

A Sociology of the Drone

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Introduction

Defence politicians, international law experts, philosophers and not least the critical public – all of them have increasingly led debates for years on the topics of the acquisition and employment of combat drones.¹ Initially, many of these voices are discussing the value of combat drones for the military.² The majority of these descriptive-technical and military-strategic literature regards the development and use of combat drone as a compelling, mostly positive development. These texts often share a technology-deterministic approach. This approach to technological development assumes that an ever-improving information and communications technology as well as progress in the development of artificial intelligence will nearly automatically lead to the increase of efficiency and effectiveness in military reconnaissance and weapons systems. For example, drones, by contrast to manned systems, are not subject to fatigue. They are more cost-effective than other systems with similar weapons effect. They require little or no infrastructure in the theatre of deployment.

Some authors, however, do question these assumptions critically. They argue that efficiency at the tactical level cannot be equated with strategic or even political effectiveness. By contrast, the employment of combat drones can be rendered ineffective at those levels through

¹ The views expressed in this chapter are solely those of the author. For their comments on earlier drafts the author would like to thank Jeronimo Barbin, Gerhard Kümmel, Steffen Kraft, Thomas Müller, Frank Reichherzer and two anonymous reviewers.

² Amitai Etzioni, 'The Great Drone Debate', *Military Review* 93, 2 (2013), pp. 2-13, Peter W. Singer, *Wired for War: The Robotics Revolution and Conflict in the Twenty-First Century* (New York: Penguin Press, 2009) plates, Peter W. Singer, 'Robots at War: The New Battlefield', in *The Changing Character of War*, eds.) Hew Strachan and Sibylle Scheipers (Oxford: Oxford University Press, 2011), pp. 333 - 53, Kai Biermann and Thomas Wiegold, *Drohnen: Chancen und Gefahren einer neuen Technik* (1st Edition, 2015).

the radicalization of local communities, lasting diplomatic conflicts with the governments of the countries where drones are employed, and through the tactical adaptation of the opponent.³

Unlike technological and military-strategic considerations which approach the topic of combat drones against the background of their effectiveness and efficiency, ethics as an element of practical philosophy deals with the standards and decency of the employment of combat drones.⁴ According to an interpretation in favour of combat drones, states are ethically obligated to use drones as the means of choice to spare the lives of their soldiers.⁵ Others argue that combat drones pose an ethical issue, as their employment violates the rules of a fair warfare.⁶

Legal approaches, on the other hand, are concerned with the lawfulness of the development and employment of combat drones and autonomous systems.⁷ This concerns issues of controlling the development and distribution of war weapons, of the *whether* and *how* new technologies influence the application of the right to war (*ius ad bellum*) and the right in war (*ius in bello*), but also the issues whether the national and international laws and regulations currently in place adequately include the new technologies or whether international law requires a revision.⁸

Those descriptive-technological, military-strategic, ethical and jurisdictional approaches currently characterise the scientific and public discourse about combat drones. But the development and the employment of combat drones also represent an issue that exceeds

³ André Barrinha and Luis Da Vinha, "Dealing with Risk: Precision Strikes and Interventionism in the Obama Administration," in , *Precision Strike Warfare and International Intervention: Strategic, Ethico-Legal and Decisional Implications*, eds., Mike Aaronson et al. (London; New York: Routledge, 2015), pp. 14-32, W. Andrew Terrill, 'Drones over Yemen: Weighing Military Benefits and Political Costs', *Parameters (US Army War College Quarterly)*, 42(4)/43/1 (2013), 17-23, Audrey Kurth Cronin, 'Why Drones Fail. When Tactics Drive Strategy', *Foreign Affairs*, July/August 2013 (2013), 44-54.

⁴ David Whetham, "Killer Drones: The Moral Ups and Downs," *The RUSI Journal* 158, 3 (2013): pp. 22-32; Mark Coeckelbergh, 'Drones, Information Technology, and Distance: Mapping the Moral Epistemology of Remote Fighting', *Ethics and Information Technology* 15 (2013): pp. 87-98; Bernhard Koch, "Bewaffnete Drohnen und andere militärische Robotik: Ethische Betrachtungen," in *Moderne Waffentechnologie: Hält das Recht Schritt?* eds., Christof Gramm and Dieter Weingärtner (Baden-Baden: Nomos, 2015), pp. 32-55.

⁵ Bradley Jay Strawser, "Moral Predators: The Duty to Employ Uninhabited Aerial Vehicles," *Journal of Military Ethics* 9, 4 (2010): pp. 342-68.

⁶ Daniel Brunstetter and Megan Braun, "The Implications of Drones on the Just War Tradition," *Ethics & International Affairs* 25, 3 (2011): pp. 337-58.

⁷ Robert Frau, ed., *Drohnen Und Das Recht: Völker- und Verfassungsrechtliche Fragen automatisierter und autonomer Kriegführung* (Tübingen: Mohr Siebeck, 2014).

⁸ Koch, "Bewaffnete Drohnen und andere militärische Robotik: Ethische Betrachtungen."

technical, strategic, ethical and legal dimensions and affects the self-perception of societies, military organisations and even individuals and groups, i.e. topics of particular interest to sociologists. Explicitly sociological arguments, however, are hardly perceivable in the current discussion about combat drones.

The non-participation of sociologists in the drone debate may be related to the general difficulty of sociology to deal with the topics of military and war.⁹ However, sociological studies have indeed contributed to earlier armament or strategy debates. For example, sociological research in the fields of organization and technology tried to explain which social aspects play a role in the implementation or non-implementation of certain military technologies and concepts.¹⁰ Case studies, for example, deal with the institutional and organisational culture factors having contributed to the development and acquisition of aircraft carriers, certain information and communications technologies and nuclear weapons, as well their military concepts of employment.¹¹

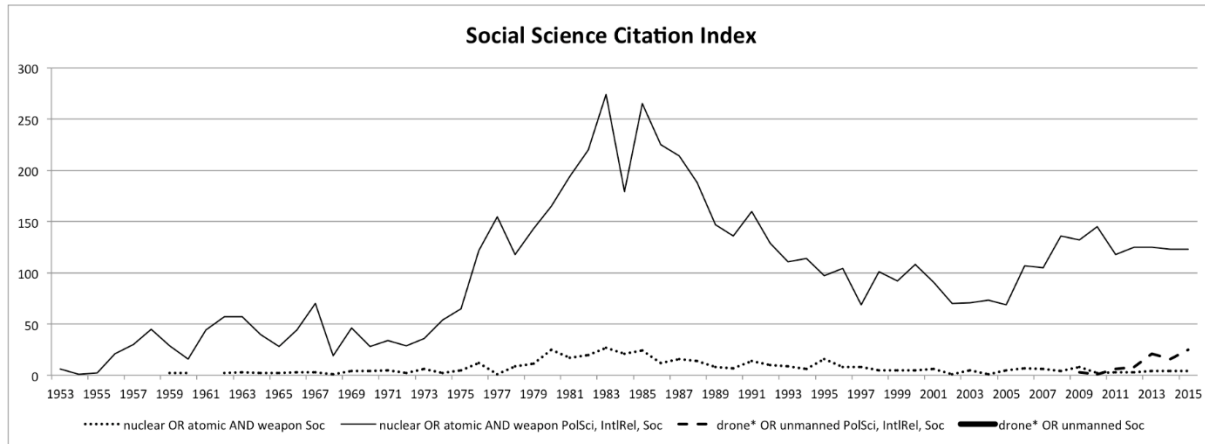
When comparing the frequencies of scientific contributions on nuclear weapons and on drones in journals registered in the *Social Science Citation Index*, the silence of the sociologists about the topic of drones seems puzzling at first (Figure 1). The number of scientific contributions in the fields of political sciences, international relations and sociology on nuclear weapons and drones differs enormously, despite high public interest in these topics. Looking at the frequencies in sociological journals, the difference seems even more marked: Although a continuous presence of the topic of nuclear weapons does exist in these journals, it is as late as 2015 that two articles on drones appeared.

⁹ Lester R. Kurtz, "War and Peace on the Sociological Agenda," in *Sociology and Its Publics*, eds., Terence C. Halliday and Morris Janowitz, (Chicago, 1992), pp. 61-98.

¹⁰ Theo Farrell and Terry Terriff, *The Sources of Military Change: Culture, Politics, Technology* (Making Sense of Global Security), (Boulder, Colo.: Lynne Rienner Publishers, 2002); , Emily O. Goldman and Leslie C. Eliason, *The Diffusion of Military Technology and Ideas* (Stanford, Calif.: Stanford University Press, 2003).

¹¹ Lynn Eden, *Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation* (Cornell Studies in Security Affairs," (New York: Cornell University Press, 2004); William C. Potter, "The Diffusion of Nuclear Weapons," in *The Diffusion of Military Technology and Ideas*, eds., Emily O. Goldman and Leslie C. Eliason (Stanford, Calif.: Stanford University Press, 2003), pp. 146-78; Ina Wiesner, *Importing the American Way of War? Network-Centric Warfare in the UK and Germany* (Militär Und Sozialwissenschaften; Baden-Baden: Nomos, 2013); Michael C. Horowitz, *The Diffusion of Military Power. Causes and Consequences for International Politics* (New Jersey: Princeton University Press, 2010).

Figure 1



Source: The frequencies of contributions with nuclear weapons or drones in the title in the fields of political sciences, international relations and sociology, and sociology only, respectively. Accessed at *Web of Science* on 15 April 2016. No graphical representation possible of two sociological contributions in 2015 (drone* OR unmanned Soc).

Similar effects are even reflected in popular culture. While the movie "Dr. Strangelove or How I Learned to Stop Worrying and Love the Bomb" (1964, Stanley Kubrick) reflected research results of strategists, politicians, advisers and military personnel which led to the specific development of the US-American nuclear strategy, the current drone films *Drones* (2013, Rick Rosenthal) and *Good Kill* (2014, Andrew Niccol) instead nearly exclusively focus on the psychological stress of drone operators which develops out of doubts about the ethical justifiability of their actions. Still, some social particularities of combat drones appear at least in the subplot. For example, the status assignment of drone operators and "real" pilots, i.e. combat aircraft pilots, which is perceived as different within the organization of the military, is addressed in the film.

The above comparison of the publication frequencies on nuclear weapons and drones also reveals that sociological approaches on nuclear weapons only came up with a few years' delay after the start of the political science discourse on the topic. The sociologists' current disinterest in the topic of combat drones does not necessarily mean that the debate will remain restricted in the future to legal, ethical and strategic issues as it is now. It is advisable to deal with questions beyond that, for example questions regarding the institutional interests that play a role in the development and employment of combat drones.

The following paragraphs will therefore discuss the topic of combat drones from a sociological standpoint. It is helpful, using the analysis levels of sociology and the scientific interest of sociology of technology, to structure potential specific questions on the development and the employment of combat drones.

Sociological Starting Points

Sociology focuses on social action. Depending on the specific research interest, societies, organisations or individuals are the focus.¹² These levels are the basis for the subdivision into macrosociology, mesosociology and microsociology.

Not only military sociologists deal with the topics of military and warfare. The military, time and again, is the object of studies in organisational sociology. Furthermore, studies of military technology are a domain of the sociology of technology that is counted among the so-called special sociologies, as are military sociology and organisational sociology.¹³ Starting from the perspectives of the sociology of technology seems favourable for a sociology of the drone. Scholars working on sociological aspects of technology development assume one of two different perspectives on technology. On the one hand, they deal with the social processes leading to technological innovation and diffusion. They ask: Why do certain technologies emerge at certain times? Why do certain technologies assert themselves among users, in organisations or societies, but others do not? They also ask about the implications which technology has on societies, on organisations and on individuals. In the following figure, these two perspectives are referred to in a simplified way as input and output dimension.

¹² Raymond Boudon, "Sociology: Overview," in *International Encyclopedia of the Social & Behavioral Sciences*, ed., Neil J. Smelser, and Paul B. Baltes (Oxford: Pergamon, 2001), pp. 14581-85.

¹³ G. Kneer, Schroer, M. (eds.), *Handbuch spezielle Soziologien* (Wiesbaden, VS Verlag für Sozialwissenschaften, 2010).

Figure 2. Research questions on the topic of combat drones¹⁴

		Focus of the sociology of technology	
		Input dimension	Output dimension
Level of observation	Society	What are the social factors promoting the development and employment of combat drones?	What are the effects of the development and employment of combat drones for society?
	Organisation	What are the organisational factors and dynamics fostering the development and employment of combat drones?	What effects do combat drones and their employment have on purposes, members, structures, processes and culture of military organisations?

¹⁴ Roger Häußling has offered a similar structure when discussing theories and research programs of the sociology of technology. See: Häußling, Roger "Techniksoziologie," in *Handbuch spezielle Soziologien*, eds., G. Kneer and M. Schroer (Wiesbaden, VS Verlag für Sozialwissenschaften, 2010), pp. 623-43.

	Individual	Who pushes the development and employment of combat drones for what reason?	What are the implications of combat drones and their employment for the action of individuals?
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The combination of three sociological approaches and the two main interests of the sociology of technology, i.e. the question of the social input for the development of technology and the question of the social output of technology, results in a helpful structuring of potential research questions for the development of a sociology of the drone (figure 2).

The Input dimension

A combat drone is a so-called technical artefact, an object created by humans. Combining innovation from aviation, communications technology and weapons technology to an overall system of the combat drone, however, does not happen out of technology-immanent necessities, even though descriptive-technical specifications of military technologies often assume a technology-deterministic development.¹⁵ Also, a functionalist, demand-oriented view, according to which technology develops to solve occurring problems, would be too short-fetched. In contrast to these technology-deterministic and microeconomic perspectives on technology development, sociologists interested in technology since the 1960s have regarded innovation and the diffusion of technologies as a social process, as innumerable decisions are made and negotiations are conducted in the course of technology development (for example on research and development funding, research foci, prototype development, required functions, etc.). Inferences about the social influencing factors on the development of technologies, i.e. the input factors, were drawn from a wide spectrum of case studies, for example about "Bicycles,

¹⁵ For a critical approach see: René Moelker, "Technology, Organization and Power," in *Handbook of the Sociology of the Military*, ed., Giuseppe Caforio, Handbooks of Sociology and Social Research (New York: Kluwer Academic/Plenum Publishers, 2003), pp. 385-402; R. R. Kline, "Technological Determinism," in *International Encyclopedia of the Social and Behavioral Sciences*, eds., Neil J. Smelser and Paul, B. Baltes (Oxford: Pergamon, 2001), pp. 15495-98.

Bakelites, and Bulbs;" the particular cross impact of military and technological development is repeatedly a topic in this.¹⁶

Regarding the development and employment of combat drones, the question that arises is *Why*. Why do military drones exist? Why are drones equipped and employed in a particular way? Approaching this question from a macro-perspective, combat drones may appear as another expression of western societies' estrangement from war.¹⁷ The drone as a standoff weapon keeps off the war from the post-heroic, casualty-sensitive societies that shy away from putting their own soldiers at the risk of being killed.¹⁸ "The drone," argues Herfried Münkler, "is the embodiment of the post-heroic society."¹⁹

Even though the argument of post-heroic societies is debated,²⁰ and casualty-sensitivity of societies cannot empirically be established²¹, some scholars remark that political elites are restrictive in the use of military means because they fear negative reaction by the electorate.²² It appears that the myth of a casualty-sensitive society has become part of the political narrative in western democracies, and thus guides political action.

¹⁶ Donald A. Mackenzie and Judy Wajcman, *The Social Shaping of Technology* 2nd Edition (Buckingham, Philadelphia: Open University Press, 1999), p. xvii, 462 pages, for military technology case studies in the fourth portion of the volume, Wiebe E. Bijker, *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change* (Inside Technology; Cambridge, Mass.: MIT Press, 1995), p. x, 380 pages.

¹⁷ Pascal Vennesson, "War without the People," in *The Changing Character of War*, eds., Hew Strachan and Sibylle Scheipers (Oxford: Oxford University Press, 2011), pp. 241-58.

¹⁸ Nina Leonhard, "Die postheroische Gesellschaft und ihr Militär", in *Metaphern Soziologischer Zeitdiagnosen*, ed., Matthias Junge (Wiesbaden: Springer Fachmedien Wiesbaden, 2016), pp. 101-21. Edward N. Luttwak, "Toward Post-Heroic Warfare," *Foreign Affairs* 74, 3 (1995): pp. 109-22; Herfried Münkler, "Heroische und postheroische Gesellschaften," *Merkur: deutsche Zeitschrift für europäisches Denken* 61, 700 (2007): pp. 742-53.

¹⁹ Herfried Münkler,; Soboczynski, Adam; Nicodemus, Katja "Schmerzlicher, blutiger und grausamer," *Gespräch mit dem Politikwissenschaftler*, Herfried Münkler, *Die ZEIT*, 2014.

²⁰ Sibylle Scheipers, ed., *Heroism and the Changing Character of War* (Houndmills, Basingstoke: Palgrave Macmillan UK, 2014); Christoph Schwarz and Ralph Rotte, "Aeneas statt Achill. Anmerkungen zum Postheroismus westlicher Gesellschaften," *Merkur: deutsche Zeitschrift für europäisches Denken* 62, 704 (2008): pp. 86-90.

²¹ Gerhard Kümmel, "Gestorben wird immer!?: Oder: Postheroismus, 'Casualty Shyness' und die Deutschen," in *Jahrbuch Innere Führung 2009*, eds., U. Hartmann, C.v. Rosen, C. Walther (Die Rückkehr des Soldatischen), pp. 92-109.

²² Peter D. Feaver, Charles Miller, "Provocations on Policymakers, Casualty Aversion and Post-Heroic Warfare," in *Heroism and the Changing Character of War*, ed., S. Scheipers (Houndmills, Basingstoke: Palgrave Macmillan UK, 2014), p. 149; John Kaag, Sarah E. Kreps, *Drone warfare. (War and conflict in the modern world)* (Cambridge u.a.: Polity Press, 2014), p. 59ff; Richard A. Lacquement Jr., "The Casualty-Aversion Myth," *Naval War College Review* LVII, 1 (2004): pp. 39-57.

Possibly, the existence of drones is an expression of a two-class view of western societies on human rights. The question may be asked whether western societies do not implicitly assume a western soldier's life is of more value than the life of a person who is innocently killed by a drone. In a representational survey in Germany from 2013, the interviewed people stated in an open question their reasons why they are in favour or against the employment of combat drones. Although the majority was against the use of drones, only 4 % of the drone opponents named the danger for uninvolved civilians as a reason for objection, while 19 % of the drone supporters gave the protection of own soldiers as a reason.²³ Differing valuation of life for members of one's own group and members of strange groups is first and foremost a subject of ethical debates, but if it manifests itself in preferences of actions, it also has a socio-political dimension.

Another macro-perspective on the development and employment of drones is that of the social cost pertaining to wars. The argument goes, that large-scale wars are too cost-intensive for globalized and networked societies. Therefore, conflicts are rather being downscaled to small-scale wars.²⁴ Combat drones are a perfect means for small-scale, but often endless wars.

At the organisational level, the appearance and the success upon the introduction of the combat drone through armed forces raises the question *Why?* Why do armed forces use the combat drone as a preferred means of mission achievement and why do they not make use of alternative options like personnel-intensive peace enforcement troops or small-size operational detachments? One answer can be found in the cross impact of macro- and mesosociological phenomena: The post-heroic society feeds and is fed on a technophile paradigm which has established itself within the US Armed Forces since the Viet Nam war and the debate about the *Revolution in Military Affairs* starting in the 1990s, and which had an impact on the development and the employment of combat drones.²⁵

However, the technophile paradigm is not at all the result of exclusively sociocultural change processes. It is quasi a consequence of a path-dependent process where actors act within an experience and decision space that has been limited by previously made decisions.²⁶ Seen

²³ Meike Wanner and Heiko Biehl, *Sicherheits- und verteidigungspolitisches Meinungsklima in der Bundesrepublik Deutschland Ergebnisse der Bevölkerungsumfrage 2013* (Potsdam: ZMSBw, 2014), p. 25f.

²⁴ Azar Gat, "The Changing Character of War," in *The Changing Character of War*, (eds.), Hew Strachan and Sibylle Scheipers (Oxford: Oxford University Press, 2011), pp. 27-47 at 29.

²⁵ Thomas G. Mahnken, *Technology and the American Way of War* (New York: Columbia University Press, 2008).

²⁶ Raghu Garud and Peter Karnøe, "Path Creation as a Process of Mindful Deviation," in *Path Dependence and Creation*, eds., Raghu Garud and Peter Karnøe (Lea's Organization and Management Series; Mahwah, N.J.: Lawrence Erlbaum Associates, 2001), pp. 1-38.

from this perspective, drones appear as advanced development of technological progress in the fields of avionics in the 1980s as well as of information and communication in the 1990s and 2000s.²⁷ The specific character of the military-industrial collaboration, shaped through a monopolistic position of the demander, i.e. the state, and the shortage of the supply associated with it, supposedly also creates path dependencies, although there have so far been no studies on the question of combat drones and industry.²⁸

Of similar interest is the aspect of institutional promotion of opinion leaders by the military. We know from diffusion research that opinion leaders have a positive influence on the dissemination of new ideas.²⁹ Against this background, Grégoire Chamayou gave the interesting indication that the US military assigned the professorial chair for philosophy at the Naval Postgraduate School in Monterey to Bradley Strawser, a drone supporter.³⁰ This means he has privileged access to the defence field and the chance to put a positive mark on the debate on the employment of drones within American defence institutions.

There are, furthermore, case studies in literature under the keyword *inter-service rivalry* about how competition for the defence budget between the individual services is a motor for innovation.³¹ In the case of the US combat drones, however, it is the cross-departmental competition between the US armed forces and the Central Intelligence Agency (CIA) that encourages the current employment of drones in the fight against terrorism. The reason for this competition is that in the 1990s both the armed forces and the CIA developed unmanned reconnaissance systems and thus established drone competences.³² As a result, the CIA has also cultivated a role in the current anti-terrorist operations; a role that actually the US military claims for themselves, but which the CIA is defending against attempts to re-transfer this authority back to the armed forces.³³

In addition to the focus on innovation processes, another perspective asks about the diffusion of ideas and technologies. More than 70 states own drones and more than 50 states are

²⁷ Mahnken, *Technology and the American Way of War*.

²⁸ Mary Kaldor, "The Weapons Succession Process," *World Politics* 38, 4 (1986): pp. 577-95.

²⁹ Everett M. Rogers, *Diffusion of Innovations* 5th Edition (New York: Free Press, 2003), p. xxi, 551 p. at 316.

³⁰ Grégoire Chamayou, *Ferngesteuerte Gewalt: Eine Theorie der Drohne* (Passagen Thema, Wien: Passagen-Verl., 2014), pp. 286 S. at 146.

³¹ Adam Grissom, "The Future of Military Innovation Studies," *Journal of Strategic Studies* 29, 5 (2006): pp. 905 – 34; Terry Terriff, "Innovate or Die: Organizational Culture and the Origins of Maneuver Warfare in the United States Marine Corps," in Grissom, pp. 3, 475 - 503.

³² Frank Strickland, "The Early Evolution of the Predator Drone," *Studies in Intelligence* 57, 1 (2013): pp. 1-6.

³³ Eric Schmitt, "Congress Restricts Program Shift," *The New York Times*, January 17, 2014.

developing their own drones.³⁴ Under the buzzword *isomorphism*, DiMaggio and Powell demonstrated that organisations often adapt to each other in their structures and processes.³⁵ This also applies to the armed forces of various nations. While the technophile paradigm of the US forces itself was an export success, having triggered a technology-based modernization boost in many other armed forces, particularly among the NATO forces under the buzzword *transformation* since the start of the new century, one can also find a swift diffusion of military drones among other states' armed forces.³⁶ The adoption of drone technology is not only triggered by aspects of effectiveness. For example, *organisational prestige* plays a role here.³⁷ There are indications that states acquire drones in order to demonstrate the modernity of their own military.³⁸ The statements of the former German Federal Minister of Defence, Thomas de Maizière, exemplify this for Germany. During a debate in the plenum of the German Parliament, de Maizière lists a series of effectiveness-based arguments in favour of drone acquisition. But he also says:

Germany has to be part of this future technology. We cannot say we are fine with the pony express while everybody else is developing the railway. This is not possible.³⁹

The third level of the sociological approaches is that of the individual. The examples of Arthur Cebrowski and David Petraeus, who had a decisive impact on the introduction of network-centric warfare and counterinsurgency, respectively, demonstrates that individuals have influence on the spread of certain ideas and concepts as well.⁴⁰ Studies have yet to resolve whether in the case of the combat drone it has been those *mavericks* like Cebrowski or Petraeus

³⁴ Lynn E. Davis, et al., *Armed and Dangerous? UAVs and U.S. Security* (Santa Monica, CA: RAND Corporation, 2014) http://www.rand.org/pubs/research_reports/RR449.html).

³⁵ Paul J. DiMaggio and Walter W. Powell, "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields," *American Sociological Review* 48/2 (1983), 147-60.

³⁶ Terry Terriff, Frans P. B. Osinga, and Theo Farrell, *A Transformation Gap? American Innovations and European Military Change* (Stanford, Calif.: Stanford University Press, 2010).

³⁷ David L. Deephouse and Mark C. Suchman, "Legitimacy in Organizational Institutionalism," in *The Sage Handbook of Organizational Institutionalism*, eds., Royston Greenwood, et al. (Los Angeles; London: SAGE, 2008), pp. 49-77 at 66.

³⁸ Ulrike Esther Franke, "The Global Diffusion of Unmanned Aerial Vehicles (UAVs) or 'Drones,'" in *Precision Strike Warfare and International Intervention: Strategic, Ethico-Legal and Decisional Implications*, eds., Mike Aaronson, et al. (London; New York: Routledge, 2015).

³⁹ The German Bundestag, "Deutscher Bundestag – 17. Wahlperiode – 219. Sitzung. Berlin, Donnerstag, den 31. Januar 2013, " /Plenarprotokoll 17, 219 (2013): p. 27109.

⁴⁰ James R. Blaker, *Transforming Military Force: The Legacy of Arthur Cebrowski and Network-Centric Warfare* (Westport, Conn.: Praeger Security International, 2007), p. xii, 248 pages; Fred M. Kaplan, *The Insurgents: David Petraeus and the Plot to Change the American Way of War*, 1st Simon & Schuster hardcover Edition (New York: Simon & Schuster, 2013).

or rather the interlopers, i.e. members of the armed forces who drove the development and employment of combat drones as a part of the technophile paradigm that is dominant and paves career paths.⁴¹

The Output Dimension

The sociology of technology not only asks about the conditions for the development of technology but also about the consequences of the introduction for societies, organisations and people. Remaining at first at the microsociological level, the questions arise, *whether* and *how* the existence of combat drones influences individuals in their behaviour.

The existence and the use of combat drones affects and changes the life and the identity of people. A group of people who are directly affected by the employment of combat drones are those inhabiting the areas where combat drones are employed. From a sociological perspective, one has to ask how the constant threat changes their lives. Jacob Ross takes up the panoptic approach of philosopher Jeremy Bentham and asks whether all-monitoring drones would constitute a supreme form of exerting power, disciplining the individuals under survey only by the *possibility* that they might be monitored at any time or continuously.⁴² The study, "Living Under Drones: Death, Injury and Trauma to Civilians from US Drone Practices in Pakistan," which interviewed among others witnesses and victims of drone attacks in the Federally Administered Tribal Areas (FATA), confirms that the existence of combat drones has changed the residents' everyday life beyond causing physical and psychological pain: The practice of the double strike for example, i.e. the launch of a second attack after the first one, led to the members of village communities no longer approaching the wounded people to help. Furthermore, some people refrain from meeting in groups, as this could attract the attention of the all-monitoring drones and their operators. However, the assemblies of the elders (*jirgas*) are a traditional form of dispute settlement in this region. Other social practices – children's school attendance, participation in funerals – are affected, according to the authors of the study. That means the drones obviously influence the social interaction of the local people. In the end, one would have to suspect that the drone attacks also contribute to the radicalization of individuals in those areas and evoke negative associations of the entire Pakistani population towards the

⁴¹ Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Cornell Studies in Security Affairs.; Ithaca; London: Cornell University Press, 1991); Keith B. Bickel, *Mars Learning: The Marine Corps Development of Small Wars Doctrine, 1915-1940* (Boulder, Colo.: Westview Press, 2001).

⁴² Jacob Ross, *Drohnen als Instrument totaler Überwachung und Kontrolle*, Wifis Aktuell; Bd. 57; Opladen, Berlin, (Toronto: Barbara Budrich, 2015).

USA and their presence in Pakistan.⁴³ However, the latter effect must be associated with the macrosociological level.⁴⁴

There are further microsociological implications arising from the current employment of combat drones. There is the question of what role the drone user attributes to the local population. The US government quotes the number of civilian drone victims much lower than investigative journalists determined it.⁴⁵ The difference can be traced back to the fact that the US government declared every man in a combat capable age a legitimate target. That means the consequence of the drone is not the often highlighted discrimination capability – the loitering capability of a drone, the hovering in theatre allowing to distinguish combatants from other people present in theatre – but instead the extreme opposite: de-individualisation.

However, the existence of drones also affects the lives of the drone operators. First, the psychological issue of the impact of posttraumatic stress disorder on drone operators has come to the focus of social science research.⁴⁶ Peter Asaro provides another perspective on how drones change military behaviour. He perceives novel ways in the 'bureaucratized killing' by drone operators. According to him, bureaucratized killing is a mixture of two already established forms of military killing: On the one hand, there is the standoff, industrialized shared-responsibility killing through activities like preparing and prioritizing target lists for bombardments. And in the case of combat drones, together with the "more 'hands-on' work of deciding when and where to pull the trigger that more closely resembles the killing work of the sniper," this combines to something new.⁴⁷ In the drone operator, both activities are united – that of the administratively controlled selection and coordination of target as well as the direct act of killing.

From a military sociological perspective, it is also interesting how the new professional profile of the drone operator will integrate into the already existing social framework of

⁴³ International Human Rights and Conflict Resolution Clinic (Stanford Law School) and Global Justice Clinic (Nyu School of Law), *Living under Drones: Death, Injury and Trauma to Civilians from US Drone Practices in Pakistan* (www.livingunderdrones.org, 2012) at vii.

⁴⁴ Houston R. Cantwell, "The Costs of Remotely Piloted Foreign Policy," *Joint Force Quarterly* 68, 1 (2013): pp. 70-72.

⁴⁵ Chris Woods, "Covert Drone Strikes and the Fiction of Zero Civilian Casualties," in *Precision Strike Warfare and International Intervention: Strategic, Ethico-Legal and Decisional Implications*, eds., Mike Aaronson, et al. (London, New York: Routledge, 2015), pp. 95-113.

⁴⁶ Wayne Chappelle, et al., "An Analysis of Post-Traumatic Stress Symptoms in United States Air Force Drone Operators," *Journal of Anxiety Disorders* 28, 5 (June 2014): pp. 480-87.

⁴⁷ Peter M. Asaro, "The Labor of Surveillance and Bureaucratized Killing: New Subjectivities of Military Drone Operators," *Social Semiotics* 23, 2 (2013): pp. 196-224 at 198.

different status groups within the military. Drone operators in the US Armed Forces are counted among the group of combat aircraft pilots. This has implications for the recognition of personal performance and for advancement opportunities. But is the job of a drone operator comparable to that of an airplane pilot? Is the workload comparable? Many "real" pilots doubt this and it is questionable whether drone operators will ever have a similar institutional acknowledgment as their colleagues. A telling example of the institutional uncertainty about the status of drone operators in the USA is the attempt of introducing a medal for drone pilots. Launched in 2013 by the former Secretary of Defense and former CIA chief Leon Panetta, the medal was named as a 'Nintendo medal' and quickly terminated by his successor, Chuck Hagel.⁴⁸ It is no wonder, therefore, that many drone operators have to fight for the recognition of their mission-related damage, particularly with regard to post-traumatic stress disorders, as they were not themselves on site in a dangerous mission.⁴⁹

Further phenomena interesting to organisational sociology are the impact of the existence of combat drones and other standoff weapons on the composition, equipment and therefore the capability profile of the military. Western armed forces have experienced a change in composition since the end of the Cold War, in addition to their massive downsizing. While in 1989, 70 % of the 494,300 Bundeswehr soldiers served in the Army (7 % in the Navy and 22 % in the Air Force), their share in 2014 dropped to 62 % (Navy now 13 % and Air Force 25 %), with an overall strength of 181,550.⁵⁰ A number of reasons account for this shift: the decreasing role of national defence, the higher significance of strategic deployability by vessel and aircraft, but also the substitution of troops - of *boots on the ground* - by technology. Drones are currently the highest developmental form of a military strategy orientation of armed services who wish to minimise their footprint in the operational theatre.

For sociology, this shift of values in the individual services is interesting in two ways: On the one hand, it has an effect on the budgetary rivalry between the services. On the other hand, technology decisions often result in path dependencies that may lead to unexpected consequences in the further course of time. This, for example, is reflected in the war in Iraq, where heavy armour on combat vehicles was substituted by an increased tactical mobility of the

⁴⁸ Andrew Tilghman, "DoD rejects 'Nintendo medal' for drone pilots and cyber warriors," *The Military Times*, 6 Jan. 2016; <http://www.militarytimes.com/story/military/pentagon/2016/01/06/dod-rejects-nintendo-medal-drone-pilots-and-cyber-warriors/78364208/>.

⁴⁹ Ed Pilkington, "Life as a Drone Operator: 'Ever Step on Ants and Never Give It Another Thought?'" *The Guardian Online*, 19 November 2015.

⁵⁰ Ina Wiesner, "Germany," in *The Handbook of European Armed Forces*, eds., Hugo Meijer and Marco Wyss (Oxford: OUP, forthcoming 2017).

troops, based on the superiority of information and communication. The idea was that the military capability "protection" could be achieved in other ways – through smartness and swiftness – than by heavy and cumbersome armour. The light and mobile deployed forces of the US Armed Forces initially were able to defeat the Iraqi government troops. However, in the subsequent occupation phase, which was characterized by roadside bomb assaults, the lack of protective equipment proved to be fatal. Soldiers started to equip their light and mobile vehicles with scrap metal to protect themselves against bombs on the roadside.⁵¹ With regard to drones, there is therefore the question of the *law of the instrument*, i.e., whether an advanced technological capability profile does not in advance pre-define the structural organization of armed forces in a certain way, thereby blending out other measures where humans instead of machines come to the fore.

This organisational sociology perspective of the *How* of a mission coincides with the macrosociological approach of the *Whether*. Each weapon in the arsenal of a state will affect the cost-benefit calculation regarding the decision about an employment in the first place. This also applies to drones. Here is an example: In a speech in front of the U.S. National Defense University in 2013, then US President Barack Obama argued a targeted drone attack would cost less victims than firing an inaccurate mortar grenade.⁵² According to this interpretation, the combat drone is the better, the more human weapon. However, this argument is too short-fetched. It is also possible that a state with regard to negative social consequences relinquishes to attack a target at all, if it does not have drones but only mortar grenades. This means, the possession of drones offers the state the opportunity to exert force, an opportunity that would not have existed before.⁵³ This opposes the often-produced argument in the drone debate that drones were "ethically neutral".⁵⁴

Within western societies, drones may furthermore lead to a self-asserting process of further distancing oneself from violence while willingly legitimating it in other regions of the world.⁵⁵ While above they were described as a consequence of the post-heroic development, they are also an expression of it and they stabilize the adopted path in the course of which the

⁵¹ <http://edition.cnn.com/2004/US/12/08/rumsfeld.kuwait/index.html>

⁵² Barack Obama, *Remarks by the President at the National Defense University, May 23, 2013* (Fort McNair/ Washington, D.C.: National Defense University/The White House, 2013).

⁵³ Chamayou, *Ferngesteuerte Gewalt: Eine Theorie der Drohne*, p. 151f.

⁵⁴ Thorsten Jungholt and Simone Meyer, "De Maizière wirbt für Einsatz bewaffneter Drohnen," *Welt Online* August 2012, p. 3; <http://www.welt.de/politik/deutschland/article108473948/De-Maiziere-wirbt-fuer-Einsatz-bewaffneter-Drohnen.html>.

⁵⁵ R. M. Hajjar, "Emergent Postmodern US Military Culture," *Armed Forces & Society* 40, 1 (2013): pp. 118-45.

soldier is replaced by technology. Drones reduce the experience of violence for the society employing them. Soldiers returning today from missions to their home countries work as multipliers: their wounds or psychological stress disorders suffered during their deployment sending a reminder to use violence responsibly. A drone will never become such a reminder.

A potential consequence of today's development and of the employment of combat drones is also the discursive pre-structuring of the development of future autonomous weapons systems. Autonomous weapons systems are characterized by the fact that they "are able to decide on the sole basis of algorithms and without human intervention."⁵⁶ In the summer of 2015, the world's leading scientists in engineering wrote an open letter and warned of the development of offensive autonomous systems, a development they think is immediately imminent. According to their view, autonomous weapons systems, like the nuclear weapon 70 years before, represent a revolution in warfare, but by contrast to the latter, could be acquired and used as easily as a Kalashnikov assault rifle.⁵⁷ The remotely-controlled combat drones of today may pave the way for developing the autonomous systems of tomorrow, as they foster the social establishment of a "bureaucratized killing" practice.

Ultimately, the current drone discourse reflects and intensifies the general discourse of the western world about war and violence. One may ask whether the drone discourse, which reflects in its international law and ethics dimension about *How* wars are conducted – as just and legitimate as possible – is not yet another side track leading away from the real urgent question: How can the causes of certain conflicts be removed and thus wars and violent collective disputes be ended and prevented?

Why a Sociology of the Drone?

The reason why sociological aspects of technology stand back behind ethical and jurisdictional questions in the current debate about the development and employment of combat drones may be due to the fact that the latter questions demand an answer more pressingly. By contrast, sociology studies the reasons for the development of technology and their long-term effects on social action, considering a longer background of time. Though these questions may stand back against the acute issue of the practice of targeted killings, they still

⁵⁶ Robin Geiss, ed., *Die völkerrechtliche Dimension autonomer Waffensysteme*, Study tasked by the Friedrich-Ebert-Stiftung (Berlin: FES, 2015).

⁵⁷ Samuel Gibbs, "Musk, Wozniak and Hawking Urge Ban on Warfare AI and Autonomous Weapons," *The Guardian Online*, Monday 27 July, 2015.

demand to be brought to a public discussion, because drones appear as an intermediate step towards ever more autonomous systems – with an unclear perspective as to how autonomous systems will change warfare in the future. Sociologists can enrich the drone discourse by giving answers to the questions why societies are technologically at the point they are and in which way combat drones change soldiers and local population, armed forces, as well as states and societies.

Against the backdrop of the fact that military experts rather doubt the combat drone itself to be something revolutionary in a strategic or military technological perspective, why is there at all the need for a specific sociology of the drone?⁵⁸ As well, should there not be a specific sociology of the strike aircraft or a sociology of the machine gun? To start with, scientific, mostly organisational sociology studies do exist on the development of military aircraft and on the use of machine guns.⁵⁹ Different from other, simpler weapons systems, combat drones affect, as demonstrated in this article, a whole series of social and organisation-specific aspects. This fact distinguishes the case of combat drones qualitatively from the case of strike aircraft, meaning that the sociology of the drone is much pressingly indicated than a sociology of this strike aircraft.

In addition, sociology is a science of its time and as such bound to focus on socially pressing topics. Sociology analyses It has the means to criticise. As opposed to ethics, sociology bases its criticism less on moral arguments but more on the disclosure of often hidden power and interest structures and the influence of often unquestioned socio-cultural concepts about the development and employment of military systems. This means that sociologists may question easily communicable statements, for example about the effectiveness or humanity of combat drones. They provide society with a compass: To make them not only participate in current discourses like that on the combat drones, not only follow along the given arguments, but enable society to evaluate which interests these discourses serve in their respective manifestation. They allow looking beyond the always politically motivated legitimization attempts of technology and thus being able to recognise, understand and criticize institutional preferences of technology development.

⁵⁸ Davis et al., *Armed and Dangerous? UAVs and U.S. Security*, p. 11.

⁵⁹ John Law and Michel Callon, "The Life and Death of an Aircraft: A Network Analysis of Technical Change," in *Shaping Technology/Building Society. Studies in Sociotechnical Change*, eds., Wiebe E. Bijker and John Law (Cambridge, Mass.: MIT Press, 1992), pp. 21-52; James Fallows, "The Army and the M-16 Rifle," in *The Social Shaping of Technology*, eds., Donald A. Mackenzie and Judy Wajcman, 2nd Edition (Buckingham, Philadelphia: Open University Press, 1999), pp. 382-94.

In his description and criticism of the thinness of theory and methodology of military sociology, Lester R. Kurtz simultaneously criticises the sociologists' shying away from the topics of war and military. With regard to the nuclear threat, humanity has exposed itself to, he judges:

Unless sociologists begin to change the way in which they address issues of war and peace, it is unlikely that sociologists will play a major role in helping humanity to escape the nuclear cage in which it has entrapped itself. The lack of attention to the issues of war and peace by most of the sociological mainstream has resulted in the failure of the discipline to meet its responsibilities, if one accepts the notion that sociologists have a responsibility to humanity."⁶⁰

If one is of the opinion that sociologists have a responsibility vis-à-vis humankind, one could make use of sociology to understand the multi-layered phenomenon of the *dronization* of war.

⁶⁰ Kurtz, "War and Peace on the Sociological Agenda," p. 89.