourses on military AI and the scope of military AI practices can be shown, explaining cases that were puzzling for realism. And second, since the following analysis will be based on extensive discourse analysis conducted by only one researcher, any large n research design is unfeasible.

This study's MSSD controls for the following conditions: a country's gross domestic product (GDP), military expenditure, available AI expertise and resources, and major geopolitical rivals in geographic proximity. This selection roughly covers the main conditions identified by various realist scholars. Economic power, as expressed in GDP, is considered a decisive factor in many classic realist theories as it limits and enables the development of military capabilities (see, for example, Waltz 2010). Thus, it should also condition the development of military AI capabilities. Other realist theorists argue that a more precise indicator is military expenditure, as it covers the economic resources that are actually mobilized for military purposes (Mearsheimer 2014: 43). For this study, the economic power argument can be refined even more by focusing on the resources mobilized for AI expertise and research. Finally, some realist scholars also consider the hostile intentions, offensive capabilities, and geographic proximity of geopolitical rivals (Walt 1990: 22-25).

For the selection of cases, countries are needed that are similar regarding all the above-mentioned realist conditions but differ in the discourse on military AI so that a difference in the

scope of military AI practices by states should be identifiable in the following analysis. The United Kingdom (UK) and Germany fulfill these conditions.

First, according to data by the World Bank, Germany's and the UK's most recent GDP figures only show a minor gap, with a German GDP of 4.26 trillion US-Dollars in 2021 (World Bank 2021a) and a UK GDP of 3.13 trillion US-Dollars for the same year (World Bank 2021b). A look at the GDP trajectory of the countries as tracked by the World Bank shows that both countries' GDPs were quite similar over the last few years and even decades, with Germany's GDP always slightly above the UK's but never exceeding the latter dramatically.

Both countries' military expenditure figures show a similar trend. Again based on World Bank data, the UK spent 68.37 billion US-Dollars on its military in 2021 (World Bank 2021c), while Germany spent 56.02 billion US-Dollars (World Bank 2021d). In recent years, the UK usually spent slightly more on its military than Germany, but between 2016 and 2021, the biggest gap between the countries has only been roughly 10 billion US-Dollars.

This study relies on the Digital Future Index for AI to compare the countries' AI expertise and resources. The index comprises several indicators, such as the level of AI talent, technical infrastructure for AI, the scope of research done on AI, and other elements. The higher the index score, the more advanced a country is in AI. For example, in 2021, Germany scored 5.1, while the UK achieved a slightly higher score of 6.4 (Catapult 2022).

Finally, both Germany and the UK face the same major geopolitical rival in geographic proximity: Russia. For instance, the British government's most recent "Integrated Review of Security, Defence, Development and Foreign Policy" describes Russia as "the most acute direct threat to the UK" (HM Government 2021: 26). Similarly, Russia's full-scale invasion of Ukraine in 2022 pushed Germany to reform and upgrade its military in dimensions that were unimaginable for many years (Mehrer 2022).

Hence, following the logic of various realist theories, the similarity of conditions between Germany and the UK, as described above, should result in no difference in the scope of military AI practices by the two states. However, the UK and Germany differ regarding the non-realist condition of discourses on military AI. Even though no comprehensive discourse analysis has been conducted yet for these two countries on this issue, explorative studies indicate that the UK's discourse embraces military AI while Germany's discourse is cautious, an observation that will be substantiated with the original discourse analysis conducted later in this study.

As research on the general discourse on AI in the country points out, Germany's dominant discourses are "marked by a certain alarmism about the future of the German economy" (Köstler & Ossewaarde 2021: 250) and promote "an AI imaginary along ethical lines" (Bareis & Katzenbach 2022: 871). German debates rarely address military AI, and security-related AI discussions focus on data protection and privacy (Eigler et al. 2019: 162). When AI is regarded in an explicitly military context, it is typically connected with the intention to limit potential risks and ethical concerns of this emerging technology rather than beefing up Germany's capabilities, an observation nicely summarized by Ulrike Franke (2019: 15): "Germany's public and political debate on AI in the military focuses almost exclusively on the control of autonomous weapon systems."

On the other hand, the discourses in the UK embrace military AI much more. For instance, a review of British media coverage on AI showed that "every outlet addresses issues of economics and geopolitics" (Brennen & Howard & Nielsen 2018: 5), with some articles providing detailed "arguments that the UK needs to increase military spending to update its military equipment and infrastructure and increase its capacity to fight cyber attacks" (ibid.: 6) because of the strategic innovations unleashed by AI. While there are also discursive nodes highlighting ethical and pragmatical issues of military AI (ibid.: 6), they usually are not outright rejections of AI-enabled military capabilities but calls to make the latter legally and morally sound (ibid.: 7; Cath et al. 2018).

Summing up, while Germany and the UK are similar regarding conditions that realists would expect to influence the scope of military AI practices, there is reason to expect that they differ regarding the dominant discourses, with the UK's discourses embracing military AI while Germany's discourses are cautious. Therefore, based on the theory outlined in the previous chapter, Germany's scope of military AI practices can be expected to be limited and the UK's scope to be comprehensive. The complete logic of this MSSD is illustrated in Table 1.

Table 1: MSSD framework for Germany and the UK.

	<u>Controlled Condition</u> 1: GDP (in trillion, 2021)	<u>Controlled Condition 2:</u> Military ex- penditure (in billion, 2021)	<u>Controlled Condition</u> 3: Digital Future In- dex for AI (2021)	<u>Controlled Condition 4:</u> Major rival in geo- graphic proximity	<u>Difference in condition of possibility:</u> Dominant discourses on military AI	<u>Expected dif- ference in practice:</u> Scope of mil- itary AI prac- tices by states
Germany	4.26	56.02	5.1	Russia	Cautious	Limited
UK	3.13	68.37	6.4	Russia	Embracing	Comprehen- sive

3.1. Methods of Poststructuralist Discourse Analysis and Source Selection

To conduct discourse analysis on the dominant discourses about military AI, Ole Wæver's theoretical approach needs to be translated into concrete methodological steps. Therefore, this chapter relies on Wæver's reflections on discourse analysis methods, supplemented and specified by additional methodological literature.

As the theoretical framework's logical starting point, how can deeper discourse layers and the Strategic Culture (SC) and Sociotechnical Imaginaries (STI) located there be identified? According to Wæver, constructing such a detailed multi-layered model usually requires long-term discourse analysis spanning over years, decades, or even centuries to identify central patterns and their logical hierarchies (Wæver 2005: 39). This is not a feasible approach within the scope of this study. Instead, this study will rely on secondary literature on German and British SC and STI, focusing on those works conceptualizing SC and STI as discourse to reconstruct the first two layers of the multi-layered model. While this approach might not be as precise and theoretically coherent as conducting original long-term discourse analysis, it is sufficient to determine general tendencies. Moreover, since for the third and most important layer, the dominant discourses on military AI, original discourse analysis will be conducted, it can be examined if there is a logical match with the deeper discourse layers, and incoherencies can be investigated further.

How can the third layer, discourses on military AI, be researched? For Wæver, discourse analysis is an iterative process of looking “for key concepts and their mutual relationship” (Wæver 2005: 41) in many relevant texts. In this sense, discourse analysis is primarily *inductive* work, implying that meaningful concepts emerge from the discourses themselves and do not necessarily correspond to pre-conceived analytical categories (Wæver 2002: 38-39). Hence, analytical tools for discourse analysis primarily serve as instruments to gain orientation and help identify the main discourse concepts, but not as strict categories that are necessarily to be found in the discourses. This needs to be kept in mind when discussing the following discourse analysis tools.

Expanding on his inductive discourse analysis approach, Wæver (2002: 41) recommends focusing on the following aspects:

“What are the powerful categories on which the argument rests, how are they related, are some concepts presented as, by necessity, companions (...), are some presented as self-evident opposites (...)? More interesting than the arguments made are the assumptions not stated, but necessary for the argument to be meaningful, the structural arrangements of key concepts, and chains of equivalence and oppositions.”

It is worthwhile to disentangle this dense paragraph and elaborate further on some methods of particular interest for this study. Since the study aims to identify dominant discourses on military AI, it should specifically focus on the “assumptions not stated” and the “chains of equivalence and oppositions.” Wæver refers to the implicit and naturalized logical nodes and their relations underpinning a discourse. As discussed in the theory chapter, both hegemonic and heterogenous discourses are characterized by naturalization and “obviousness,” or in other words, they are based on those assumptions and deduced logical chains which are not explicitly stated but implicitly assumed and which frequently reoccur in a vast body of texts. Thus, the first step for identifying hegemonic and heterogenous discourses is to find discursive formations prominent in most analyzed documents and based on naturalized assumptions and logic.

A fruitful way to uncover these naturalized assumptions and logical chains is so-called deconstruction, which involves the following procedure: by engaging in a critical “dialogue” with the texts, by analytically “asking” the text where its logical structure originates, the researcher scrutinizes and traces back the foundations of the discourse (Dunn & Neumann 2016: 109-110). For this procedure, the two deeper discourse layers about SC and STI reconstructed with secondary literature will be a helpful guide since they can be expected to contain already many

deeply ingrained and naturalized assumptions in an explicit form. If naturalizations can be identified by applying the deconstruction method, the analysis can proceed to determine if the naturalized discourse is hegemonic or heterogenous and if it can be characterized as cautious or embracing.

Considering that hegemonic discourses contain an antagonistic element while heterogeneous discourses exclude words and concepts as meaningless and unintelligible, the following analytical step focuses on what Wæver calls “companions” and “opposites.” With these terms, Wæver points out how identities are constituted by the othering of one group against another. For the constitution of an identity, the other must be explicitly or implicitly known (Hansen 2006: 41-42). Such othering can also take on an antagonistic character. As discussed in the theory chapter, an antagonism is given if internal differences of a discourse are collapsed into an empty signifier, such as “liberal democracy,” that is presented as threatened by another empty signifier, such as “autocracies.” Hence, a hegemonic discourse is identified if a naturalized discourse contains othering of an antagonistic quality.

To investigate othering and antagonism, several discourse analysis tools can be of help. The first such tool is predicate analysis. This method concentrates on the adjectives, adverbs, and verbs frequently linked to nouns (Dunn & Neumann 2016: 111), allowing to identify othering between signifiers based on the opposing predicates ascribed to them. For example, in the context of an AI arms race, antagonistic othering between the “liberal,” “open,” “ethical,” and “peaceful” UK vs. “autocratic,” “closed,” “immoral,” and “aggressive” Russia could be expected.

Another discourse analysis tool that ties into othering is metaphorical analysis, which examines the generation of meaning using metaphors (ibid.: 114-115). One example is “Terminator” as a metaphor for unpredictability, inhumanity, and extreme aggressiveness stemming from high-tech robots. In the context of military AI, a depiction of Russia or China using “Terminators” could contribute to the discursive construction of unethical and aggressive antagonists. For this analysis, the two deeper SC and STI discourse layers will provide the necessary context to understand deeply ingrained connotations of specific empty signifiers, adjectives, adverbs, and metaphors.

Antagonistic othering and the related tools of deconstruction and predicative and metaphorical analysis also help categorize discourses as cautious or embracing. As discussed in the theory chapter, whether a discourse on military AI is cautious or embracing essentially depends on

whether it presents military AI as legitimate *and* useful or not. The criteria of legitimacy and utility are closely linked to the antagonisms constructed by othering. For instance, if the UK sees itself in an antagonistic competition between its model of liberal democracy vs. Chinese autocracy and regards Chinese military AI capabilities as one of the central dimensions of this rivalry, the development of such military AI capabilities could be legitimized by the end of preserving and advancing British democracy and assessed as useful being the only way to balance Chinese AI capabilities.

Similarly, predicates such as “ethical,” “effective,” “necessary” military AI and metaphors such as “silver bullet” are signs for an embracing discourse. In contrast, predicates such as “immoral,” “uncontrollable,” “unpredictable” military AI, and metaphors such as “Terminator” are indicators for a cautious discourse. Expressed more abstractly, othering that predominantly portrays military AI as an inherent characteristic and useful tool of “us” in antagonism against the other, and/or as a means to acquire for “us” to prevail in this antagonism, and predicates as well as metaphors about military AI that positively relate to characteristics otherwise used to describe “us” and “our” needs in this antagonism suggest an embracing AI discourse. In contrast, othering that portrays military AI as an inherent characteristic of the “other” and/or as an immoral/useless means to prevail in the antagonism against the “other” and predicates as well as metaphors about military AI that negatively relate to characteristics otherwise used to describe “us” and “our” needs in this antagonism suggest a cautious AI discourse. What characterizes “us” and the “other” as well as “AI” is expected to be informed by the two deeper discourse layers on SC and STI, which will therefore serve as an analytical guide again.

If a naturalized discourse does not contain othering with an antagonistic character, *heterogeneity* can be analyzed by investigating which words and concepts the discourse excludes as meaningless and unintelligible. To do so, the method of deconstruction, as introduced above, can be used again. Uncovering the naturalized assumptions and logical chains underpinning a discourse can also help determine which aspects and concepts the discourse is oblivious to. It requires extensive knowledge about military AI to identify such “blank spots” of discourses, which the author of this study has acquired by studying secondary literature and discourses on military AI in countries other than Germany and the UK. In the same way, it can also be determined if heterogeneous discourses overlap with hegemonic discourses.

The analysis of heterogeneity is also closely linked to the categorization of cautious and embracing. The aspects and concepts a discourse excludes can heavily affect utility and legitimacy. For example, if a discourse is oblivious primarily to lethal autonomous weapon systems

(LAWS), which are arguably the most unpredictable and ethically, legally, and operationally most questionable form of military AI applications (Amoroso & Tamburrini 2020), this might lead to ignorance about complex moral and political issues and thereby depict military AI as more legitimate and useful than it would have been the case had it not been for the heterogeneous exclusion of LAWS. Expressed abstractly, heterogeneous discourses excluding military AI concepts and characteristics that would have been considered illegitimate and/or not useful according to the logic of the discourse *facilitate* an embracing discourse on military AI. Vice versa, heterogeneous discourses excluding military AI concepts and characteristics that would have been considered legitimate and/or useful according to the logic of the discourse *facilitate* a cautious discourse on military AI. To analyze if these facilitations lead to embracing or cautious discourses, they must be regarded together with the hegemonic discourses and their predicates and metaphors as described above.

In summary, the upcoming analysis chapter will reconstruct the two deeper discourse layers based on secondary literature about Germany's and the UK's SC and STI. Then, it will identify dominant cautious and embracing discourses inductively, with the tools of deconstruction, othering, predicate analysis, and metaphorical analysis providing analytical orientation. Finally, the two deeper discourse layers will continuously serve as a guide and context to understanding connotations and implicit assumptions on the third layer.

After discussing poststructuralist discourse analysis methods, the choice of texts as the material for the analysis needs to be explicated. When investigating political phenomena, it seems natural to focus on official policy documents and leading politicians; however, as Wæver (2005: 40) points out, politicians communicate strategically and might obscure essential aspects of the underlying logic behind their rhetoric. On the other hand, academic researchers and media can afford more explicitness and make recurrent discourse themes more evident in their texts.

Hence, while it seems counterintuitive at first to select secondary sources like general media publications and academic articles for political and military discourse analysis, it is essential to note that "secondary material might itself become primary material, either by being key texts repeatedly quoted in official discourse or wider public debate or (...) as exemplars of academic discourse" (Hansen 2006: 74). Bearing in mind that military AI is an issue provoking vivid public imaginaries displayed in media and being driven by experts at the intersection of technology, politics, and strategy, including these two additional source types next to official political documents and statements allows creating a more precise and comprehensive representation of the dominant discourses.

However, these three source types require more specifications to be applicable. For this purpose, Hansen's three criteria for text selection are an appropriate starting point: "texts should be selected that meet the following three criteria: they are characterized by the clear articulation of identities and policies; they are widely read and attended to; and they have the formal authority to define a political position" (Hansen 2006: 76). Based on these criteria, the three source types can be specified as follows.

First, to include texts that hold "formal authority to define a political position" and are "widely read and attended to," the source type of political discourse will be focused on official governmental policy papers that refer to military AI in some way (especially those published by the Ministries of Defense and its sub-structures) and on speeches and statements given by members of the German and British governments and parliaments.

Second, to account for widely read and clearly articulated texts, the source type of media will be focused on the top five leading political online media outlets in Germany and the UK, as their reach is bigger than offline print media.

And third, regarding academic discourse, the focus will be on leading think tank publications. As institutions advising governments and politicians while conducting independent research, think tank discourse can be categorized as semi-formal yet clearly articulated.

Hence, these three source types complement each other by adding authoritative, explicit, and/or widely read content to the data corpus. To identify the actual text documents for the political source type, the OECD AI Policy Observatory, official websites of the German and British governments, their ministries, and their archives of parliamentary speeches were manually searched. For the leading political online media outlets, a top-five selection for each country was made based on the most recent market share data. For Germany, the online media includes t-online, Bild, Focus Online, Chip, and Welt (Statista 2022). In the case of the UK, the list consists of BBC, The Sun, Mirror, Mail Online, and The Independent (Majid 2022). Finally, the most influential three think tanks of each country researching security politics and AI were selected for academic discourse. For Germany, SWP, DGAP, and Stiftung Neue Verantwortung were chosen (Orrico et al. 2022). For the UK, the IISS (On Think Tanks 2023a), RUSI (On Think Tanks 2023b), and Chatham House (On Think Tanks 2023c) were selected.

For all source types (official governmental policy papers, parliamentary debates, news outlets, and think tanks), all content with the words "military" and "artificial intelligence"/"AI" (in German: "Militär," "Künstliche Intelligenz," and "KI") in the title or body of the text were

manually selected and retrieved from the online sources. The time frame for this search spans from 01.01.2016 to 18.04.2023. This range includes the preparation and publication of Germany's and the UK's major AI strategies, and therefore debates on AI applications accelerated in the two countries at this time. Then, in a second step, all retrieved texts were skimmed to select the most relevant texts for discourse analysis. More specifically, texts that only referred to military AI as a side note were excluded from the final text corpus for discourse analysis.

In total, 301 texts were retrieved from the mentioned online sources and manually skimmed, and 100 texts were selected as sources for discourse analysis. Notably, more texts on military AI could be found in UK sources compared to German ones. Furthermore, most texts selected for discourse analysis are from the types of news outlets and think tank reports, which reaffirms previous observations made by other authors that military AI is only rarely publicly debated and commented on in German and British parliaments and governments (Dahlmann & Dickow 2019: 7; Franke 2019). A detailed overview of the text corpus can be found in Table 2.

Table 2: Data selection for discourse analysis.

Text Type	Germany	UK
Retrieved in total	93	208
Selected for discourse analysis, total	25	75
Official governmental policy papers used for discourse analysis	2	3
Parliamentary debates used for discourse analysis	0	3
News outlet articles used for discourse analysis	17	56
Think Tank reports used for discourse analysis	6	13

3.2. Methods for Identifying the Scope of Military AI Practices by States

As explained in the theory chapter, the scope of military AI practices can be either comprehensive or limited, depending on three conditions. These three conditions reflect discursive practice; in other words, they are not ontologically distinct from discourse, but rather the specific application of more general concepts and policies that are dominating in a discourse. Hence, as discussed in the theory chapter, the separation between dominant discourse and scope of military AI practices by states is merely analytical, and what is investigated here is if there is a match between embracing discourse and comprehensive scope, and cautious discourse and limited scope.

The *first* condition is that the country should boast at least five military AI capabilities already in use or close to being used. The number of five was derived from a comparison with the USA and China, which are widely seen as the globally leading military AI powers. According to a report from 2019, the USA has at least 10 and China at least between 15-25 military AI applications in use or development (Morgan et al. 2019: 49-70). Assuming that the number should be significantly higher when new projects started since 2019 and secret applications are considered, a yardstick of at least five applications for the considerably smaller countries Germany and the UK is reasonable.

To measure this first condition, all texts retrieved for the discourse analysis will be searched for mentions of concrete military AI applications in Germany and the UK. It can be assumed that any such capabilities would be mentioned at least in one of the source types (official governmental policy papers, parliamentary debates, news outlets, and think tanks). Those capabilities already used by a state's military, in production, or at an advanced stage in the research and development process are counted.

Second, these military AI capabilities are regarded as substantial for the country's military by the majority of expert assessments. "Substantial" means that the AI capabilities are seen as a significant contribution to the country's military, implying that the military could not perform important functions and tasks at the same level without AI. This study relies on expert assessments for categorizing military AI capabilities as substantial or not because experts can evaluate these applications within the broader context of a country's military. This assessment would go beyond the scope of this study and is therefore delegated to these experts.

"Experts" are defined as all professional researchers who primarily work on security and military issues and are associated with think tanks and universities. Any texts by such experts

assessing the total or specific military AI capabilities of Germany and the UK published within the period of 01.01.2016 to 18.04.2023 was manually collected using the academic search engines Google Scholar, JSTOR, ResearchGate, and ScienceDirect¹ as well as the websites of all think tanks in these two countries working on security and military issues as listed in the Open Think Tank Directory (On Think Tanks 2023d). These search engines and think tank websites will be searched with the keywords “military” *and* “artificial intelligence”/“AI” *and* “UK” (for Germany in both German and English: “Militär” *and* “Künstliche Intelligenz”/“KI” *and* “Deutschland” as well as “military” *and* “artificial intelligence”/“AI” *and* “Germany”). From the collection of texts retrieved this way, all assessments of the countries’ AI capabilities will be selected for the final corpus of assessments. If the majority of these assessments regard the total or partial military AI capabilities as substantial for the respective country, this condition will be fulfilled.

Hence, the quality of these assessments is mainly assured by the association of the experts with institutions that usually require in-depth thematic expertise to work there. While the quality standards of universities and think tanks might vary significantly, the fact that the majority of assessments are deciding should at least partially neutralize potential biases and lack of professional standards among individual assessors. Moreover, while the experts might focus their assessments on different AI-enabled capabilities, collecting several assessments makes it possible to observe a general tendency towards substantial AI capabilities.

And *thirdly*, specific instructions, policies, or doctrines for military AI exist, setting a clear goal for military AI and defining how to use it. All policy documents already selected for the discourse analysis will be scrutinized to determine if they, as a whole, set a clear goal for military AI and define how to use it. The decisive aspect is the clarity and specificity of the goals and instructions: do they go beyond abstract definitions, and are they applicable in practice? Only if they do this condition can be regarded as satisfied.

The scope will be considered “comprehensive” only if the three conditions are fulfilled. It will be considered “limited” if at least one of these conditions is not fulfilled. While this dichotomous distinction is a rather rough categorization of the scopes of military AI practices, it is sufficient for the study’s aim of establishing if there is a link between discourse and scope of military AI practices by states. The threshold of fulfillment of all three conditions for

¹ These engines were chosen because of their vast databases.

“comprehensive” was chosen to ensure that a comprehensive scope entails both quantitative and qualitative dimensions of military AI.

Lastly and importantly, it must be pointed out that discursively constituted definitions and characterizations of “AI” may be highly different so that countries might label their capabilities AI-enabled even though they are not based on the same technology. Hence, the scope of military AI practices can only be examined *from within the logic* of each country’s discourse. Thus, for all three conditions mentioned above, AI is defined as anything that the dominant discourses label as “AI.”

3.3. Discussion: Limits of the Chosen Methodology

A major component of the study at hand is discourse analysis on the phenomena of military AI. In that regard, it must be stressed that poststructuralist discourse analysis is interpretative work and, therefore, always depends on the researcher’s cultural background to a certain extent (Angermuller & Schwab 2014). Adding to that, since discourse analysis is primarily the analysis of language, it is essential to note that the author of this study is a native German speaker and a non-native but proficient English speaker. Consequently, the research results might be influenced by the author’s linguistic and personal proximity to Germany, its culture and politics, and the author’s more distanced personal and linguistic relation to the UK. However, the fact that the author has spent several years living and studying abroad should enable him to keep an academic distance from German discourse. At the same time, the author consulted secondary literature on specific political and cultural aspects of the UK when necessary to understand puzzling formulations in British discourse.

Furthermore, while limited resources made it impossible to add additional quality control strategies, for example, two or more independent researchers analyzing the data corpus (Flick 2019: 475-482), the following analysis will attempt to make the author’s interpretation process as explicit as possible by describing the reasoning in detail (Angermuller / Schwab 2014: 648-649). Nevertheless, subjectivism is, to a certain extent, an inherent and legitimate feature of discourse analysis (Keller 2011: 76).

Another caveat concerns the access to data for the discourse analysis and the assessment of the scope of military AI practices. Not all publications of the selected media outlets, think tanks, and academic institutions are freely available. Due to limited resources for this study, fee-based content could not be included in the analysis.

Finally, the chosen research design also comes with specific limitations. For one thing, this study's MSSD is based on two cases, Germany and the UK. Adding more cases lies beyond the scope of this work. Nevertheless, relying on only two cases is a severe limitation to demonstrating the plausibility of this study's theoretical argument, as other cases might require theoretical refinement or a different theoretical focus.

4. Analysis of Germany and the UK: Dominant Discourses on Military AI and Scope of Military AI Practices

The two case studies, Germany and UK, will be analyzed individually in this chapter. First, for each country, the two deeper discourse layers and the Strategic Culture (SC) and Sociotechnical Imaginaries (STI) located there will be reconstructed using secondary literature. Following that, the results of the discourse analysis conducted on the topic of military AI are presented. Finally, each country's scope of military AI practices and their match with the dominant discourse on military AI will be determined.

4.1. Germany's Strategic Culture and Sociotechnical Imaginaries

The single most important episode for Germany's SC was the destructive experience of the Second World War, which according to the scholar Hanns W. Maull, led to the formation of three main pillars for German strategic thinking: "never again," "never alone," as well as "politics before force" (Maull 2011: 100). These three abstract principles have been singled out as the concepts guiding German foreign and security politics ever since 1945 by numerous authors (Giegerich & Terhalle 2021: 24; Techau 2011). Hence, it is reasonable to select them for characterizing Germany's SC on the deepest layer.

According to Maull, "never again" is a consequence of the annihilation, suffering, and eventual self-destruction pursued by the totalitarian Nazi regime (Maull 2011: 100). Having learned from this history and determined to avoid its repetition at any costs, "never again" entails Germany's wholehearted acceptance of democracy and liberal values as the basis for its domestic governance and foreign relations to make the return of any regime similar to the Nazis impossible both in Germany and elsewhere (ibid.).

The tenet of "never alone" can be understood as a strategic principle to achieve "never again": it implies the close cooperation with Germany's Western partners, the rejection of unilateralism associated with Germany's past aggressiveness, and the intense focus on multilateral institutions and solutions. According to the logic of "never alone," being firmly integrated into Western alliances with liberal values and coordinating interests with other countries are safeguards for Germany not to repeat past mistakes (ibid.).

The last principle, "politics before force," can be understood as another strategy for preventing a backsliding of Germany. It refers to the deeply held German preference for diplomatic means

to resolve international issues and an ingrained practical skepticism and ethical rejection of military operations (*ibid.*). Translating these three guiding premises of German strategic thinking into this study's theoretical model and the first discourse layer, it can be concluded that Germany's most fundamental goals are to preserve its liberal democracy and to prevent totalitarianism and military aggressiveness in Germany and elsewhere. The abstract means to achieve these goals are cooperation with Western partners, multilateralism, and a strong prioritization of diplomacy over military capabilities. Regarding discourse on AI, these SC elements would suggest a cautious approach to military AI only as a last resort after diplomacy has been fully exhausted, and only embedded in multilateral efforts including Western allies.

Since the end of the Cold War, the principle of "politics before force" has undergone various developments and refinements. With Germany's participation in military missions in Kosovo and Afghanistan, military force gained a new legitimacy in the contexts of massive violations of human rights and protection of vulnerable groups (the mass killings in the Kosovo conflict) and the responsibility for collective defense (supporting NATO and the USA after 9/11) (Staun 2020: 95; Giegerich & Terhalle 2021: 44). Adding to this, Russia's large-scale invasion of Ukraine in 2022 strengthened German discourses portraying military force as a necessary and decisive means for protecting Germany and Europe (Blumenau 2022). Thus, while there is still a general tendency for military restraint in Germany (Giegerich & Terhalle 2021: 44), the list of exceptions to this tradition has steadily grown over the last two decades. It is possible that military AI could also be portrayed as an exception to this tradition if, for example, it is regarded as a highly efficient means of defense against Russia.

At the same time, however, it can be argued that Germany's general goals, preserving its liberal democracy and preventing totalitarianism and military aggressiveness in Germany and elsewhere, are still pursued in the contemporary strategic environment and are now primarily focused on Russia as a military aggressor that endangers peace and democracy in Ukraine, Europe, and Germany (Blumenau 2022). Moreover, Germany's integration with the West, particularly with the USA, France, NATO, and the EU, has only been reinforced by Russia's war against Ukraine and previous geopolitical events (*ibid.*: 1913). And while Germany has adapted its multilateralist approach to the more dynamic and contested international environment (Helwig 2023), multilateralism and "never alone" are still fundamental principles for Germany and operationalized in significant contributions to and involvement in the EU, NATO, and the UN (Blumenau 2022: 1913). It is especially these three multilateral institutions that can be expected to be stressed in German discourses as forums for controlling and coordinating military AI.

Hence, Germany's SC on the first two discourse layers can be illustrated as in Figure 2.

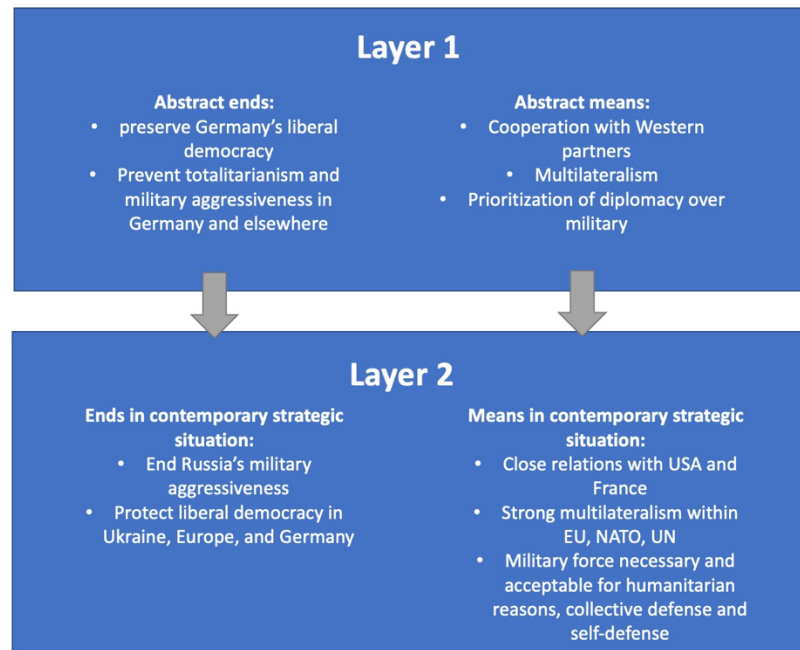


Figure 2: Germany's Strategic Culture.

When it comes to STIs, there is a long German tradition of understanding innovative technologies as tools to preserve the positive features of its political, social, economic, and environmental order instead of transforming them. In this sense, German STIs are generally characterized by a focus on sustainability understood in a comprehensive way (Jasanoff & Kim & Sperling 2007: 8; Wittrock et al. 2021: 86). This tendency, which can be traced back at least to the 18th century, was reinforced by the traumatic experience of the Second World War, the Nazi regime, and their usage of technologies for oppression, industrial mass killings, and military aggression. Together with the strong influence of environmentalist movements and heated discussions about nuclear power and biotechnology in Germany's post-war politics, this has led to a strong risk-consciousness and risk-aversion pattern in German discourses on new technologies (Jasanoff & Kim 2013: 192).

The uncertainty inherent to or caused by disruptive technologies is usually regarded as threatening, and law and academic expertise are commonly portrayed as means to achieve predictability (ibid.: 192). Against the background of the misuse of technology by the Nazis and environmental concerns, German discourses typically also stress the need to embed and "tame" innovative technologies by connecting and adapting them to ethical values and putting them into the service of the social good (Jasanoff & Kim & Sperling 2007: 8; Wittrock et al. 2021:

86-87). Summing up, Germany's STI on the deepest layer is defined by preservation and sustainability, risk-consciousness and risk-aversion, and the adaption of technology to ethical and social needs and standards.

These characteristics are strongly reflected in German discourses on AI in general on the second layer. Mostly, AI is referred to in an economic context and portrayed as a means to preserve Germany's status as an economic powerhouse in international competition with countries increasingly integrating AI in their economies (Bareis & Katzenbach 2022; Köstler & Ossewaarde 2022: 254). More specifically, AI is predominantly thought of not as a tool to transform Germany's economy and society but rather to translate what has made Germany successful so far into an AI context (Köstler & Ossewaarde 2022: 250).

This finds its most vital expression in "AI Made in Germany," a widely referred concept in the German government and industry that applies traditional German priorities such as safety, ethics, and social acceptance to AI (ibid.: 255). Notably, the "AI Made in Germany" concept is associated with the idea that AI can produce significant benefits and advantages for Germany only if it is implemented in the right way, implying there are wrong implementation strategies for AI (Eigler et al. 2019: 159; Köstler & Ossewaarde 2022: 255). Moreover, it also aims to distinguish German AI, and implicitly the German political and social system, from other economic powerhouses like the USA and China and their "careless" use of AI (Köstler & Ossewaarde 2022: 255).

Germany's two STI layers can be illustrated as in Figure 3.

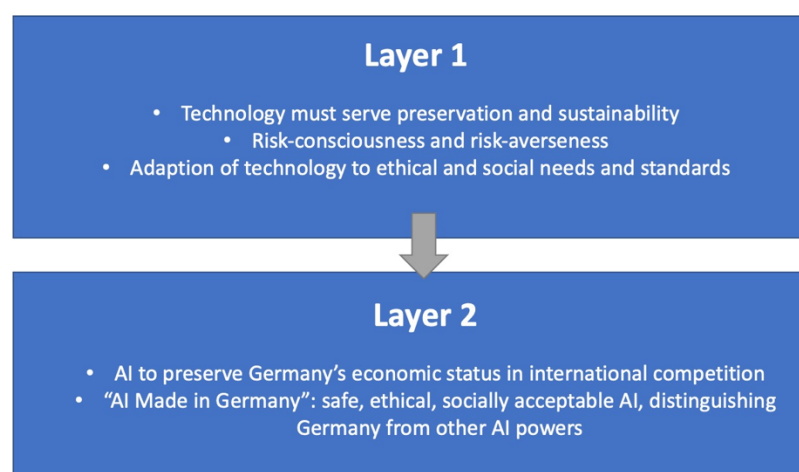


Figure 3: Germany's Sociotechnical Imaginaries.

Summing up and referring back to the theoretical framework formulated earlier, Germany can be described as a country with a SC stressing non-military means to reach its ends and a STI characterized by risk aversion. Therefore, Germany can be expected to produce a cautious dominant discourse on military AI.

4.2. Germany's Dominant Discourse on Military AI

The first hegemonic discourse identified as part of Germany's dominant discourse is an antagonistic othering between military AI and humans in general, linked to the fear that "high-tech forces rise up against their creators"² (Bauernebel 2016). In several variations, this basic concept is widely expressed in news articles and think tank reports. Based on both implicit and explicit assumptions about fundamental epistemological and ethical differences between humans and military AI that are frequently presented as evident and therefore naturalized, the "humans vs. military AI" concept entails the idea that military AI will cause escalations and thereby existentially endanger human life: "The First World War ended because people didn't want to kill anymore, that won't happen with machines because they don't have free will" (Kummert 2018). Thus, internal complexities and nuances of discourses on humanity and military AI are collapsed into two antagonistically opposing signifiers.

A central dimension of this antagonism is the assumption of different epistemological accesses to the world. In various texts, it is suggested that humans are equipped with a flexible grasp of dynamic and ambivalent contexts, qualities that military AI applications lack, as formulated by Moritz (2019):

"'From a technical point of view, a battlefield is the last place where a robot should be deployed,' warns the scientist. The demands of combat are too complex, and the danger is too great that the machine will make fatal mistakes - or be manipulated by the enemy and turn against its own troops."

The idea of military AI lacking a flexible grasp of dynamic and ambivalent contexts is frequently expanded into a larger differentiation between two kinds of intelligence: a human, general "big picture" intelligence that is often described with predicates such as "slow," "imperfect," and "vague" in comparison to AI but on the other hand possessing a mental model of how the world works as a whole, and narrow, artificial intelligence that is extremely "fast" and "precise" at fulfilling specific tasks but has no real understanding of the world in which it

² All quotes in the subsection for German discourse are originally in German and translated by the author.

operates. For instance, military AI could “carry out attacks faster and more precisely, even in combat zones where humans would never venture” (Bauernebel 2016) and is therefore portrayed as causing “an increasing acceleration of warfare without time to think about decisions” (t-online 2020). A particularly illustrative example of this epistemological othering is given by Kummert (2018):

“35 years ago, mankind was almost wiped out by artificial intelligence: On September 26, 1983, at the height of the Cold War, the Russian missile warning system ‘Oko’ reported an American attack by a missile launched toward Russia. (...) Colonel Stanislav Petrov was on duty that day in the Russian command center. Petrov resisted the system out of a feeling. He asked himself: Why should the Americans start a nuclear war with a small missile? Later it turned out that his hunch was right.”

Kummert’s example implies that Petrov’s broad knowledge about the world and military strategy, or in other words his human “big picture” view, was superior to the narrow categories with which the alert system worked and thereby prevented nuclear devastation, a lesson to keep in mind for the age of modern military AI.

The “big picture” and “flexible grasp of dynamic and ambivalent context” ideas are also strongly linked to the assumption of human free will and the resulting unpredictability that AI-enabled machines cannot handle. This line of thought is well-expressed in the following quote from a think tank report: “In the ‘rush’ of the calculability of the world - and digitalization and robotization are nothing else - it is easily overlooked that humans themselves, and thus their actions, are anything but calculable” (Dahlmann & Dickow 2019: 12). Hence, military AI necessarily fails to predict inherently incalculable human beings, which is portrayed as highly problematic in battlefield situations when combatants and civilians, as well as friend and foe, must be differentiated: “can they [military AI machines] detect if an enemy is about to surrender or is injured? Whether the person recognized has a weapon but is not a soldier but a hunter? Whether the recognized soldier may be a comrade on his own side?” (t-online 2018a).

Ethics is the second dimension of the antagonistic othering between humans and military AI. A defining ethical argument is that only humans can feel emotions and have a conscience, characteristics which are portrayed as requirements for taking on responsibility for killing humans in combat: “If the decision to kill is made in war, it is therefore important that a morally acting human being understands and reflects on the fact that he is killing another human being. A machine cannot do this because it fundamentally lacks an understanding of mortality” (Dahlmann & Dickow 2019: 19). Hence, in contrast to lifeless AI machines, mortal humans

understand the fear and emotional as well as intellectual significance of death, which enables them to carry responsibility for killing. AI-enabled military devices are depicted as categorically incompatible with human ethics, which makes them unacceptable from the perspective of Germany's STI tradition of embedding and adapting innovations to society and moral values.

Additionally, the "Terminator" metaphor is frequently used to imply unethical, merciless, and lighthearted killing by AI: "Questions like these trigger eerie primal fears: Who can't remember the 'Terminator' movies, in which the autonomous military network 'Skynet' takes on a life of its own and destroys the planet with nuclear strikes?" (Bauernebel 2016). Considering the importance of rejection of military aggressiveness in Germany's SC, the reference to the Terminator as a symbol of boundless aggression is a particularly weighty rejection of military AI capabilities.

A second, widely spread antagonism sets up Germany as a multilateral and norms-focused actor in international relations vs. "great powers" (specifically the USA, China, and Russia) unilaterally competing for military AI dominance and thereby driving a risky AI arms race that could also endanger Germany. As Adani (2018) puts it:

"Major powers such as the USA, Russia and China are already preparing to use 'killer robots' in combat. The reason could be the fear of not being able to keep up in a possible future arms race. Although the German armed forces have so far ruled out acquiring such systems (...), German defense policy must prepare itself for the possibility that German soldiers could one day be confronted with such systems."

Again, this logic collapses internal complexities of different discursive streams in Germany and the "great powers," thereby constructing an antagonism between them, and relies on naturalized assumptions about the mechanisms operating in international relations.

More specifically, the USA, China, and Russia are frequently portrayed as engaging in a self-propelling dynamic of military AI competition: "The Pentagon is pumping \$18 billion (...) into the expansion of robot armies, saying it has no choice: Strategic rivals such as China and Russia are spending similar sums on the development of science-fiction armed forces" (Bauernebel 2016). Hence, the logic of a security dilemma driven by mutual lack of trust and egoistic pursuit of survival is implied – but only for the "great powers." Germany, on the other hand, is frequently portrayed like in the following quote by Dahlmann & Hoffberger-Pippan & Wachs (2021: 8) referring to UN negotiations on a ban on lethal autonomous weapon systems:

“Germany could further stimulate the negotiation process in Geneva through politically softer and less tense mechanisms. It could, for example, promote the adoption of non-binding documents, work toward more detailed elaboration of the GGE's guiding principles, and thus fulfill its role as a mediator in other areas as well. At the same time, it could also use this approach to bring important states such as the United States, Russia and China on board and persuade them to make concessions.”

Thus, Germany is presented as a mediating actor that wants to prevent or mitigate security dilemmas using multilateral diplomacy. This approach perfectly reflects Germany's SC of prioritizing diplomacy over military means and finding multilateral solutions. This also reveals implicit assumptions about the nature of international relations, which are regarded as malleable depending on the outlook and motivations of states: security dilemmas are not inevitable, but multilateral diplomatic success is not guaranteed either. In any case, Germany is supposed to maintain its own ethical and safe way regarding AI, even if that means being confronted with an adversary's more advanced AI system one day. As the Amt für Heeresentwicklung (2019: 9) puts it:

“In addition to the political and legal framework conditions, the use of conceivable future LAWS is also not desired from a military perspective and is not being pursued. However, it must be assumed that potential opponents will develop weapon systems that do not meet the above framework conditions.”

Hence, Germany's STI of “AI made in Germany” reinforces the antagonist opposition between Germany and the “great power” arms race.

A last defining feature of Germany's discourse on military AI is the strong focus on lethal autonomous weapon systems (LAWS) and the heterogenous exclusion of other potential military applications of AI. Indeed, in the German discourse analysis data corpus consisting of 25 texts, only four address non-LAWS military AI applications like intelligence gathering and forecast software or logistic systems in-depth (t-online 2018b; Amt für Heeresentwicklung 2019; Hageböling & Barker 2022; Mathewson 2022). Considering that LAWS are often regarded as the ethically, legally, and practically most risky and challenging military applications of AI (Amoroso & Tamburrini 2020), the focus on such weapon systems and the exclusion of various other applications facilitates a cautious discourse on military AI.

In total, Germany's discourses on military AI can be characterized as cautious according to the definition given in the theory chapter. Facilitated by a nearly exclusive focus on LAWS, military AI is predominantly portrayed as uncontrollable and dangerous because it lacks an

understanding of the “big picture” and a flexible grasp of dynamic and ambivalent contexts. Thus, military AI is mostly not seen as a useful tool. Moreover, using military AI to kill in combat is predominantly considered unethical because of its emotionlessness and missing conscience. Adding to this, military AI is also strongly associated with a dangerous, self-propelling security dilemma between “great powers,” which is contrasted with a German approach of multilaterally and diplomatically controlling and reducing the race for military AI and thereby advancing more civilian, ethical, and safe use cases in line with the “AI made in Germany” concept. Hence, military AI is also portrayed as illegitimate from the perspectives of ethics and Germany’s SC and STI. This also shows that elements of Germany’s SC and STI, such as a pronounced reservation against military means and a focus on multilateral solutions, shape discourse on military AI on the highest layer.

4.3. Germany’s Scope of Military AI Practices

Germany already fails to fulfill the first condition, the threshold of at least five military AI capabilities in use or close to being used. While numerous ongoing research projects and experiments exist on military AI in the German armed forces, the German Ministry of Defense, and diverse related institutes (Borchert & Schütz & Verbovszky 2023: 25), they are mainly explorative and far from actually being deployed in the military. For this study, only three AI-enabled military applications in use or close to being used could be identified for Germany. First, the Ministry of Defense uses AI-based software to support forecasts and alerts for crises and military escalations (German MoD 2022). Second, situational overviews for the cyber- and information division of the German armed forces are facilitated by AI tools (Müller 2021). And third, the Bundessprachenamt, a language-learning and translation service for the German army, uses AI for translation tasks (Bundeswehr 2019).

Therefore, it is not surprising that experts unanimously assess Germany’s military AI capabilities as not substantial for the German military. According to Ulrike Franke from the European Council on Foreign Relations, “Germany has been much more reluctant to engage with the topic of AI in warfare and appears uninterested in the geopolitics of the technology” (Franke 2019: 19). Craig Albert, Christopher Henningan, Lance Hunter, and Joshua Rutland from the Augusta University argue that Germany “is not incorporating AI technologies within their militaries” (Albert et al. 2023: 30). Amy Nelson from the University of Maryland concludes: “Germany’s efforts to integrate semiconductor and AI technologies into the German military are

relatively nascent and opaque” (Nelson 2020: 4). And in the most comprehensive study on German military AI capabilities so far published by the Defense AI Observatory, it is stated that the “Bundeswehr may want to operate at the technological edge, but existing shortfalls inhibit Germany’s armed forces from doing so. New concepts that leverage emerging technologies are bound back by the resistance of a Bundeswehr bureaucracy solidly grounded in the status quo” (Borchert & Schütz & Verbovsky 2023: 49).

Against this background, it is much more surprising that the German armed forces, specifically the subdivision responsible for developing innovative defense concepts called Amt für Heeresentwicklung, have published a major work on the potential use of AI (Amt für Heeresentwicklung 2019). However, since the strategic goals, doctrines, and policies proposed in this document are just conceptual input without any legal or operational consequences so far and formulated rather vaguely, this document can hardly be described as an actual strategy (Franke 2019: 15-16). Moreover, beyond this paper, there are no specific instructions, policies, or doctrines for military AI (ibid.: 14-16). Hence, Germany does not fulfill a single of the three conditions and can thus be considered to have a limited scope of military AI practices.

4.4. The UK’s Strategic Culture and Sociotechnical Imaginaries

In contrast with Germany, the UK’s SC discourse on the deepest layer is not so much shaped by a single deciding episode but rather by referencing a long tradition of liberalism and global relevance. A central point of orientation is the UK’s imperial past, which finds discursive reflections in political slogans like “Global Britain” and the aspiration to be a global player, politically, economically, and militarily, until today (Miskimmon 2004; Cornish 2013: 361; Daddow 2019). Indeed, this striving for continuous global relevance also firmly frames discourses surrounding the UK’s nuclear weapon program and other prestigious military technologies (Miskimmon 2004; Beaumont 2021), and it can therefore be expected that military AI should also be embraced by the UK as part of its global crave for recognition. At the same time, the idea of a proud, long-lasting liberal-democratic tradition in the UK’s domestic politics is reflected in particularly close relationships with Canada, Australia, New Zealand, and especially the USA, as well as with continental Europe, which are portrayed as a means to protect the UK and liberalism worldwide but also as ends in themselves (Miskimmon 2004; Dowdall 2010). Hence, military AI will likely also be portrayed as a tool to protect liberalism and the UK’s ally system.

Beyond that, the UK's basic SC also contains several characteristics that could be described as "realist" ideas. Among these features is an intergovernmental approach to security and defense issues, which presents nation-states as the most critical actors in international affairs and is highly skeptical towards international and supranational institutions like the EU (Cornish 2013: 373). Moreover, military capabilities are regularly portrayed as one of the primary factors shaping international relations, and military force is typically regarded as a legitimate and effective tool for advancing the UK's interests, multilaterally but also bi- and unilaterally (Dowdall 2010; Cornish 2013: 373). Therefore, military AI should also enjoy legitimacy as a tool of foreign policy.

The goals of staying a globally relevant power and maintaining close relationships with liberal forces as well as the "realist" understanding of mechanisms in international affairs continued to guide UK's SC discourses over the more recent years and decades. More specifically, the discourse on British strategy has found a new focus on a perceived direct security threat emanating from Russia (Zandee & Kruijver 2019), but also on the notion of a systemic competition with China and the Indo-Pacific region as a geopolitical hotspot for which the UK bears responsibility and needs to get involved in (HM Government 2021: 17). These challenges are often presented as a justification for re-structuring and updating the British armed forces, in particular when it comes to new military technologies (Dowdall 2010; Zandee & Kruijver 2019). This focus on military innovation should also be reflected in an embrace of military AI. Furthermore, regarding the UK's close relationships with transatlantic partners and European countries, recent discourses have focused on distinguishing the UK from the EU and portraying it as closer to the USA and Commonwealth countries (Eaton 2020).

In summary, the UK's SC on the first two discourse layers can be illustrated as in Figure 4.

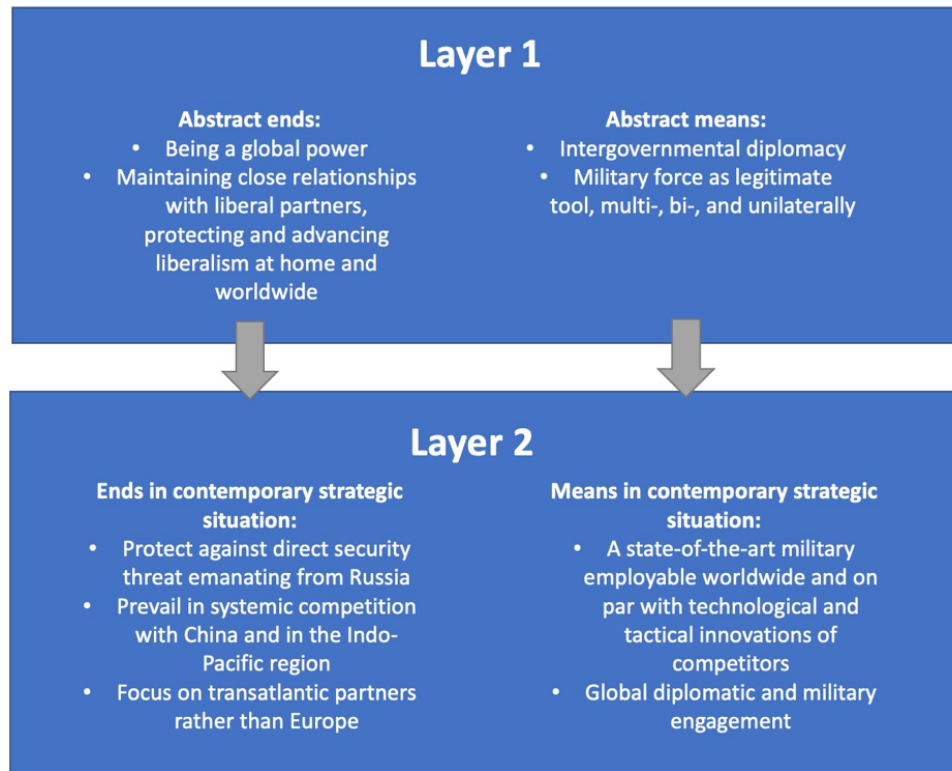


Figure 4: The UK's Strategic Culture.

Similarly to its SC, the UK's STI on the deepest layer is heavily characterized by references to the country's status as a global leader in excellent research and science, with the "London-Cambridge-Oxford golden triangle" as a vocal point (Wittrock et al. 2021: 96). Moreover, this self-understanding as a "science superpower" is closely linked to a concept of British pragmatism, which stresses the adaption of scientific breakthroughs and innovations for industry and business (Smallman 2018: 668; Wittrock et al. 2021: 96), and to the idea of a British liberal-democratic tradition entailing values such as objectivism and neutrality (Wittrock et al. 2021: 96). Hence, the concepts of science, innovation, economic power, liberalism, and global leadership are typically interwoven in British STIs, which results in discourses affirmative of innovation and tolerant towards risks.

These aspects find their reflection in British discourses on AI. Commonly defined as a technology to "perform tasks that would otherwise require human intelligence" (Brennen & Howard & Nielsen 2022: 33), AI is typically portrayed as a catch-all solution to a vast range of issues and challenges in various social and political domains such as the economy, healthcare, or the military (Brennen & Howard & Nielsen 2018: 5; Brennen & Howard & Nielsen 2022: 23-24). Interestingly, AI is closely linked with the concept of the UK being a science

superpower. This status is often translated into the ambition of becoming (or already being) an “AI superpower” as well (Brennen & Howard & Nielsen 2018: 5). Indeed, AI is predominantly presented as a disruptive technology that has the potential to dramatically improve the life of British people and advance the global status of the country, while ethical and safety concerns are usually downplayed (Brennen & Howard & Nielsen 2018: 6; Brennen & Howard & Nielsen 2022: 33).

The UK’s two STI layers can be illustrated as in Figure 5.

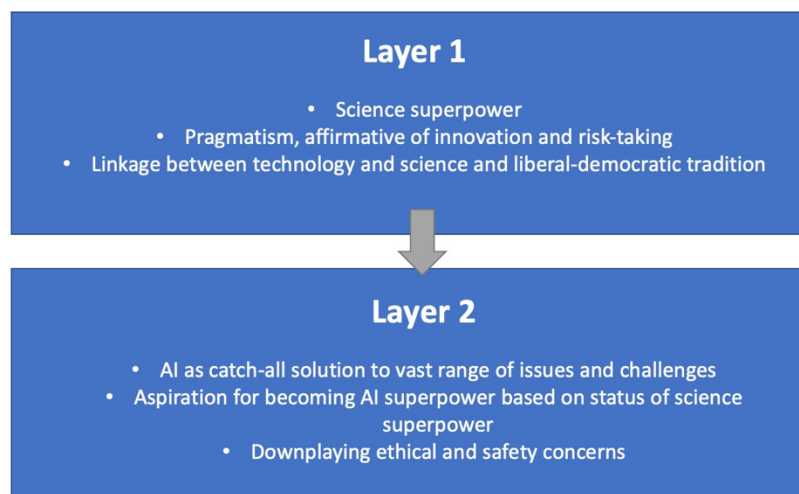


Figure 5: The UK’s Sociotechnical Imaginaries.

Summing up and referring back to the theoretical framework formulated earlier, the UK can be described as a country stressing high-tech military capabilities as a means to reach its ends and a STI characterized by risk tolerance and is therefore expected to produce an embracing dominant discourse on military AI.

4.5. The UK’s Dominant Discourse on Military AI

The first and most crucial hegemonic discourse identified for the UK surrounds the idea of the UK participating in an AI arms race with China and Russia. Collapsing internal complexities of discourses on the UK, Russia, and China and thereby antagonistically contraposing these poles, and tracing back to naturalized concepts of a security dilemma and a SC-informed “realist” outlook on international relations, the AI arms race idea can be found in numerous texts. For example, Cann (2018) writes:

“Russia are [sic] not the only country in this next-generation air arms race. In July the UK unveiled the Tempest fighter jet - a stealth bomber capable of flying with or without a pilot

aboard. (...) As early as April China unveiled the new DF-26 nuclear missiles capable of travelling 2000 miles and sinking aircraft carriers.”

Moreover, this arms race logic is portrayed as connected to norms and values, more specifically an antagonism between the UK as a liberal-democratic nation vs. other AI powers neglecting freedom and ethics. Hence, the military AI arms race is not only a question of physical security and survival, but also of protecting the UK’s liberal tradition. This also means that military AI is portrayed as compatible with the UK’s values and norms. For instance, in the official British “Defence Artificial Intelligence Strategy” by the UK MoD (2022a: 7), it is written:

“As AI becomes increasingly pervasive, it will significantly alter global security dynamics. It will be a key focus for geostrategic competition, not only as a means for technological and commercial advantage but also as a battleground for competing ideologies. We will shape the development of AI in line with UK goals and values, promoting ethical approaches and influencing global norms and standards, in line with democratic values.”

However, while this normative dimension of the antagonism is present, a “realist” outlook on international relations, focusing on material power distributions and security interests, is shaping the UK discourse on military AI even more. Similar to the German discourse, a self-propelling security dilemma driven by a mutual lack of trust and egoistic pursuit of survival by nation-states is implied in various texts, but in contrast to the German case, the UK is portrayed as an active participant in this AI arms race with China and Russia: “Western countries including Britain and the US have refused to stop the development of robot-fighting machines over fears China and Russia will race ahead with the technology” (Hodge 2021).

The UK is seen as a participant because of its perceived status as a great power, at least in the field of AI. In line with the British SC’s ambition of being a global power and the UK’s STI of being one of the world’s most excellent centers for science and research, the UK is regularly portrayed as “a global superpower in AI and is well placed to lead the world over the next decade as a genuine research and innovation powerhouse” (UK MoD 2022a: 41). Hence, it is presented as natural that there is a need for an “increased focus on cutting-edge technologies to enable the UK to keep pace with competitors and adversaries” (BBC 2018). Moreover, in line with the self-help logic of the arms race theme underpinning the UK discourse and informed by the UK’s SC of intergovernmentalism, most approaches for international cooperation on military AI mentioned in the data corpus, such as sharing best practices, engaging in regular dialogue, or creating codes of conduct (UK MoD 2022a: 37-58), are characterized by a high degree of voluntarism and caution. International regulations and the ethical and safety

rules guiding them are only relevant as they “do not impede our legitimate, responsible and ethical development of AI” (ibid.: 53).

The UK discourse generally contains concerns about military AI systems similar to Germany. First, it is widely assumed that AI lacks the epistemological “big picture” access to the world, posing a risk of unpredictable and unintended escalations and actions. As, for example, Smith (2017) puts it:

“But what happens when such systems encounter something they have no experience of, but are still given the freedom to act using a ‘best guess’ approach? Mistakes could be disastrous - the killing of innocent civilians; the destruction of non-military targets; ‘friendly fire’ attacks on your own side.”

And second, emotions, an understanding of morality, and a conscience are closely linked with responsible and ethical killing in combat, attributes that are exclusively ascribed to humans: “Robots are increasingly being used in the military but many fear that because they don’t have a moral compass they could commit war crime when left to their own devices” (Kindred 2019). These ethical concerns are also reinforced with various references to the “Terminator” metaphor. For example, an article in the Mirror argues that the development of military AI could lead to “a Terminator without a conscience” (Webb 2016).

However, unlike the German discourses’ portrayal of these issues as intractable, the British discourses typically link them to one solution: human-machine teaming. More specifically, while there is othering between humans and AI systems, characterizing AI with predicates such as “decisive,” “fast,” “precise,” and “tireless” and humans as “creative,” “responsible,” “inventive,” these differing qualities are predominantly regarded as complementary rather than antagonistically so that humans and military AI-enabled systems cooperating compensate for each other’s weaknesses and potentiate their respective strengths. This is perfectly expressed by the UK MoD (2022a: 15):

“Machines are good at doing things right (e.g. quickly processing large data sets). People are good at doing the right things (e.g. evaluating complex, incomplete, rapidly changing information guided by values such as fairness). Human-Machine Teaming will therefore be our default approach to AI adoption, both for ethical and legal reasons and to realise the ‘multiplier effect’ that comes from combining human cognition and inventiveness with machine-speed analytical capabilities.”

This concept is so prominent in the UK’s discourses that the British Ministry of Defence even produced a comprehensive strategy for human-machine teaming (UK MoD 2018). It can be

argued that the idea of human-machine teaming reflects the UK's STI feature of pragmatism with regards to technology: instead of focusing on issues associated with military AI, possible solutions are stressed and ways of operationalization imagined.

A second hegemonic discourse identified for the UK, albeit by far not as prominent as the previous one, is the naturalized antagonism of the "civilized" and "self-controlled" UK vs. "uncivilized," "brutal" and "irresponsible" terrorists and "rogue states" when it comes to the use of military AI. For example, Cuthbertson (2018) argues that military AI has "the potential to be weapons of terror. Despots and terrorists could use them against innocent populations, removing any ethical restraints." And Allen (2021) writes about military AI capabilities that "rogue states and terrorists will inevitably try to get hold of them to unleash massacres." Collapsing all nuances about the UK and "rogue states" as well as terrorists, this antagonism creates a dichotomous distinction between "humane" liberal and democratic countries like the UK using military AI ethically and proportionately and inhumane dictators and extremists employing military AI to "massacre" people. Hence, this antagonism suggests that the consequences of using military AI are not so much inherent in the technology but rather depend on the intentions and methods of the user. This reinforces the idea of the fundamental compatibility of military AI with British values.

At the same time, all texts present the proliferation of military AI to "rogue states" and terrorists as likely or even inevitable. For example, Allen (2021) holds that "leading militaries are kidding themselves if they believe they can control the spread of these advanced new weapons." This assumption of a likely or even inevitable proliferation of military AI amplifies the concept of an arms race and security dilemma: if military AI is so easily available for comparatively resource-poor terrorists and "rogue states," it should not be a problem for "established" nations and militaries to develop military AI at scale.

A last defining feature of UK discourses is the partial heterogeneous exclusion of AI-enabled lethal autonomous weapon systems (LAWS). While UK media addresses this issue frequently (see, for example, O'Neill 2016; Howes 2017; Smith 2017; Pinkstone 2018; Landi & Best 2020; Pero 2020; Morrison 2022; Bett 2023; Newman 2023), the analyzed British think tank reports, parliamentary debates, and official government publications usually treat LAWS as a sidenote or not at all, indicating an internal rift in the UK. Nevertheless, not addressing LAWS facilitates the production of embracing discourses on military AI, at least within the boundaries of governmental and political advisor discourse.

In total, the UK's discourses on military AI can be characterized as embracing according to the definition given in the theory chapter. Facilitated by a partial heterogeneous exclusion of LAWS, military AI is predominantly portrayed as a necessary tool to prevail in a great power arms race with China and Russia. Moreover, human-machine teaming is assumed to mitigate potential risks and ethical concerns of military AI. Adding to this, as a means that is imagined to be inherently value-neutral, military AI is also presented as compatible with the UK's core values if used "correctly." Thus, military AI is presented as useful and legitimate. Also, this suggests that indeed, elements of the UK's SC and STI, such as the self-perception as a global (science) power and the focus on prestigious military technology, shape discourse on military AI on the highest layer.

4.6. The UK's Scope of Military AI Practices

The UK's military boasts many AI capabilities in use or close to being used. In total, 10 such applications could be identified for this study. Those are an analytical AI software that provided operational support for British soldiers in a NATO exercise (UK MoD 2021); an AI system for the Royal Navy to counter missile attacks on the sea, which is at a late development stage (MarineLink 2021); Project SPOTTER, an AI-enabled image analysis software (UK MoD 2022a: 43); Project SQUINTER for the AI-empowered analysis of satellite data (ibid.: 43); the SAPIENT system to provide soldiers with intelligence derived from sensor information (ibid.: 52); the VIKING 6x6 Unmanned Ground Vehicles for logistical support (UK MoD 2020); the HMS Anson (S123) submarine with an autonomous mode, also at a late development stage (Dempsey 2021); an Open Source Intelligence Hub with AI analysis capacities (Firstpost 2023); the intelligence fusion module for the F-35 fighter jets (Payne 2022: 17); and the Mission Master A Unmanned Ground Vehicles, also for AI-enabled logistical support (Rheinmetall 2021; Fiorenza 2022). Adding to this, the UK is constantly initiating new military AI research projects and experiments (Payne 2022: 17). Hence, the UK certainly fulfills the condition of at least five military AI capabilities in use or close to being used.

This is also reflected in the expert assessments. Although only three assessments by authors affiliated with universities or think tanks could be identified, two regard the UK's military AI capabilities as substantial for the country's military, and one shows a mixed perspective. Evaluating the implementation of AI together with other cutting-edge technologies in the British army, Simona Soare, Pavneet Singh, and Meia Nouwens from the IISS have a mixed

impression: “For each of the positive examples discussed above, there are just as many complex UK capability-development programmes that continue to treat software as an adjunct to military hardware because the UK continues to pursue a capability-based approach” (Soare & Singh & Nouwens 2023: 32). However, Kenneth Payne from the King’s College London observes a substantial use of AI especially in the British military intelligence services (Payne 2022: 16) and states that “parts of the British state have a longstanding track record of using machine learning techniques for national security” (ibid.: 38). Finally, Craig Albert, Christopher Henningan, Lance Hunter, and Joshua Rutland from the Augusta University write that the UK is one of the few states “actively applying AI in their militaries for both offensive and defensive purposes” (Albert et al. 2023: 30). Thus, it can be argued that the majority of expert assessments regards the British military AI capabilities already in use or close to being used as substantial for the country’s military.

Lastly, the UK also boasts specific instructions, policies, and doctrines for military AI, setting a clear goal and defining how to use it. For example, the official “Defence Artificial Intelligence Strategy” describes comprehensive strategic plans for the British use of military AI and defines binding policies for achieving them (UK MoD 2022a). Beyond that, there are various official policy and doctrine papers on military AI, for example, on the collaboration between AI systems and humans (UK MoD 2018) and safety regulations for using AI in the British armed forces (UK MoD 2022b). These documents provide comprehensive strategic and operational guidance for military AI in the UK (Soare 2022). Hence, the UK fulfills all three conditions, and its scope of military AI practices can be labeled as comprehensive.

4.7. Comparing the Findings from Germany and the UK

When regarding the two cases in comparison, it becomes clear that dominant discourses as the condition of possibility can account for their differences in the scope of military AI practices. Germany stands exemplarily for a cautious dominant discourse on military AI, questioning its usefulness due to AI’s lack of a “big picture” and a flexible grasp of dynamic and ambivalent contexts and raising ethical concerns because of AI’s emotionlessness and missing conscience. While these issues also occur in the British discourse, they are defused by the central concept of human-machine teaming, which very rarely features in the German discourse. Moreover, the rejection of a German role in a military AI arms race stands in a stark contrast with the UK’s portrayal as an active participant in this competition, a finding that strongly reflects Germany’s

multilateral and civilian SC and the British SC's ambition of being a global power with prestigious military capabilities at its disposal. Moreover, the British concept of the ethical value and practical utility of military AI depending on its user and not inherent qualities could not be found in the German discourse. Instead, Germany's strong heterogeneous exclusion of military AI applications other than LAWS implies a more closed and narrow perspective on the inherent characteristics of military AI.

The cautious dominant discourses on military AI in Germany and the embracing dominant discourses in the UK also correspond with the theoretically expected scopes of military AI practice, with Germany showing a limited scope and the UK a comprehensive scope. While Germany only boasts three AI-enabled military applications in use or close to being used, the UK shows 10. Furthermore, experts unanimously assessed the German AI applications as not substantial for its military, while in the British case, the majority regarded them as substantial. Finally, Germany did not show specific instructions, policies, and doctrines for military AI either, whereas the UK boasts major military AI strategies like the "Defence Artificial Intelligence Strategy." Hence, these findings make it possible to answer the central research question "What explains difference in the scope of military AI practices by states?" as follows: a country's SC combined with its STI shape its dominant discourses on military AI, which in turn explain difference in the scope of military AI practices by a state.

5. Conclusion

As this study shows, the scope of military AI practices by states is shaped by dominant discourses on military AI. More precisely, Strategic Culture and Sociotechnical Imaginaries as part of a country's deeper discourse layers shape the dominant discourse on military AI on the higher level, which in turn conditions the scope of military AI practices.

The point of departure of this study were realist perspectives on the scope of military AI that failed to account for empirically observable differences. From the angle of various realist positions and based on the logic of a self-propelling security dilemma, it was expected that *all* countries with sufficient resources for developing military AI capabilities would do so. However, countries not diverging strongly in terms of factors realist scholars expect to be decisive show substantially differing scopes of military AI practices. Therefore, this study set out to provide an alternative to realist perspectives on military AI to account both for cases that realism can explain and those that are puzzling for realism. For this purpose, the study developed a discourse-theoretical explanation for the differences in the scope of military AI practices by states.

The basis for this alternative explanation is a theoretical framework combining Strategic Culture (SC) and Sociotechnical Imaginaries (STI) concepts with Ole Wæver's multi-layered discourse analysis model. Specifically, the main argument brought forward by this study is that a country's SC in tandem with its STI influence its dominant discourses on military AI, which then shape the scope of military AI practices by the country. Two theoretical expectations were formulated: 1. Embracing dominant discourses on military AI will produce a comprehensive scope of military AI practices by a state; 2. Cautious dominant discourses on military AI will produce a limited scope of military AI practices by a state.

This theoretical framework was applied within a most similar systems design (MSSD) research framework, with Germany and the UK selected as cases of scope of military AI practices. Both countries' SCs and STIs were reconstructed using secondary literature and analyzed as the countries' two deeper discourse layers within Wæver's model. Furthermore, the two countries' dominant discourses on military AI were investigated using poststructuralist discourse analysis methods, including text sources from official governmental policy papers, parliamentary debates, news outlets, and think tanks. Finally, Germany's and the UK's scopes of military AI practices were determined based on the number of military AI capabilities, expert assessments, and a review of their instructions, policies, and doctrines for military AI.

In the analysis, all theoretical expectations could be confirmed. On the deeper discourse layers, Germany showed a SC stressing non-military means and multilateralism, and a STI characterized by risk aversion, sustainability, embedding technologies in the social context, and a distinctive “AI Made in Germany” concept. These deeper layers then shaped Germany’s cautious dominant discourse on military AI. This cautious discourse was characterized by an antagonistic othering between military AI and humans, portraying AI as lacking a “big picture” world understanding, dynamic grasp of ambivalent situations, and comprehension of mortality and value of life, features which are regarded as inhuman and producing unacceptable practical and ethical risks. Moreover, the discourse entailed an antagonistic othering between Germany and great powers competing for military AI dominance, tracing back to Germany’s SC focus on diplomacy over military as well as on multilateralism and Germany’s STI featuring a unique “AI Made in Germany” concept. Additionally, Germany’s discourse was characterized by a heterogenous exclusion of military AI applications beyond lethal autonomous weapon systems. Finally, in line with its cautious discourses, Germany showed a limited scope of military AI practices, with only three military AI capabilities in use or close to being used, experts unanimously assessing Germany’s military AI capabilities as not substantial for the country’s military, and the country not having published any specific instructions, policies, or doctrines for military AI.

The UK’s deeper discourse layers were characterized by a SC stressing a global power ambition and the effectivity as well as necessity of military means and especially high-tech military capabilities, and a STI characterized by a self-perception as a science superpower, risk tolerance, pragmatism, and AI euphoria. Accordingly, these deeper layers led to an embracing dominant discourse on military AI. This embracing discourse was characterized by an antagonistic othering between the UK vs. China and Russia in an international AI arms race, which portrayed the UK as an active and capable participant in the competition due to Great Britain’s SC and STI-informed status as an “AI superpower.” While the ideas of AI lacking a “big picture” world understanding, a dynamic grasp of ambivalent situations, and ethical competencies also occurred in the British discourse, they were defused by the human-machine teaming concept, linking with the UK’s STI pragmatism. Another important feature of the UK’s discourse was an antagonistic othering between the UK’s controlled and civilized use of military AI vs. “rogue states” and terrorists employing military AI for mass atrocities, which implied that military AI is not inherently problematic but depends on its user. Moreover, a partial heterogeneity excluding lethal autonomous weapon systems could be identified.

Finally, in line with its embracing discourses, the UK showed a comprehensive scope of military AI practices, with 10 military AI capabilities in use or close to being used, a majority of experts assessing the UK's military AI capabilities as substantial for the country's military, and the UK having published specific instructions, policies, and doctrines for military AI, setting a clear goal and defining how to use it.

Thus, the central research question "What explains difference in the scope of military AI practices by states?" can be answered as follows: a country's SC combined with its STI shape its dominant discourses on military AI, which in turn can plausibly explain differences in the scope of military AI practices by states, which was puzzling for realism. Hence, while there might still be other potential explanations, for example such focusing on domestic rational choice perspectives, discourse theory proved to be plausible and superior to realist approaches in this study.

The theoretical framework and this study's findings have broader implications for the academic literature. Most importantly, the combination of SC, STI, and the multi-layered discourse model proved to be a suitable framework for analyzing general enabling technologies in military contexts, for which AI is only one example. Hence, this framework could be applied to other general enabling technologies such as military quantum computing in further studies. Moreover, the study's framework demonstrated how classic concepts in security and military studies, such as SC, can be productively reconceptualized as discourse within the multi-layered model. It is worthwhile to explore whether there are other such concepts that reveal a new academic significance if regarded as deeper discourse layers.

Beyond purely academic discussions, this study also has practical ramifications. Most importantly, efforts for international cooperation on and regulation of military AI should be based on understanding countries' specific SCs, STIs, and discourses on military AI. This also implies that national positions on and development of military AI are not driven by external and self-propelling systemic pressures but by malleable ideational factors, which leave room and opportunity for political change and negotiations. Hence, understanding what drives the scope of military AI practices is essential for considering the range of feasible options and making sound political decisions promoting stability and cooperation for a technology that will most definitely shape the future of international security.

Summing up, the differences in the scope of military AI practices, which was puzzling from realist perspectives, could be sufficiently explained with a discourse-theoretical framework.

However, further research on more cases is needed to substantiate the explanatory power of the theoretical framework developed in this study, since the study's research design was limited to a specific setting with a case selection of two mid-sized powers in Europe. In particular, the framework's applicability in regions outside Europe and in small- and large-size countries should be explored further. In doing so, it can also be determined if the specific contents of discourses on military AI are unique for each country or if larger discursive patterns can be observed.

Another limitation of this study was that the first two discourse layers could only be reconstructed using secondary literature. A future research project with a bigger scope could conduct original discourse analysis for each layer and thereby potentially refine the theoretical framework, for example by uncovering more relevant layer levels than just three. Moreover, even if the available data for assessing Germany's and the UK's discourses and scope of military AI practice allowed the formulation of a clear result, it cannot be ruled out that some relevant data was not found and some information is kept secret by the two states, or that new expert assessments being published in the near future lead to different conclusions. Therefore, conducting a similar study on discourse about and scope of military AI practices in Germany and the UK in a few years, including new data and information that was previously unavailable, might be fruitful. Finally, other explanation approaches potentially superior to realism, such as rational choice theories focusing on domestic factors, should also be explored, and their explanatory power compared to the discourse-theoretical perspective developed in this study.

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