

BACHELOR THESIS

How can we explain the development of Project Maven from agenda-setting theory, and to what extent did this Project affect the relationship between the military and industry?

A historical analysis of rising artificial intelligence in the defense industry.

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Public Governance across Borders

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Abstract

The present thesis deals with the controversial relationship between military and industry within the emergence of artificial intelligence in warfare. Therefore, a case study of an exemplary single case is conducted to symbolize the current situation of the two sectors in times of rising artificial intelligence notions. The thesis is based on a qualitative data collection mechanism combined with the theoretical framework of agenda-setting by John Kingdon.

The social relevance of the research lies in the dangerous implications of the military-industrial complex and the controversial usage of artificial intelligence in warfare. The scientific relevance is to investigate whether the military-industrial complex changes over time to fill the existing gap of knowledge regarding the implications of Project Maven in the United States.

Main conclusions are the difference in contractors between military and industry, followed by expanding military expenditures in artificial intelligence technologies, as well as implications that the U.S. is developing into a garrison state. Another result is a revolution in military affairs.

Keywords: Project Maven; Military-Industrial Complex; Artificial Intelligence; Military Spending; Multiple- Streams Framework;

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List of Abbreviations

AI	Artificial Intelligence
AWCFT	Algorithmic Warfare Cross-Functional Team
CPT	Causal-Process Tracing
DoD	Department of Defense
GDP	Gross Domestic Product
JAIC	Joint Artificial Intelligence Center
MIC	Military-Industrial Complex
MSF	Multiple Streams Framework
RMA	Revolution in Military Affairs
U.S.	United States of America

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1. Introduction

Thousands of Google employees signed an open letter in 2018 asking the internet giant to stop working on a project for the American military. The letter states that Google should not be in the business of war. Unfortunately, the actual contract between the Pentagon and various tech companies is disclosed for public engagement (Fang & A.m, 2018). Nevertheless, it is acknowledged that the cooperation involves a contract between the Pentagon and tech companies. The contract was established by the U.S. Deputy Secretary of Defense in 2017 to apply machine learning and engineering to separate people from objects in drone videos (Frisk, 2018). By implementing this kind of innovative warfare, the military makes use of new technologies in the field of artificial intelligence (AI).

One reason for shielding the contract from public attention is that the concept of AI is a highly controversial suspect. However, it is a relevant topic today, not only in political discussions but also for the application in warfare and its impact on hegemonic powers. Moreover, since AI is already incorporated into military operations, namely in Iraq and Syria (Sayler, 2020), the U.S. government is interested in new military AI systems to implement them into their military.

Another reason for preventing the contract from public attention is the illegitimate relation between state-owned and private sectors. Including the threat that the industry might downplay the potential negative sides of using AI in the military to profit from the contract financially (Schipper, 2020). The consequence is a close relationship between the U.S. Department of Defense (DoD) and the private industry, namely tech firms located in Silicon Valley like Google, Microsoft, and Amazon¹.

Although the cooperation between military and industry seems like a win-win situation for both sides, President Dwight D. Eisenhower addressed his concerns about this developing relationship as a threat to the American democracy. On January 17th 1961, he gave his farewell speech to the United States of America (U.S.), in which he introduced the relationship as “military-industrial complex” (Eisenhower, 1961).

Eisenhower had been Chief of Staff of the U.S. Army before becoming President of the United States from 1953 until 1961. “He had personal ties to many corporate leaders” (Smith, 2015; 578), so that his skepticism about the military-industrial complex (MIC) can be taken seriously even though the complex is not visible. Yet, we detect higher amounts of government budget spent on the military, especially on AI technologies and various contracts between industry and military, involving not solely traditional weapon-building companies. According to Eisenhower’s warning words in his speech, many argue that the money would be better invested in health care, especially during the current pandemic and in times of peace. Indeed, the amount of U.S. military spending is higher than ever before (Klare, 2020; *Ranking*, 2019). One reason is the arms race in combination with AI technologies, as indicated by the Russian President, Vladimir Putin: “whoever becomes the leader in artificial intelligence will become the ruler of the world” (2017).

¹ There are more companies that work together with the DoD under the frame of Project Maven. However, the present thesis solely concentrates on these three.

Therefore, the present bachelor thesis will study Project Maven as an exemplary case, analyzing the effects on the MIC in the new digital age. Thereby, the emergence of military AI systems with the development of Project Maven will be the subject of analysis. I will analyze the information by applying the agenda-setting framework by John Kingdon (1984) to explain how and why issues are set on the political agenda and how Project Maven developed.

Although scholars already point out that “AI will be fundamental to the future fortunes of the states and the balance of power” (Steff et al., 2020; 66), it has not yet been analyzed how the military-industrial complex has changed through the emergence of the AI technology with respect to the Maven Case. Therefore, the thesis will fill in the gap of knowledge and point out the changing relationship by using the method of causal-process tracing within a historical analysis of three focus points: 1961, 2017, and 2021.

The combination of the above-described phenomenon leads to the research question:

How can we explain the development of Project Maven from agenda-setting theory, and to what extent did this Project affect the relationship between the military and industry?

1.1 Scientific and Social Relevance

The rising use of artificial intelligence in warfare is influenced by the interdependency between private industry and state-owned and -governed military, which is neither regarded by many scientists nor the media. However, the changes within the MIC in the United States will affect all our lives in divergent fields, especially in terms of democracy (cf. Eisenhower, 1961). Now, the rise of AI in warfare seems far away (living in the EU, approximately 4,900 miles away from Silicon Valley and the U.S. government). When considering globalization, innovations of new technologies travel fast. In order to raise awareness of the dangerous relationship between the two sectors, the topic at hand is scientifically and socially relevant, especially for politicians and citizens in the U.S. but also for the rest of the world.

To fill the knowledge gap concerning the MIC in times of rising AI technologies and the emergence of Project Maven. On the one hand, the research is necessary to provide scientific awareness of the relationship. On the other hand, it is socially relevant to acknowledge the interdependent relationship between military and industry, especially since AI is highly controversial and might be used devastatingly.

1.2 Aim of the Research

By applying a causal process tracing analysis of a single case study under the multiple-stream framework by Kingdon, the research question of the present thesis is approached. In order to structure the thesis

and come to a satisfactory conclusion, I will additionally answer three sub-questions combining elements of the research question: systematically and academically.

In the following, I will be looking at the background content asking,

(a) what changes in the MIC did occur in the context of a rise in AI since 1961 in the U.S.?

To do so, I will be examining three relevant points in time: 1961, 2017, and 2021. Considering the research design, the case study of Project Maven is expected to be a turning point within the following analysis, leading to a changed and expanded MIC after the emergence of Project Maven.

Thus, I will also be answering a descriptive question asking:

(b) How did Project Maven develop after its initiation in 2017?

Given the selected case and its implementation in the context of the MIC, I will answer the question within a historical analysis.

Furthermore, I will answer the explanatory question:

(c) How can the initiation and development of Project Maven be explained from a multiple-streams perspective on changes in the MIC?

This is due to merge the theoretical framework with the single case study and the phenomenon of the MIC.

2. Theoretical Framework

In this section, the concept of agenda-setting by Kingdon is discussed, as the theory explains how and why agenda-setting takes place. Therefore, three different streams of agenda-setting will be brought into the context of the MIC. Here, the focus lies on the relationship between the U.S. Department of Defense and tech companies and the concept of artificial intelligence (in warfare). Thus, the theory will be embedded into the context of the arms race. Substantially, the first part concentrates on agenda-setting by Kingdon used as an implication for the theoretical understanding of the emergence of Project Maven. The second part consists of a detailed explanation of the military-industrial complex, followed by a brief introduction to the concept of artificial intelligence. Hence, the aim is to bring Kingdon's approach into the picture of the current developments of the military-industrial complex. Lastly, I will outline my expectations of the following research.

2.1 Agenda-setting

The Multiple Streams Framework (MSF) is a theoretical agenda-setting approach developed by John Kingdon (1984), which is informed through a former agenda-setting theory, called the 'garbage can' model by March and Olson (1972). The MSF is typically applied to policy-making within the legislative branch (Ellington, 2011) to understand "why things happen the way they do in entities like the federal

government” (Kingdon, 2001; 331). Here, the framework is used to examine policy changes within the military-industrial complex, mainly focusing on the development of Project Maven.

The independent streams, which are the main content of the framework, are primarily used to analyze agenda-setting and decision-making at the federal level, focusing executively on the U.S. (Béland & Howlett, 2016). It can be seen that the approach by Kingdon presents policy-making as a “collective output formulated by the push and pull of several factors” (Ellington, 2011; 133). As such, it describes how a particular policy is chosen when an opportunity for policy adaption and implementation arises. Thereby, it explains how the federal government makes decisions under ambiguous or competing positions.

In the following, the three streams - policies, problems, and politics – are introduced to understand the theoretical approach of the research. Systematically, the impact of time is essential as policy solutions and proposals are agreed upon due to their precise timing and not due to its perfect policy solution. That is why if the policy proposal comes up at the appropriate time, it is likely to be accepted in the decision-making process (cf. Kingdon, 2001;172). A policy develops within a process made up of varied specialists, like legislators, academics, analysts, lobbyists, and policy entrepreneurs (cf. Ellington, 2011; 133). As such, the policy is, in the end, not a structured process but rather a “process of natural biological selection” (Kingdon, 1995; 116), proposing policies and refining policy proposals. “In this stream, the myriad possibilities for policy action and inaction are identified, assessed, and narrowed down to a subset of ostensibly feasible options.” (Béland, Howlett, 2016; 222). Due to the long process of evaluation, some ideas do not survive while others prosper, symbolizing a metaphor of a “policy primeval soup” (Kingdon, 2001; 333). Secondly, “problems are conditions that are seen as warranting government attention and action” (Ellington, 2011; 133) so that government action is needed to solve public problems. Therefore, policy actors decide on which problems they are going to concentrate on. Besides, the framing of a problem is not simply an objective condition, but a critical issue crucial for the on-going process and the opening of a window of opportunity (cf. Kingdon, 2001; 332). Thirdly, the politics stream consists of elements that influence the body politics, including “the public mood, pressure group campaigns, election results, partisan or ideological distributions in Congress, and changes of administration” (Kingdon, 1995; 145), which come along on its own, like the changes of the public mood.

In summary, Kingdon describes agenda setting as:

“The separate streams of problems, policies, and politics come together at certain critical times. Solutions become joined to problems, and both of them are joined to favourable political forces.” (1984; 21).

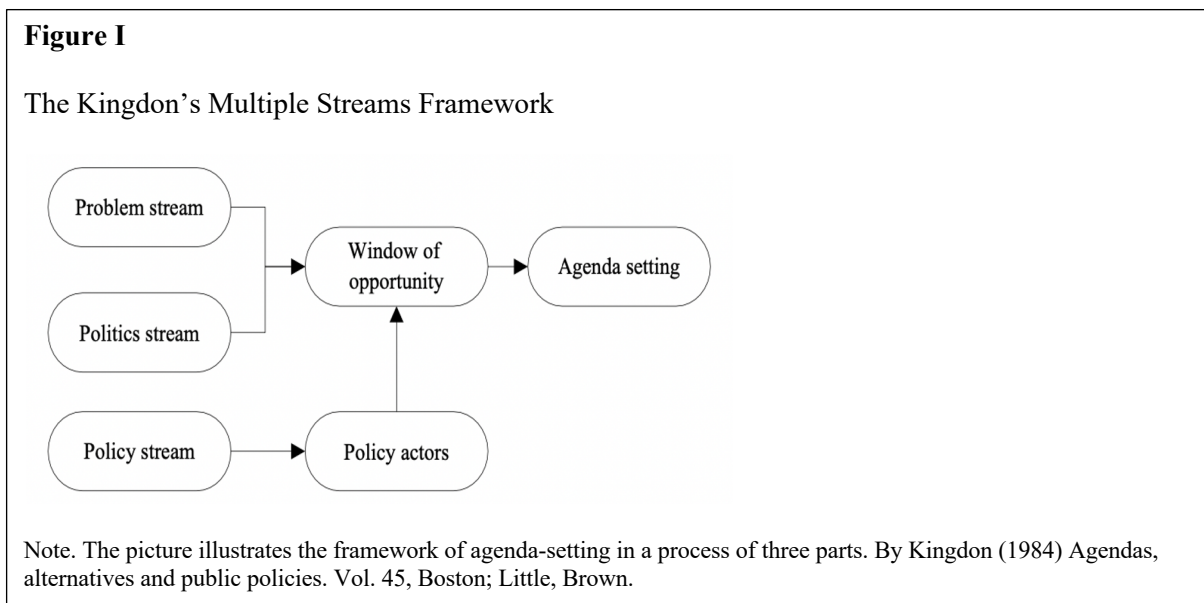
As shown in Figure I, the three streams have a life of their own, and the outcomes depend on if and how the streams get joined. So that, at any given time, three different streams follow through the policy system. The three categories of independent and interdependent variables interact to produce ‘windows of opportunity’ during critical decision-making periods. This event of ‘open policy windows’

is exceptional, as they are prone to rapid closure and are only open for one reason. This is the presence of one or more policy entrepreneurs (Béland, Howlett, 2016). Policy entrepreneurs are people

“willing to invest their resources in pushing their pet proposal or problems, are responsible not only for prompting important people to pay attention but also for coupling solutions to problems and for coupling both problems and solutions to politics.” (Kingdon, 1984; 21).

It can be understood that policy entrepreneurs have the most important role within the agenda-setting theory, as, without them, there would not be a policy change.

Generally, the framework relies on metaphors to illuminate subtle policy dynamics and simplify complexity. Consequently, either “the problem is pressing, verging on a crisis, and that creates an opportunity for people to advocate their solution to it, or the political stream changes, and the advocates of their open window push their proposals.” (Kingdon, 2001; 332). So that, open policy windows lead to significant changes in public policy when policies, problems, and politics come together.



By focusing on the MIC, Kingdon's framework allows for insight into agenda-setting and policy formulation, identifying the elements of each stream, concentrating “particularly on and around the distinctively American congressional system” (Béland, Howlett, 2016; 224). An understanding can be reached regarding how (and why) a growing relationship between military and industry emerged as a viable option, beginning from 1961. Therefore, the multiple streams help by analyzing the emergence of Project Maven and the effects on the MIC.

2.2 The Phenomenon of the Military-Industrial Complex

At the beginning of the 1940s, “new and consequential relationships began to be established” (Wasson, Grievson, 2018; 5) that shaped the policy and led to an expansion of the military. Since technological advancement exceeded, the U.S. tried to keep up with the pace. Therefore, the relationship began to establish “among the iron triangle of state, military, and advanced industry, which significantly shaped

policy and the continued expansion and development of the military.” (Wasson & Grieverson, 2018; 5). Due to this, the former U.S. President, Dwight D. Eisenhower, officially introduced the concept of the military-industrial complex in his farewell speech to share his concerns “about the combined power of the large military establishment and arms industry” (Dunne, Sköns, 2009; 2). Before, Mills had described the complex in his book, *The Power Elite* (1956), outlining that “the major centers of power -political, economic and military- are made up of elites drawn from the same social strata who circulate between them” (Mills, 1981; 72). Furthermore, Mills argues that the elites know each other and cooperate in mutual interests. In his opinion, “the state is not a neutral mediator of conflict but an agency that coordinates elites’ interests” (Smith, 2015; 577). Thinking about Mills words combined with missing public understanding, Eisenhower sharply denounced the logic of this relationship as MIC with the intention to raise awareness of the interdependent relationship between industry and military.

“The conjunction of an immense military establishment and a large arms industry is new in the American experience. [...] The total influence -economic, political, even spiritual- is felt in every city, every statehouse, every office of the federal government. [...] In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist.” (Eisenhower, 1961)

Social scientists developed the complex into being seen as “coalitions of vested interests within the state and industry” (Dunne & Sköns, 2011; 2), where decisions are made by the interests of coalition members instead of providing national security. Thereby, the MIC becomes a self-generating structure that embodies the interests of various groups in society, which is considered severe in pressuring for military spending and out-crowding of civilian resources in the U.S.

As a critical reflection of the MIC, Barry Rundquist outlines that the relationship between business and government is one of the most discussed and rarely analyzed problems in American social science, stating that “good explanations of business/ government relations remain few and far in-between” (Rundquist, 1978; 29). His study was conducted one year before Eisenhower’s farewell speech and concentrated on the problem of the MIC. The relation between military and industry is described as ‘seldom analyzed’ (ibid). Acknowledging that the MIC can hardly be analyzed with qualitative data in terms of strength and power. However, it can be analyzed within a historical analysis, considering relevant points in time and determinants such as military spending and the behavior of industry and military in the area of weapons procurement. Another aspect is understanding military contractors and government decision-makers as they interact to affect military procurement policies. Thereby, the topic of the MIC has implications for extending theories of iron triangles and regulatory capture. Unfortunately, they are not within the scope of the present bachelor thesis.

Nowadays, the complex is not much spoken about. However, according to Eisenhower, it is still a danger to American democratic ideals. That is why the effect of Project Maven on the MIC is analyzed by applying Kingdoms’ multiple streams framework combined with a causal-process tracing method.

2.3 The Controversial Concept of Artificial Intelligence

The term ‘artificial intelligence’ was first introduced in 1956 by the American scientist John McCarthy, defining AI as solely the development of computer systems to perform tasks that generally need human intelligence. Nowadays, the exponential rise of AI is driven by divergent developments, like drones and facial recognition. (Chin, 2019) A current definition shows AI as “an umbrella term that refers to a series of general-purpose and diverse technology, which are propelled by computational power, and which build on methods in fields such as machine learning to advance automated and increasingly automated decision-making and actions.” (Schippers, 2020; 33) In fact, Birgit Schippers is concerned about the democratic politics in consideration to the rising artificial intelligence. Schippers regards AI as “threats of our fundamental rights” (Schippers, 2020; 33). Besides, Allan Dafoe states that a race in AI “sacrifices safety and other values” (Dafoe, 2018; Abstract). Other scholars, however, describe AI as positive and beneficial (Klare, 2020; Mahnken et al., 2016; Wasilow & Thorpe, 2019).

However, the enormous speed of innovations towards “new warfare” can be described as breathtaking. “[T]he war-technology dynamics have changed the world” (Chin, 2019; 766) as well as the relationship between nations and governments. The central argument of Chin is that “after 1945, technology acted as a vital agent of change in the war-state relationship, and eventually the ripples of this change spread throughout society.” (Chin, 2019; 766) Within his argumentation, he shows that states consciously develop their defense technology to promote further economic prosperity (cf. Chin, 2019). For instance, the U.S. spends \$18.5 billion on AI research in 2019 (Sayler, 2020).

2.4 Integrated Theoretical Framework: Expectations

The theory part amounts to the expectation of a changing MIC as researched by Rundquist. Although the concept of the MIC is complex and sometimes inconsistent, the agenda-setting framework by Kingdon will break down the complex into different streams. Nevertheless, the MSF should be combined with other theoretical assumptions in order “to provide a more accurate and more powerful depiction of policy-making reality“ (Béland & Howlett, 2016). Thereby, fundamental theories, namely iron triangle and regulatory capture, are replenishing concepts referring to the influence of the MIC relationship in the U.S. Unfortunately, the theoretical background of these concepts is overstretching the scope of the present thesis.

Conforming to Rundquist and the described situation in the United States, I expect

- That changes within the MIC can be detected through the growing importance of the complex, especially in terms of military AI innovations in high-tech companies.
- An increasing (complexity of the) MIC.
- Actors are changing from industry to government and the other way around, creating a power elite, as Mills detected.

- A change in contractors of military defense contracts; from the traditional weapon industry towards tech companies.

3. Methodology

The research aims to answer the explanatory research question of how we explain the rise and decline of Project Maven in the context of a MIC developing under the rise of artificial intelligence, beginning in 1961 in the United States. The central expectation is that the MIC expanded over time. What specific changes occurred is the subject of the first descriptive research question, expecting to find explanations for changes in the multiple stream model, as proposed by Kingdon. Therefore, the research expectations consist of a relationship between the military-industrial complex, Project Maven, and an arms race between (at least) the U.S. and China. That is why the emergence and application of the contract between military and private tech industry under the frame of ‘Project Maven’ will be analyzed on the background of agenda-setting by John W. Kingdon.

Below, I further describe how the empirical research will be conducted in terms of research design, case selection, and sampling, as well as operationalization, data analysis, and sources. By testing the expectations and answering the research question as well as sub-questions, the methodology of causal-process tracing (CPT), according to Blatter, Haverland (2021), and Yin (2018), will be applied to the exemplary case study. The theoretical background, as described and discussed in section 2, builds on to the methodology since the case should be related to the “theory or theoretical propositions of interest.” (Yin, 2018; 84). Therefore, the theory has specified a clear set of circumstances within which its propositions are believed to be accurate.

3.1 Research Design

Within the study at hand, the design is based on a qualitative single case study, as the research question begins with a “How” (Yin, 2018; 32), symbolizing that the research has no control over behavioral events and the focus of the study lies upon a contemporary phenomenon.

The CPT by Blatter and Haverland (2012) will be applied to approach the single case study. The explanatory approach “is used as a complementary technique to co-variational analysis. (Blatter, Haverland, 2021; 79). That suits the explanatory research question most since the “approach is Y-centered, which means that the researcher is interested in many complex causes of a specific outcome (Y) and not so much in the effect of a specific cause (X)” (Blatter, Haverland, 2021; 80). As the research question seeks to examine the causes of the relationship between military and industry, ‘many complex causes’ need to be analyzed to determine if the MIC changed over time and due to the emergence of Project Maven.

That is why the research design allows to accurately and systematically describe the mechanisms that change the MIC and give an in-depth understanding of the phenomenon with the application of the

CPT method as it assumes that “multiple conditions work together at a specific point of time or over a short period of time to produce the outcome of interest” (ibid; 94). Referring to a “comprehensive storyline” (ibid.; 110) that concentrates on theoretically informed storytelling, consisting of a timeline of critical events. The aim is to detect causal chains of action and reaction patterns that prompt the relation between variables and changes and highlight different actors’ interactions. One relevant factor is to include the outstanding observations of “smoking guns” (ibid.; 119) into the CPT. It is highlighting the motivation of the stakeholders and its significant impact on the actual outcome. Thereby, the methodology adds perfectly to the theoretical framework and its implication on the policy entrepreneur.

Within the design, it is acknowledged that there will be threats to validity. To conduct valid research, measures need to be accurate. Therefore, all aspects of the topic need to be covered and adhere to existing theories. (Yin, 2018). Some potential threats to validity are bias, including selection and information bias, which are violations of the code of conduct. Selection bias is prevented through clear selection criteria regarding the research case and the conducted literature. Bias information will be encountered due to a wide variety of information and interpretation as well as a careful consideration of the authors and articles. (Yin, 2018) Another threat is missing reliability, a research is reliable when the measures are constant. To achieve reliability, the research will be the same if another author would conduct it. Therefore, the aim is to re-test remarkable outcomes to check if they are reliable, including a detailed description of the data collection and analysis under sections 3.3 and 3.4. The consideration of divergent scholars is one solution.

As the phenomenon at hand conducts an exemplary single case study, it is impartial to regard that CPT “is a within-case technique of causal inference” (Blatter, Haverland, 2021; 82), meaning that the cause which is analyzed belongs to a specific population and cannot be generalized nor applied to another population. However, this is not problematic for the thesis since the research is explicitly narrow and does not require larger samples (Yin, 2018) or generalizations. The study aims to inform solely about the MIC within the population of the United States.

Additionally, threats concerning the chronological structure are a pitfall of “giving disproportionate attention to the early event and insufficient attention to the later ones.” (Yin, 2018; 287). The solution is to draft the cases backward but analyze them systematically within the study.

3.2 Case Selection and Sampling

The single case design is chosen as it offers various significant contributions and allows to build on the theory by extending the expectations (cf. Yin, 2018; 49). Therefore, Project Maven functions as an exemplary single case, defined as “a case study whose purpose is to explain how or why some condition came to be” (ibid.; 351). Explaining the changes of the MIC by examining a “complexity of activities and events” (ibid.; 261).

Thus, several features make it the best available exemplary case to analyze using causal-process tracing within a chronological structure. One feature is that the case fits perfectly into the topic and the theoretical framework since Project Maven is interlinked to the phenomenon of the MIC. Another feature is that the Project includes many divergent stakeholders, as will be mentioned in section 4.1. The second feature makes the case illustrative and available to rely on references that can be almost exclusively retrieved online. As the Project emerged in 2017, the first article can be traced back to the press release: “Project Maven to Deploy Computer Algorithms to War Zone by Year’s End” by the DoD (Pellerin, 2017). Since the Maven case is still active, literature concerning the Project published in 2021 is informative as well.

In the present qualitative research, the case is the unit of analysis, ideally reflecting the best possible insights of the contribution of artificial intelligence to the MIC. Thereby, divergent data, including policy reports, press releases, and other documents, will be analyzed within the research. The research will show if the expectation of an increasing military-industrial complex can be related to the development of Project Maven. That is why Project Maven is selected to symbolize the current involvement of the industry in the military sector. So that, the case is selected as it depicts the perfect example to study within the topic of the military-industrial complex.

With the approach of CPT, two critical points need to be considered. Firstly, the case must be accessible to identify the empirical information necessary to make convincing causal claims. Secondly, the logic of case selection depends on the specific goals that are to be pursued. (cf. Blatter, Haverland, 2021; 100) The two crucial points are fulfilled as mentioned above. Firstly, there are sufficient stakeholders involved to provide accessible information. Secondly, the case provides an explanatory example of the current situation regarding the MIC in terms of artificial intelligence in the U.S.

Nevertheless, boundaries influence the research of the case study, for instance, the non-accessibility of the original contract. However, this makes the case highly interesting and exceptional as few scientists have focused on the unclassified Project Maven contract.

3.3 Operationalization

The thesis consists of a qualitative data collection, as it “serve[s] the primary purpose of collecting textual data for research and analysis.” (Nahmias-Wolinsky, 2004; 26). The data collection fits perfectly into the study at hand, due to limited time and word count, no other type of data would be capable of answering the research question. The textual data is used as a variation of wide-ranging literature, including the original speech of the 34th American President, as well as other secondary literature on AI technologies and national safety.

Within the qualitative research, numerical figures are only used to symbolize military spending as one determinant of the MIC. The limited numerical data are included to represent the change over time, thereby adding to the quantitative data collection design of the thesis.

The gathered information will be analyzed using causal-process tracing to find solutions and answers within a comprehensive storyline (cf. Blatter & Haverland, 2021; 80). CPT will perform a complementary function, linking steps to cause an effect. Consequently, the question deals with the tracing of an operational process over time, rather than mere frequencies (cf. Yin, 2018; 40). The CPT methodology “is an adequate analytical approach to develop and test configurational theories and hypotheses.” (Blatter, Haverland, 2021; 85). So that CPT does not only help by answering the explanatory research question but also by testing the expectations, achieved by a historical analysis of three different points in time.

Based on the theory, the multiple streams will be applied to the processes of the MIC, outlining what changes occurred. The framework encloses the thesis's validity as the approach has been cited in “more than three dozen *Journal of Comparative Policy Analysis* articles” (Béland & Howelett, 2016; 221) until 2016.

Referring to Rundquist and his research (1978), military spending will be considered a relevant determinant. Other determinants like the behavior of military and industry in weapon procurement cannot be viewed as it overstretches the scope of the present thesis. However, there will be other determinants, namely the democratic process, the rise of AI technologies in warfare situations, and the existence of power elites, implicated to the MIC by Mills.

3.4 Data Analysis

The present bachelor thesis consists of a historical analysis including 60 years. To appropriately analyze the amount of available data, the qualitative analysis of process tracing will be applied. Process tracing “provide[s] theoretical explanations of historical events” and “establish[es] whether, and how, a potential cause or causes influenced a specific change or set of changes” (INTRAC, 2017; 1) which is precisely what the research question at hand is asking for. Within process tracing, I will test two criteria to establish a causal connection. The two criteria are necessary and sufficiency. Therefore, the process can be defined in a series of steps which concludes the comparison over time. Thus, I will start by outlining the military-industrial complex analyzed with the four determinants (mentioned in section 3.3). Secondly, I will examine the establishment and development of Project Maven, using the agenda-setting framework by Kingdon. Afterward, there will be an analysis of the present time to present a comprehensive storyline. Additionally, I will append a short analysis of rising artificial intelligence. The data belong into the analysis and add to the conclusion, as innovations in this field mark the analyzed time period. The data are analyzed in a comparison, where the similarities and changes can be ideally

detected. Finally, it will be possible to assess the evidence from the data in the results. (*Process Tracking*, 2017)

3.5 Data Sources

The data is selected through an in-depth literature review considering hard copy and online literature, including the following criteria. First, the literature needs to be written within an academic context to be considered. Secondly, when working with online sources which are not peer-reviewed, the data source always needs to be scientific and trustworthy. Thirdly, the documents must contribute to the topic.

Furthermore, press releases and insights on Project Maven are outlined to apply its emergence to the context of the MIC within the rise of AI. The study by Rundquist provides relevant contributions to the thesis since the study has been conducted in 1960, obtaining 325 congressional districts. Which makes his research more than convenient when analyzing the MIC from 1961. Additionally, newsletter articles (for instance, Crofts & van Rijswijk, 2020; Harper, 2021) are considered to conduct the most recent, accurate, and valid research. Moreover, the National Defense Strategy of the U.S. is deemed to comprehend the American way of thinking.

4. Project Maven

The arms race and the developing advantages of military AI systems in China and Russia pressure the United States to be more advanced in artificial intelligence in warfare (Băjenescu, 2020). To gain technological support from highly innovative tech companies, the Pentagon established Project Maven, formally known as the Algorithmic Warfare Cross-Functional Team (AWCFT). This a cooperation between various tech firms and the DoD with the American aim to become the leader in AI. It is chosen as the research case and can be defined as a Pentagon program building surveillance weapons to use them in times of conflict (Appendix B). Since the DoD does not have the capability to innovate AI technologies by itself, it established a contract with tech companies in order “to interpret video imagery, which could, in turn, be used to improve the targeting capability of drone strikes.” (Crofts & van Rijswijk, 2020; Abstract) and to outrage China and Russia (Mahnken et al., 2016). Aiming to become the world-leading power in AI before its competitors by delivering “the first algorithms for automating the processing, exploitation, and dissemination of full-motion video data to teams in the Middle East and Africa” (Doubleday, 2017; 12) in December 2017.

Nevertheless, *Google Inc.* decided not to renew the contract when it expired in March 2019. One reason for that was an employee pushback (Greene, 2019), framing the controversial contract with the Department of Defense as ‘business of war’ (Statt, 2018). Due to that, “thousands of Google

employees, including dozens of senior engineers, have signed a letter protesting the company's involvement in a Pentagon program" (Shane, 2018; 1) on ethical grounds.

4.1 Historical Background

The contract was first announced in the press release: Project Maven to Deploy Computer Algorithms to War Zone by Year's End by the Department of Defense (Pellerin, 2017). However, before the 21st of July 2017, the contract had been active but kept secret (Robitzski, 2019). Project Maven became better known among civil society due to intense internal and public pressure towards *Google's* engagement in the Project.

The overall establishment of Project Maven has been influenced by divergent groups of stakeholders, making the case more salient for public attention. Not merely the American citizenry who is subject to the topic but mainly the democratic institutions of the U.S have been influenced by the establishment. Thereby, significant stakeholders are, among others, officials of American defense policymakers. For instance, the former Deputy Secretary of Defense, Robert O. Work. Lieutenant General Jack Shanahan, the two-year Project Director of the Maven Project before becoming the Director of the Joint Artificial Intelligence Center (JAIC). As well as Drew Cukor as the Chief in Office of the Project (Crofts & van Rijswijk, 2020). Furthermore, the research case contains journalists as another group of stakeholders, especially journalists writing for news magazines like *Defense One* and *New York Times* with a worldwide readership. Additional stakeholders are policy experts and scientists who gather information and publicize policy documents or comments.

4.2 Ethical Reservations

The Project involves a negative connotation towards legitimacy, as it has been kept secret and still (2021) is fully disclosed. The DoD stated that "every single sentence was too sensitive to release to the public [to] protect information about 'critical infrastructure'" (Robitzski, 2019). That is one reason why over 3,100 (of more than 70,000) of *Google's* employees, including senior engineers, decided that the company should not be involved in the business of war. The employees announced their concerns that "the U.S. military could weaponize AI and apply the technology towards refining drone strikes and other kinds of lethal attacks" (Frisk, 2018) in April 2018 (Crofts & van Rijswijk, 2020). Another reason can be traced back to *Google's* new motto. That changed from "Don't be evil" into "Do the right thing" in 2015. Because of the latest statement, *Google* saw itself responsible to withdraw from the contract, even though it implicated financial benefits (Crofts & van Rijswijk, 2020).

After *Google* officially decided not to renew the contract with the Pentagon, the company released a policy regarding how it will handle AI projects in the future. Trying to solve the controversy with guiding principles, *Google* stated the company's future involvement in AI development and military research (Galliot et al., 2020). However, these principles entail a general lack of moral clarity

regarding military AI systems. For instance, according to the international treaty of the Geneva Conventions, AI is “impossible for humans to completely comprehend” (Galliot et al., 2020; 122). Interestingly, *Google* announced a section called ‘*AI applications we will not pursue*’, including all kinds of technologies which “cause or directly facilitate injury to people.” (Galliot et al., 2020; 122).

Thus, the ethical problem “demonstrates the extreme dependence of the government apparatus [...] on the technological industry.” (Băjenescu, 2020; 48) The former Deputy Director, Haspel, was ‘alarmed’ by *Google*’s decision to walk away from the program due to ethical concerns about the weaponization of *Google*’s information. Haspel’s reaction symbolizes that nobody expected a withdraw from the contract.

5. Analysis

5.1 Comparison over Time

The analysis frames a period of approximately 60 years, beginning in 1961 and ending in 2021. Therefore, the analysis concentrates on three events, the MIC, Project Maven, and a description of the current situation in 2021. All three events provide necessary information for this research. Determinants of the analysis are military spending, the democratic process, as well as AI technologies, and partly the existence of a power elite combining two sectors. The three different points in time are analyzed to describe the MIC before and after Project Maven’s emergence. Thereby, the analysis will be integrated into the MSF by Kingdon using the methodology of CPT.

5.1.1 The Military-Industrial Complex

To start with the analysis of the final rhetorical act of Eisenhower, the military-industrial complex “became an indelible part of the national vocabulary” (Janiewski, 2011; 667). During this time, the military spending of the United States was \$49.88 billion, which used to be 9.16% of the gross domestic product (GDP) (Macrotrend LLC, 2010). Eisenhower recognized the excessive spending on conventional weapons and warned about the dangerous consequences of the complex (cf. Eisenhower, 1961; Appendix A). Thereby, he announced the problem stream that the U.S. might become a garrison state with eroded civil liberties (Lasswell & Stanley, 2018). Consequently, civil liberties used to be high, including a working democratic process of governmental decision-making.

Within days after Eisenhower’s speech, the author Jack Raymond wrote for the *New York Times* about the term ‘military-industrial complex’. He found that the 100 leading defense contractors of the U.S. “employed 726 former top-ranking military officers and contractors financed lobby groups for the armed service and worked closely with military leaders.” (Smith, 2017; 579). On the one hand, this

shows the intense relationship between the two separate sectors, including solely conventional weaponry. On the other hand, he adds to the problem stream that the defense industry is said to act in concert as an interest group to persuade the state to spend more on defense. Most importantly, the situation points out that the two sectors were already connected before Eisenhower's speech.

However, artificial intelligence technologies were not advanced. Drones and other high-level recordings were not thought about since a permanent economy of war marked the period, and tech companies like *Google*, *Microsoft*, and *Amazon* did not exist. All three companies were founded far after Eisenhower's final speech².

Additionally, the interdependent relationship between industry and military can be seen through the elitist people like the President of Ford Motor Company, Robert McNamara, who left the company to become Secretary of Defense in order "to bring modern corporate techniques to the conduct of military affairs." (Dunne & Sökns, 2009; 5). More policy actors like McNamara symbolize the interdependent relationships between government and industry since several retired military officers became industry directors. This gives further evidence of a powerful lobby for expensive weapons projects in a war-based industrial complex (cf. Janiewski, 2011; 675).

Overall, the MIC is vague and inconsistent, however, it firmly frames coalitions of vested interests instead of the interests of national security (Dunne & Sköns, 2009). Thereby, the complex is shaped by the problem stream and the politics stream as the MIC symbolizes the systematic allocation of the agreed aims of the power elite (Smith, 2015). This, according to Kingdon (2018), is also part of the problem stream, as governmental action is needed to solve the public problem of legitimacy within the decision-making process of agreed aims. However, the American citizens do not agree upon these aims, but they are decided upon due to elitist notions between military and industry capturing the government. This can be shown by outlining the example of McNamara, who, after being a businessman, became Secretary of Defense, influences body politics through its close connection to the private industry (Dunne & Sökns, 2009).

So that the first event can be detected as the first critical event in the comprehensive storyline. Even though the military and industry were already connected, Eisenhower made aware of the dangerous situation, which leads to the following developments.

5.1.2 Project Maven

As shown under section 4, Project Maven is the example of the merging relations between military and industry, mainly in terms of AI in tech companies. These enter the conventional defense companies (Figure II) in order to win the international arms race against China and Russia. This was initiated by

² 1975 (*Microsoft*), 1994 (*Amazon*) and 1998 (*Google*).

the policy entrepreneur who sets the contract on the agenda. Since the former Deputy Director of Defense initiated the contract, Robert O. Work is detected as the policy entrepreneur within the process of developing the Pentagon’s artificial intelligence program. As the Secretary of State, he used his central position to notice the unique situation of the U.S. government in terms of AI developments. All three streams were together during this time, and the policy window, therefore, open for agenda settings (cf. Kingdon,1984). He wrote that the focus would be “to apply computer vision algorithms to tag objects identified in images or videos captures by surveillance aircraft or reconnaissance satellites.” (Cornillie, 2021). That is why his policy proposal developed into an actual contract and a changing relationship between military and industry contractors. Work’s timing was fitting, as the U.S. government needed a way to innovate military AI systems to compete against China and Russia (Mahnken et al., 2016). So that his time and reputation were used to set up a legal cooperation between the DoD and high-tech companies. Serving as a policy-decision enabler, he sees Project Maven as the “basis for the next military-industrial revolution” (Work, 2018; 5:21) and a “pathfinder for a new way of war” (ibid. 4:37). Thereby, Work is credible in the area, as he has a strong background as a former Marine Corps Artillery Officer and the Deputy Defense Secretary during the Obama Administration, which relates him to both sectors.

Figure II shows the four most relevant conventional contractors in the fiscal year 2017, symbolizing that *Lockheed Martin Corp.* benefits most from the U.S. government with \$48,181 million. At the same time, Project Maven is expected “to grow into a \$250 million-a-year project” (Wakabayashi & Shane, 2018; 3). According to an internal email, *Google* was to receive \$9 million from contracting with the Pentagon (Wakabayashi & Shane, 2018). Whereas the total amount of military spending in 2017 was \$646 billion (3.31% of the GDP). Interestingly, the total amount of military spending increased by approximately \$596 billion over 56 years. The percentage of GDP decreased by 5.85 percent can be traced back to inflation and other economic factors, which are not relevant for the present thesis. However, the decrease in GDP illustrates that military spending is a less informative determinant of an expanding relationship between military and industry.

Figure II

The four prime defense contractors in 2017.

#	Prime Contractor	US \$ million	In % of Total
1	Lockheed Martin Corp.	\$48,181	14.98%
2	The Boeing Company	\$21,832	6.79%
3	Raytheon Company	\$13,933	4.33%
4	General Dynamics Corp.	\$13,693	4.26%

Note. U.S.A Spending (2017) Top-100 U.S. Defense Contractors FY 2017

Nevertheless, when looking at the distribution of military spending, it can be seen that more finances go into the industry, especially towards innovation, education, development of new AI technologies (*Statista*, 2019). Therefore, the DoD spent \$7,4 billion on AI in 2017 (Corrin, 2017), plus various disclosed contracts under the frame of Project Maven with publicly disclosed information. As a result, the unavailability of financial figures symbolizes missing transparency. So that, the lack of transparency combined with many new companies that enter the business of military AI systems “do not know [that] they are involved in arms production” (Dunne & Sköns, 2011; 7) adds to the problem stream.

The monopolistic structure of high-tech companies influences the behavior of the national government and individuals. It can be analyzed that the government is likely to depend on these companies “though they have little to no capacity to independently remedy issues when they arise.” (Crofts & van Rijswijk, 2020; 76). Consequently, AI leads to increased power and centrality of companies that provide AI technologies. Whereas the system is struggling to impose sufficient values and restrictions, as the field contains “little to no government regulation or intervention.” (Crofts & van Rijswijk, 2020; 76). This leads to technological changes and internationalization of military AI systems as massive increases in size and power. The exemplary case shows that the problem has been publicly framed by *Google*’s withdrawal (section 4.2).

An existing power elitist structure is partly detected with the policy entrepreneur who pushed for the development of the AWCFT to establish innovation in artificial intelligence guided by the DoD. First, \$7 billion from the defense budget should be set aside for AI projects. Second, he wants a public-private partnership between the Pentagon, academia, and the private sector. Third, he wants to strengthen the JAIC, giving it authority over all the AI services. (Williams, 2020; Work, 2017) These innovations are agreed upon due to Work’s central position in government. The controversial subject of AI technologies in warfare or the general negative sides of artificial intelligence usage are not mentioned. This symbolizes that Work wants the U.S. to win the arms race by strongly improving the military regarding AI technologies through intense budget expenditures.

Moreover, this illustrates that Work was in an influential position, able to set the artificial intelligence Project on the agenda. Overall, Work’s actions are legitimate. However, with the strengthening of the JAIC, he works together with Lieutenant General Jack Shanahan, who used to be the Project Director of the AWCFT. As detected in section 4.1, Shanahan became the Director of the JAIC. This relationship between Work and Shanahan outlines the vested interests and intermingled relations in the military sector, which is spreading towards the industrial sector.

Overall, the emergence of Project Maven happened within a democratic process, as the Deputy of Defense is authorized to participate in the agenda-setting process. Compared to 1961, the military spending towards AI technologies in warfare increased, whereas the percentage of GDP on military expenditure decreased. Thus, an existence of an elitist power structure is not seemingly detected. However, the missing transparency of the contract symbolizes degrading civil liberties.

5.1.3 Present-day

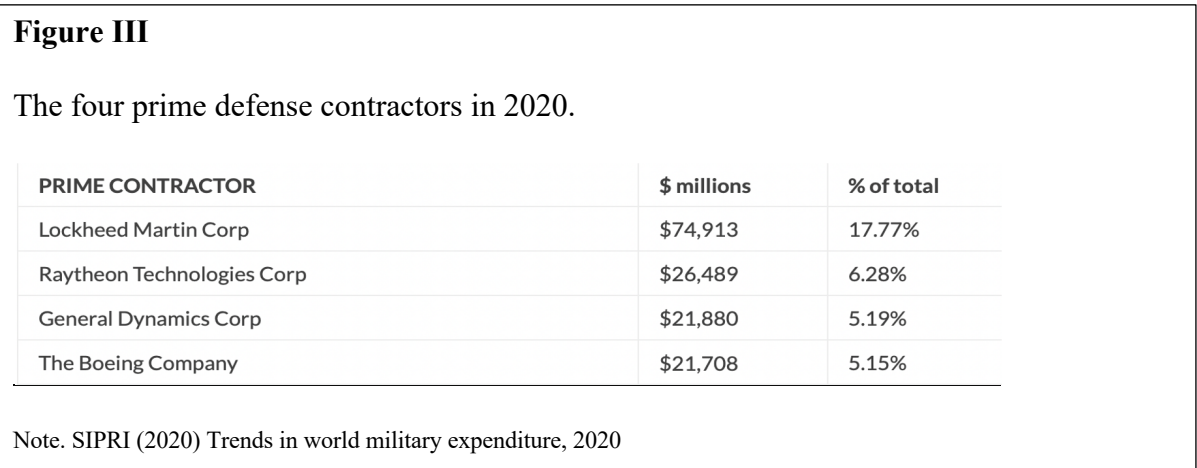
In 2021, it becomes clear that AI is the future for becoming the world's leading power (section 1). That is what the U.S. is trying to achieve through expenditures of more than \$6 billion into the implementation of military AI systems, such as \$137 million in the JAIC. (Doubleday, 2017) Now, it is recognized that the "DoD has been channeling funds of AI research for decades" (Alice, 2020) but is increasing the amount of funds in AI.

The military expenditure rose to \$1981 billion in 2020, which is 3.7 percent of the GDP (SIPRI, 2021). While the percentage of GDP has been decreased from 1961 until now, the actual budget spending on military utilities increased by approximately \$1938 billion in 60 years. The emergence of the JAIC shows that the role of AI in war expands to a controversy of technological development that "reduced the opportunities for war, but the arms race it generated also brought into being new technologies, and these facilitated new forms of conflict." (Chin, 2019; 765) Therefore, the DoD spent \$6,3 billion on artificial intelligence in 2020, which is \$1.1 billion less than in 2017. However, the estimated budget expenditures on military AI technologies are \$11,6 billion by 2025 (Corrin, 2017; ReportLinker, 2021). If the expectation is accurate, this would indicate a growth of \$5,3 billion in five years. Nevertheless, the expectation cannot be taken for granted. Therefore, it shows again that military spending is no clearly supporting determinant of my main expectation that the MIC is expanding over time.

Considering the military spending towards the most relevant defense contractors of the U.S. (Figure III) shows that *Lockheed Martin Corp* is the leading contractor. That can be traced back to the fact that the company includes artificial intelligence systems (ReportLink, 2021). Compared to 2017, *Lockheed Martin* received \$48,2 million in prime contracts (15% of total contract funds) awarded by the DoD. In 2020, the company received \$75 million (17.8% of the total), as shown in Figures I and II. Both figures illustrate an increase of \$26,8 million in three years and a rise of 2,9 percent of total contract funds.

Interestingly, *The Boeing Company* moved from the second prime contractor to the fourth, with a decrease of approximately one hundred thousand dollars. Consequently, *Raytheon Technologies Corp* advanced from third place to second, with a total increase of \$12,5 million. However, \$48,4 million less than *Lockheed Martin*, which symbolizes the monopolistic structure of the one prime contractor,

Lockheed Martin, that invests in artificial intelligence. In contrast, the other three mentioned companies do not support artificial intelligence as much. Especially, *The Boeing Company* lacks behind. This explains the change of military funding towards *The Boeing Company*, compared with *Raytheon Technologies Corp*, which integrates more AI-related technologies into their warfare strategies.



As a result, military spending is increasing, “military experts believe that the pandemic has not affected the demand for AI in military market defense applications.” (ReportLinker, 2021). However, the military procedure in the U.S. has changed by moving towards less risky, however more capital-intensive techniques of war waged with drones, robots, and satellites. The downside is that the industry does not appreciate times of peace as their financial situation would be harmed. That is why there is also a “rising prominence of military in peacetime” (Chin, 2019; 769). Namely, “the DoD’s unclassified investments in AI have grown from just over \$600 million in 2016 to \$2.5 billion in 2021.” (Sayler, 2020; 2), which are still highly controversial as the concept of AI is in discussion, especially in terms of moral behavior.

Nowadays, there are implications on power elites, like *Google’s* former chief executive officer, Eric Schmidt, who now sits on the Defense Innovation Board with tied connections to the private sector. Symbolizing a shift towards growing powers of the defense contractors while expanding the power of the MIC, “encouraging the US government to exploit the military-industrial complex as a means to export the economic policy globally.” (Bray, 2020; 3) The power elite grew further than in 2017, as the Pentagon now has relations with all the big players in the cloud space and AI space. Building on a strongly intermingled sector of industry and military. Since the government depends on tech companies to develop its military AI systems since tech companies are needed for the “sophisticated technological understanding [of] complex weapons systems.” (Gholz & Sapolsky, 2021; 2). The two separated sectors are hard to distinguish as “companies take on some characteristics of government, and government decision-makers take on some private roles.” (Gholz & Sapolsky, 2021; 2). Which cannot be considered as a democratic process when private and state-owned sectors blend.

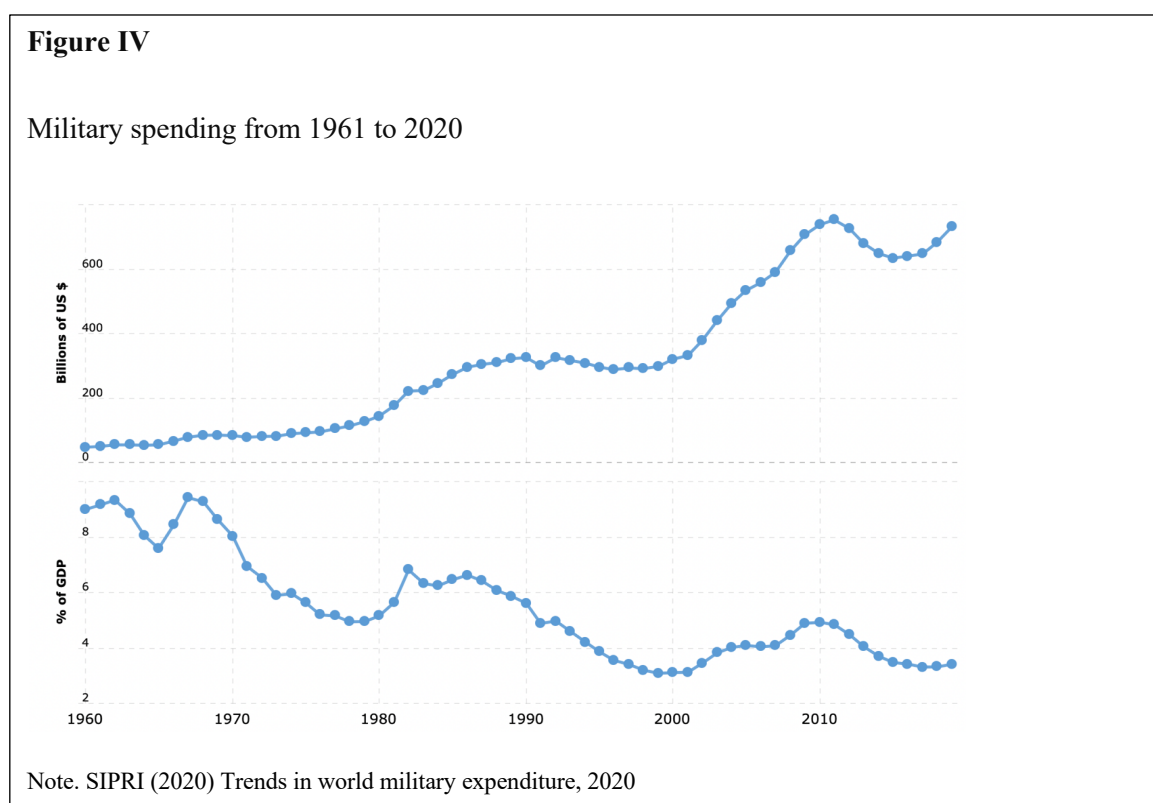
In summary, the Project is still active, involving tech companies like *Microsoft* and *Amazon* as well as many more that “proudly promote their links with military and defense agencies.” (Crofts & van Rijswijk, 2020; 84). The overall military spending is increasing, and the two sectors are still strongly connected through many new contractors and people who change careers from the military to the industry and the other way around. Moreover, it is analyzed that AI technologies are highly relevant for nations like the U.S., as they imply hegemonic powers.

6. Results

In the following four sections, I will outline the results of the analysis, structured in a separation into the four different determinants identified in section 2.4. Thereby, the democratic process and the existence of power elitist notions are combined under section 6.2. Finally, there will be a historical analysis of the military-industrial complex embedded into the theoretical framework.

6.1 Military Spending

The analysis shows that military spending alone is no reliable determinant for an expanding MIC. In Figure IV, military spending over time is depicted. As described above, military spending is increasing, whereas the percentage of GDP is decreasing. However, in the field of AI, the U.S. spends enormous amounts of money to develop the latest weaponry. Therefore, it even established a new governmental agency, the JAIC (Work, 2018). However, the actual amounts of budget spending are not available for public usage, therefore, there cannot be more concrete results regarding expenditures on military AI systems.



6.2 Democratic Process (and *The Power Elite*)

The comprehensive storyline shows that the United States of America is likely to develop into a garrison state. Implications are the eroding civil liberties, as the contract enormously benefits vested interests of the power elite developed between the industry and the military. One current example is the former chief executive officer of *Google*, Eric Schmidt, who now sits on the Defense Innovation Board. Thereby, Schmidt is acting as a legitimate policy-making within a democratic institution, however, he has close ties to the private sector. Which is considered problematic by some scholars (Fang & A.m, 2018). Another implication is the increasing military spending in times of peace and pandemic misfortunes. Finalized by the missing transparency within the development of Project Maven, as the contract is still disclosed and probably ever will be.

6.3 The Rising Artificial Intelligence

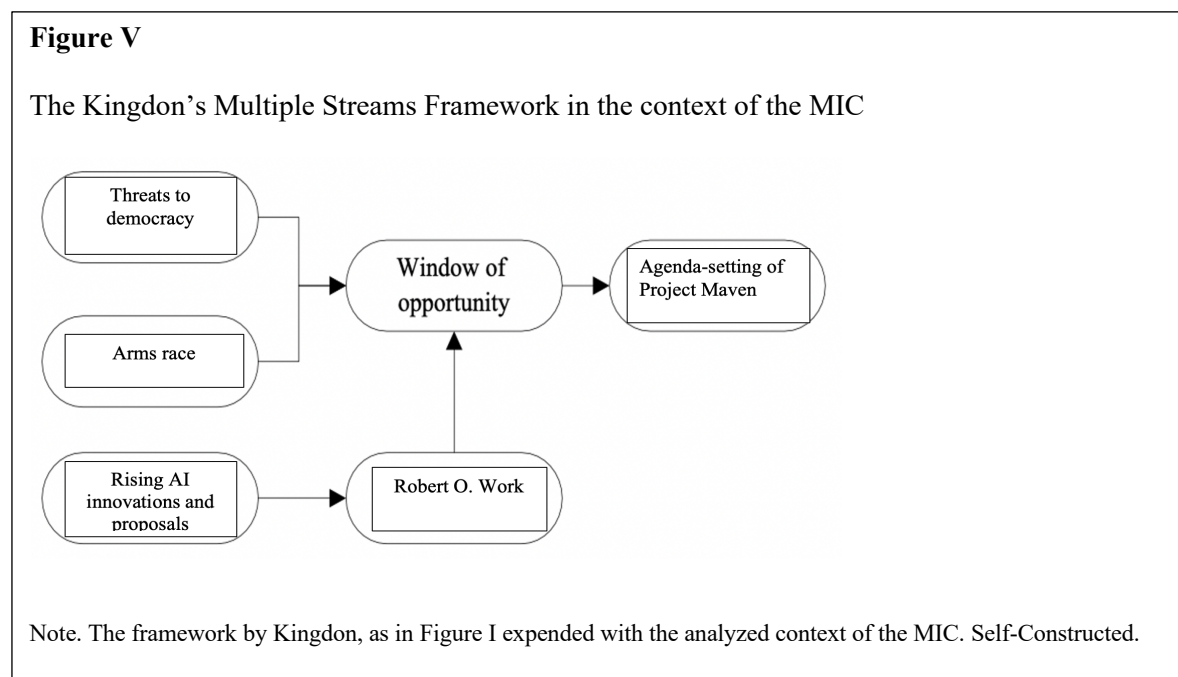
To successfully guide the rise in AI, the DoD developed a classified AI strategy, including several aspects like the establishment of the JAIC to coordinate the transition of AI into operational use, as presented by Work. These aspects are followed by a ‘strategic roadmap’ for AI establishments and a National Security Commission on AI “to conduct a comprehensive assessment of military relevant AI technologies and provide recommendations for strengthening U.S. competitiveness” (Sayler, 2020; 5). So that, AI can be regarded as the policy stream within the MSF, proposing policies without a structural process by involving tech companies in warfare technologies. Such as, *Lockheed Martin* that receives \$75 million of defense revenue from the U.S. government (DefenseNews, 2020; Figure III), and *Microsoft*, won a cloud contract from the Pentagon worth up to \$10 billion (Novet, 2021). Thereby, it is analyzed that the relationship between military and tech companies is expanding fast, including substantial resources. One determinant of fast-rising tech companies which deal with artificial intelligence is their annual revenue (Appendix C as an example of *Microsoft*). Strengthened by the fact that these companies have been founded between 1975 (*Microsoft*), 1994 (*Amazon*), and 1998 (*Google*), which was 22 to 46 years ago. However, their annual revenue is far over \$100 billion.

Undoubtedly, negative externalities are extreme as one potential downside might be an unmanageable great-power (nuclear) war. Whereby, AI technologies are able to rise in extreme power shifts, tempting a great power to initiate a preventive war as a potential scenario in the future (Rundquist, 1978). Whereas Project Maven symbolizes the rise of AI and the reluctance of *Google* to be involved in contracts with the Department of Defense in implementing new military AI systems. The unwillingness seems suspicious in the context of the MIC. Thereby, the dangers of AI usage can be illustrated by the Organization for Economic and Cooperative Development, which issued *Principles of AI* on May 22, 2019, to provide high-level guidance for responsible stewardship of trustworthy AI. (Băjenescu, 2020), setting guidelines and standards to ensure that the research, development, and use of AI ethical.

6.4 Historical Analysis within Agenda-Setting Theory

Considering the theoretical framework (Figure V), it has been analyzed that the arms race between the U.S., Russia, and China is driving the politics stream as it influences the body politics is becoming the leader of the world. The rise of AI advances the policy stream within a policy primeval soup because some ideas and companies survive and expand while others do not. Looking at the problem stream, the threat to democracy is elemental. That is why governmental action was needed to solve the public problem of an increasing MIC. Generally, all three streams are affected by the active MIC in 2017, so that a window of opportunity opened. Robert Work has been identified as the policy entrepreneur in the process of the MIC towards a relationship between military and tech companies. He intended to jumpstart the Pentagon's involvement in AI. He outlined how important it is to invest in AI technologies as the race would otherwise be lost against China. He believes that the rise in AI will even lead to a revolution in military affairs (RMA), outlining that the revolution begins with the emergence of Project Maven. (Work, 2018) All of this leads to the current situation of a strongly intermingled relation between the private tech industry and the military, only four years after the emergence of PM. So that, the government became progressively dependent on the private industry to develop military systems.

As a result, it's the military and the industry which define the conditions under which Project Maven rose, and we can explain it using Kingdon's Framework. Therefore, the multiple streams help analyze the MIC, symbolizing power relations in divergent contexts, describing how the power shifted from contracts between the military and the defense industry towards contracts between the military and the private tech industry.



7. Conclusion

This section concentrates on summarizing the main results. Therefore, I will first answer the sub-questions of the research. Following, I look back at my expectations from section 2.4. Finally, the explanatory research question will be answered.

The first sub-question **(a)** *What changes in the MIC did occur in the context of a rise in AI since 1961 in the U.S.?* has been answered in section 5.1.

The comparison over time shows that the MIC has become deeply entrenched in the American political system. As there are changes in military spending towards artificial intelligence, including contracts between tech companies and the U.S. government, these are blurring the line between times of peace and war. Ironically, the disclosed contract with tech companies is one of the U.S.'s most significant achievements in implementing military AI technologies. Moreover, growing power elites between the two sectors have been detected, as indicated by Mills in 1956.

Secondly, the descriptive question **(b)** *How did Project Maven develop after its initiation in 2017?* has been pointed out in sections 5.1.3 and 5.2.

Developments of Project Maven are *Google's* withdraw in 2018 and the inclusion of defense contractors into the usage of military AI systems like *Lockheed Martin Corp.* Illustrating that Project Maven is still active, as companies like *Microsoft* and *Amazon* still contract with the Pentagon on innovations in artificial intelligence. According to Eisenhower, the development shows the “disastrous rise of misplaced power” (1961). So that, the military actions are driven by a fusion of political and economic interests.

Thirdly, the explanatory sub-question **(c)** *How can the initiative and development of Project Maven be explained from MSF on changes in the MIC?* is answered in section 5.3.

The initiative arose through the coming together of all three streams, opening a window of opportunity that was successfully used by the policy entrepreneur Robert O. Work. He used its position and the perfect time to push for the contract between government and tech companies to become the leader in military AI systems. Symbolizing that the concept of the MIC changed but remains due to the dynamic and impact of vested interests. However, the MIC is pervasive and powerful but considerably less visible, less controllable, and more international. So that, the MIC has already developed elementary systems and is today building the system that will operate in the coming decades. (Galliott et al., 2020)

Generally, the CPT methodology helped detect the military-industrial complex as trigger point. Moreover, the CPT shows that the MIC is a valuable concept for understanding the current military establishment in receiving unprecedented government budget allocations within the U.S. Furthermore,

the tracing of events allows to explain the smoking gun effect with the emergence of Project Maven. As the coherent cluster of observation in the process of the MIC were disrupted by the establishment of Project Maven and *Google's* involvement as one of the most important tech companies. I detected the Maven case as the turning point in the MIC, as from 2017 on, the military spending towards AI innovations rose drastically.

In section 2.4, I stated my expectations that

- That changes within the MIC can be detected through the growing importance of the complex, especially in terms of military AI innovations in high-tech companies.
- An increasing (complexity of the) MIC.
- Actors are changing from industry to government and the other way around, creating a power elite, as Mills detected.
- A change in contractors of military defense contracts; from the traditional weapon industry towards tech companies.

Systematically, it can be concluded that the first expectation is disproved within the analysis section, due to missing data on military AI innovations, especially in terms of figures and with the application of Project Maven. Therefore, the MIC is hard to measure as it cannot visually be seen, and the phenomenon does not get public attention from media or other information-providing sources. However, other determinants like the single case and the theoretical framework conclude that the importance of the MIC did increase and still is expanding. Mainly due to similar characteristics of the two differentiated sectors.

The second expectation has been noticed through the case study, as it gives an example of an expanding military-industrial complex. The complex is growing in complexity as not solely traditional defense contractors are involved in the relationship between military and industry. Due to the Maven case, the defense industry extended towards the inclusion of tech companies into the MIC. As a result, it can be concluded that the MIC did change from 1961 until now in an increasing and shaping way. Thereby, the MIC consists out of self-interests hiding behind the banner of security.

The third expectation is analyzed as accurate, as in all three points in time, there was (at least) one policy actor who had ties to the other sector or changed from the industry to the state-governed military.

Lastly, the expectation of changing contractors is not entirely accurate as the traditional defense contractors are still contracting with the Pentagon. The only change is that tech companies also contract with the Pentagon regarding military systems.

Considering all, I am in the position to answer the research question:

How can we explain the development of Project Maven from agenda-setting theory, and to what extent did this Project affect the relationship between the military and industry?

The analysis shows that the policy, politics, and problem stream came together within the process of the military-industrial complex beginning in 1961. Therefore, the policy entrepreneur, Work, used the window of opportunity and his reputation as Secretary of State to put the contract on the agenda. Thus, the MIC has changed and expanded, as expected. However, the change cannot solely be traced back to military spending, as initially expected. Instead, the comparison over time shows that the state reduced its participation in sustaining defense research and allowed the private sector to play a more prominent role in defense production.

The second part of the question can be answered by referring to the growing power elite and the strongly intermingling relationship between military and industry. Affecting the relationship between military and industry to an expanding extent, as according to Work, Project Maven can be seen as RMA (Work, 2017) due to the advancement in AI technologies in the field of data collection and implication. This leads to a changed area of warfare technologies, including defense contractors, and a governmental dependence on tech company's innovations towards military AI systems. Through its content, the Maven Case symbolizes the changing power relations of influential multinational companies and the dependent DoD. Project Maven outlines the rise of AI within the interdependent relationship within a disclosed contract between military and industry. As the contract still is and possibly ever will be disclosed, the relation between the two sectors is seen as a violation of democracy in terms of transparency and legitimacy. Therefore, the MIC is genuine and endangers liberties like the democratic processes illustrated within the exemplary case. Overall, Eisenhower's warnings about the expansion of the military-industrial complex have not only been realized but have been immeasurably surpassed due to the symbiotic of rising artificial intelligence.

8. Discussion

This section outlines the shortcomings of the thesis as well as their relevance.

By looking back on the topic, more aspects can be included when analyzing the vast content of the MIC. For instance, fundamental theories like iron triangles and regulatory capture. Moreover, the development and meaning of Project Maven could have been considered through interviews with different stakeholders and the policy entrepreneur. Therefore, I suggest viewing the topic again with an extended timeframe in a broader study as it would be interesting to further study the military-industrial complex in times of rising artificial intelligence and a potential revolution in military affairs (Work,

2018). Unfortunately, this was not possible within the scope of the present thesis. However, it would be interesting to analyze what ethical and moral barriers the rising AI might bring about in further studies. Moreover, I can imagine that the outcome will be completely different when analyzing the complex again during another time, as forecasted by Băjenescu that “high-level machine intelligence will be developed around 2040-2050, rising to a nine in ten chance by 2075” (2020; Abstract).

The other shortcoming of the study is missing tables of budget spending on military AI systems. The weakness can be traced back to non-available data. Furthermore, the relationship between the Pentagon and tech companies is hard to measure because “most of what happens within the Pentagon stays hidden from outsiders” (Alic, 2020). This makes the situation hard to analyze but also highly interesting and unique.

The importance of the thesis lies in the detection of a military-industrial complex in the United States, which expands parts in power but mainly in the inclusion of AI technologies and in cooperating with tech companies instead of solely with traditional defense companies. Thereby, the multiple streams framework symbolizes why and how Project Maven has been put on the agenda in 2017. Thus, MSF is beneficial in analyzing the background of the changes in MIC towards artificial intelligence notions, sue to the theoretical implications of metaphors within the agenda-setting process.

Positively, the selected case highlights the most practical example of an increasing military-industrial complex containing a contract between military and industry (Frisk, 2018). More importantly, the case reflects the rise of AI in tech companies. That is why Project Maven depicts the perfect case, especially when looking at how it has been materialized and developed (Yin, 2018). Thereby, the thesis outlines that there needs to be more attention on the phenomenon, including public information concerning the content of Project Maven. Additionally, the U.S. government should publish its connection and contracts with the industrial sector as well as its budget expenditures towards military AI systems.

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