Science / War / Technology / The Military. Surveying Complex Relationships. 59th International Conference for Military History and Social Sciences

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The interdisciplinary conference was dedicated to discussing the entanglement of the military, science and technology. Though the close relationships between these fields is not new, the relationships have often been imagined as static rather than dynamic. Thus, the conference aimed at bridging military history and social sciences and focused on multi-layered complex interactions between the military, war, science and technology from the long 19th century until the present. Numerous thematic blocks discussed various places of military knowledge production in the context of the history of science and technology, achievements of scientific disciplines related to the military (amongst others medicine, physics, chemistry, innovation studies, cybernetics) and current problems and processes (for example digitalization of the military or automatization of military technology). The plurality of approaches, methods and key concepts was ensured through the interdisciplinarity of discussions, and therefore science and technology studies, history of science and medicine, digital humanities, ethics, political history (as one of the classical fields of military history), international politics and relations, international security, international law and literary studies were all represented at the conference.

Science and research in the military context were some of the most important topics at the conference, and numerous case studies focused on the developments of the sciences and the military in connection with each other from World War I to the present time. Furthermore, numerous papers exemplified developments of science and the military in German history. For instance, MANFRED RASCH (Bochum) explained the funding of military research during World War I in Germany. Before 1914 the research on military topics in Germany was funded by the industry and private persons. World War I marked a functional shift in financing military research as the state government became aware of the importance of research for military purposes. Rasch emphasized that the initiative for state funding came from the scientific community in order to serve the military and to make the research results applicable to practical warfare. The most important example of this is Fritz Haber's research on mustard gas in Berlin, conducted at the Kaiser Wilhelm Society for the Advancement of Science. The mustard gas, invented by Haber, was used by the German army during the war. Although the use of the gas did not bring any changes in warfare, the importance of the sciences for the military was fully recognized in the awarding of Fritz Haber in 1918 with the Nobel Prize. Since this event, it is hard to imagine the sciences and the military without one another. FRANK REICHHERZER (Potsdam) discussed the establishment of military science (*Wehrwissenschaft*) in interwar Germany and its sociological issues. Military science was established in Germany in 1933, aimed at problem-oriented and transdisciplinary research of questions related to warfare. It was considered to be a space for communication between military and society, which was required for a better coordination of the achievements of scientific research and its applications to the military and for an improved perception of the military in society. Thus, science became a central actor in the interwar period, and, following this, established a division of labor: while the military dealt with warfare, the sciences investigated economic, political and technical aspects of the war in order to make it more efficient. Then again, the increase of efficiency of the German army legitimized the close connection between military and science. Reichherzer rightly mentioned that military science was a social practice; nevertheless, the society was excluded from discussions about the application of scientific achievements to military goals because of the high level of secrecy and censorship. SÖREN FLACHOWSKY (Berlin) pointed out

that science and technology in Nazi Germany were characterized by a chaotic science policy which was combined with a contempt for specialist knowledge. Inflexible planning of the research in 4-year-plans and a lack of connections between industry, science and society were the main problems of the science policy in Nazi Germany.

The advanced topics of transatlantic military history were also discussed. OLIVER MEIER (Berlin) focused on the time after World War II and called the nuclear bomb a 'game changer'. The nuclear order was understood as a specific way of dealing with dangers, contradictions and inequalities in the world.[1] It is most problematic in this field that decisions are made by a small circle of political rulers and the high level of secrecy prohibits access to information. PHILIPP MÜNCH (Potsdam) spoke about the spread of American military science and knowledge transfer in the Bundeswehr since 1975 – especially the methods of material and strategic calculations of military operations developed during World War II. These developments marked the beginning of operations research as a scientific discipline. Political issues for the establishment of operations research were the focus of the investigation. The Sputnik shock in 1958 was the starting point for the widespread operations research of the USA to produce more compatible data, whereby the spread of knowledge was carried out by NATO. TOM DYSON (London) dealt with contemporary organization of 'learning from war' in the modern British army whose special tactics-lessons were thereby driven by the US innovations in the Iraq War. The goal is to gain effective military knowledge transformation and to make it useful for future operations of the British army.[2]

A number of papers of the conference addressed the importance of the military in understanding communication technologies. TOBIAS NANZ's (Dresden) paper was dedicated to crisis communication during the Cold War. During this period, human actors were not the only agents who decisively influenced communication, non-human actors like machines and communication technologies also played a part in the shaping of communication.[3] This constellation was exemplified by the supposed communication over the so-called 'Red Telephone' represented in science fiction. The literary representations of the nuclear war were investigated on the basis of science fiction novels from the 1950s and 1960s. The 'Red Telephone' is thereby a central element of such novels. The book „Strategy and Arms Control" by Thomas Schelling and Morton H. Halperin (1961) served as an inspiration for numerous science-fiction-authors. The genre influenced the real communication practices in times of nuclear deterrence. Science fiction made wide reader circles familiar with contemporary nuclear deterrence theories and influenced the building of public opinion. The nuclear deterrence is a literary representation of the theory of 'mutually assured destruction' developed by John von Neumann according to which both the USA and the USSR have enough nuclear capacities to destroy each other. In novels like „Red Alert" by Peter George and „Fail Save" the 'Red Telephone' stands in the foreground as an important dramaturgical element. Because of its literary representations the 'Red Telephone' became a hybrid actant which exerted not only fictive but also real influence during the Cold War. MARTIN SCHMITT (Potsdam) investigated social issues of technological development by the example of one of the first computer networks APRANET in the early 1970s, applying a poststructuralist approach of the social construction of technology, and distinguishing between the three relevant social groups: the military, industry and underground culture: The military developed computer networks in the context of the Cold War, science pushed new technological achievements and wanted to develop new research perspectives of telecommunications, while the underground culture wanted equal access to information and was thereby against both the military and the industry and saw

[1] James M. Acton, Escalation through Entanglement. How the Vulnerability of Command-and-Control Systems Raises the Risks of an Inadvertent Nuclear War, in: International Security 43,1 (2018), pp. 56–99.

[2] Samuel Philips Huntington, The Soldier and the State. The Theory and Politics of Civil–Military Relations, Harvard 1981.

[3] Bruno Latour, Science in Action. How to Follow Scientists and Engineers Through Society, Milton Keynes 1987.

the APRANET as a technology of freedom. Therefore, the APRANET as a sociotechnical ensemble consisted not only of infrastructure and software, but also its social surrounding. The tensions between freedom and secrecy, communication and surveillance during the construction of the APRANET exemplified the essential role of social values in technical systems. NIKLAS VAN AALST (Potsdam) observed the technical development and perception of the Internet in the 1990s from the perspective of science fiction literature. Although the Internet was considered by society as a space of freedom, there was also uncertainty regarding its incalculable effects. In this sense, the concept of 'cyber war' was developed in the US and was decisively influenced by literature. The text „Cyberwar is Coming!" (1993) by John Arquilla and David Ronfeldt was especially influential, although the study was speculative without any analysis or clear results. Nevertheless, this text found wide reception and is an example of how fictive scenarios linked terrorism with the Internet. Van Aalst sees science fiction as a moving force for the perception of new technologies, and fear as a result of ignorance and insecurity. The fictions about the Internet generally played a more important role rather than technical facts or research results.

Overall, the central topic of the conference was autonomous weapon systems. MICHAEL DECKER (Karlsruhe) examined in his keynote lecture the role of the human being in autonomous technical systems. He looked at questions concerning the economic possibility of substituting human work by machines, repair and maintenance of the autonomous weapon systems as fields of application for humans, technical support, surveillance and responsibility for robots' actions were discussed. Robots were considered as transparent, predictable and calculable. Because an action requires goals (given by humans) and the robots cannot formulate them by themselves, they possess only a 'weak autonomy'. In the contrary, the strong autonomy is possessed by the human, who formulates rules and goals. Even though automatic systems calculate their actions when following the rules, they do not make decisions. This asymmetrical relationship refers to moral

scripts in technical systems, depending on moral values which are not the same for every society. Decker argued that cooperation and collaboration between human beings and machines could be fruitful, however, no substitution is possible. He showed that social and political problems cannot be solved through technology alone. DIERK SPREEN (Berlin) investigated connections between transhumanism and autonomous weapon systems based on profound investigations by Ror Arkins, Ray Kurzweil, Victor Vinge, Nick Bostrom and Hans Moravec. Transhumanism was understood as a redefinition of human nature through its supplementation with artificial (technological) elements to exceed the possibilities of the biologically defined human life. The starting point was that humans can be substituted by artificial intelligence, which has a high relevance for the military. Questions such as „Can robots be more humane than humans?" and „Can robots prevent war crimes?" are ethically problematic. The critique of extending the biological frame of human existence like 'terminator scenarios' in literature and art, in which robots gain in importance and begin to kill the humans, has political and social effects because transhumanism can also be seen as anti-humanism when the human is downgraded to a dead subject. ROBIN GEIß (Glasgow) dealt with open problems of international law related to autonomous weapon systems. The paper focused on responsibility for actions of such systems and decision-making processes (especially in case of negligence). There have been no clear solutions until now. Mathematically calculated killing is thereby an infringement of human dignity, so the human is degraded to an object. Because of these considerations Geiß pleads for more human control of autonomous weapon systems.

The conference provided insights into innovative approaches towards military history and achieved its goals by bringing together various perspectives of the humanities on the military, war, science and technology. Moreover, the conference brought young and experienced researchers together and enabled a productive exchange of ideas. Undoubtedly, new perspectives of military history have been opened. In spite of this success there are

some epistemological problems regarding the scope and historical time frame. Although the conference concentrated on modern history (since 1500), most cases discussed belonged to contemporary history (since 1900). While focusing on the history of Germany, Western Europe and partially also the USA, many historically important regions and cases (for instance Eastern Europe, the Eastern Bloc, the Third World, decolonization after World War II or global historical approaches) were excluded or represented only insufficiently and should be allowed more space in future conferences.

Conference Overview:

Panel I: Wandern zwischen Welten. Die Universität und das Militär

Matthias Berg (Dortmund): Papierkrieger. Akademische Rezeptionen und Adaptionen von Krieg wie Militär im Vergleich (1870/71, 1914/1918, 1939/1945)

Florian J. Schreiner (Jena): Akademische Wehr- und Studentendivision. Universität und Militär im Nachkrieg des Ersten Weltkrieges

Simon Meisch (Tübingen): Friedens- und Zivilklauseln zwischen Zumutung und Verantwortung

Panel II: Militär und Medizin

Anja Opitz / Martin Prokoph (beide Tutzing): Global Health Security und Militär. Zur Interdependenz zwischen resilienten Gesundheitssystemen und der Rolle des Sicherheitssektors

Nebiha Guiga (Paris): Amputation and Evacuations during the Napoleonic Wars. Theoretical Discussions, Technical Solutions and Logistical Difficulties

Andrea Gräfin von Hohenthal (Hohenthal): Experten in der Luft. Psychologische Diagnostik bei der Luftwaffe im Ersten Weltkrieg – Großbritannien und Deutschland im Vergleich

Abendvortrag
Michael Decker (Karlsruhe): Menschliches Handeln und autonome Technik. Eine multiperspektivische Reflexion

Panel III: Akteure – Netzwerke – Konzepte des Wandels

Tobias Nanz (Dresden): Krisenkommunikation im Kalten Krieg. Konstellationen faktischer und fiktionaler Akteure

Philipp Münch (Potsdam): Einfallstor der Wissenschaft? Die NATO, die USA und der Beginn von „*Operations Research*" in der Bundeswehr

Alexander Salt (Calgari): Military organizational change. Integrating the lessons of war

Panel IV: Militär 4.0

Martin Elbe (Potsdam): Innovation als Regelverletzung. Zur Temporalität der Organisation

Dierk Spreen (Berlin): Transhumanismus im Militär

Tom Dyson (London): The British Army as a Learning Organization. Exploring the Sources of Military Learning

Panel V: Rüstung und Militär

Dieter H. Kollmer (Potsdam): Mit der 143er Klasse in ein neues maritimes Zeitalter

Helmut R. Hammerich (Potsdam): Baron Fuchs und die Modernisierung der deutschen Artillerie vor dem Ersten Weltkrieg

Ralf Stremmel (Bochum): Zur Verwissenschaftlichung der Rüstungsforschung in der Industrie. Das Beispiel der Firma Krupp, 1880-1918

Panel VI: Hybrid-Gemeinschaften. Der Blick in die Zwischenräume

Manfred Rasch (Bochum): Wollen und Wirken der Kaiser Wilhelm Stiftung für kriegstechnische Wissenschaft im Ersten Weltkrieg

Sören Flachowsky (Berlin): Das Reichsamt für Wirtschaftsausbau und die kriegs- und rüstungsrelevante Industrie

Frank Reichherzer (Potsdam): Im Zwischenraum. Die Deutsche Gesellschaft für Wehrpolitik und Wehrwissenschaften (1928-1945)

Panel VII: Die Atombombe als ‚gamechanger'

Markus Thurau (Potsdam): Die Atombombe

und der Gerechte Krieg. Ein Paradigmenwechsel in der katholischen Soziallehre?

Xavier Royer de Véricourt (Paris): French Nuclear Doctrine in Context

Katharina Kunter (Heidelberg): Auf der Suche nach Sicherheit und Gleichgewicht. Die Rolle der Atomwaffen im KSZE-Prozess

Oliver Meier (Berlin): Die Bedeutung von Atomwaffen für die internationalen Beziehungen des 21. Jahrhunderts

Panel VIII: Aufbrüche in das digitale Zeitalter. Die Rolle des Militärs als Innovationsbetreiber und Anwender

Martin Schmitt (Potsdam): Computernetzwerke im Kalten Krieg. Das ARPANET als kybernetisches System

Janine Funke (Potsdam): „Erst organisieren, dann automatisieren". Die frühe Computerisierung in Bundeswehr und NVA

Niklas van Aalst (Potsdam): Albtraum oder Aufbruch? Wahrnehmungen des Cyberraumes in den 1990er-Jahren

Panel IX: Autonome Waffensysteme

Jürgen Altmann (Dortmund): Technologien für autonome Waffensysteme. Stand und Perspektiven

Götz Neuneck (Hamburg): Sicherheitspolitische Implikationen und Möglichkeiten der Rüstungskontrolle autonomer Waffensysteme

Robin Geiß (Glasgow): Die völkerrechtliche Dimension autonomer Waffensysteme

Bernhard Koch (Hamburg): Ethische Fragestellungen im Kontext autonomer Waffensysteme

Podiumsdiskussion

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