

Chapter 19

Autonomous Systems in a Military Context (Part 2): A Survey of the Ethical Issues

Jai Galliot

The University of New South Wales, Australia

Tim McFarland

The University of Melbourne, Australia

ABSTRACT

This is the second paper of two on the role of autonomy in the unmanned systems revolution currently underway and affecting military forces around the globe. In the last paper, the authors considered the implications of autonomy on the legal obligations of military forces and their ability to meet these obligations, primarily through a survey of the domestic law of a number of drone wielding nations and relevant international legal regimes, including the law of armed conflict, arms control law, international human rights law, and others. However, the impact of autonomy in the military context extends well beyond the law and also encompasses philosophy and morality. Therefore, this paper addresses perennial problems concerning autonomous systems and their impact on what justifies the initial resort to war, who may be legitimately targeted in warfare, the collateral effects of military weaponry and the methods of determining and dealing with violations of the laws of just war theory.

INTRODUCTION

This paper surveys the broad range of ethical issues that apply to increasingly autonomous systems. It begins by assessing the appeal of said systems and provides a social contract account that places their operational benefits in a moral context and acknowledges that any fundamental shift in the character of warfighting involves a change in the relations between society, state and the military institutions charged with their defence. From within the just war framework established by philosophers to regulate the resort to war and its conduct, it then examines these relationships at the robot-warmaker, -enemy and -civilian levels, considering questions of risk, transparency, cognitive dissonance, fairness, terrorism and peace,

DOI: 10.4018/978-1-5225-8365-3.ch019

among others. All are described as traditional concerns exacerbated by autonomy, and which are not insurmountable or do not necessarily counter the moral advantages on offer. It concludes by noting that government, as the most potentially powerful agential entity, holds the ultimate responsibility for avoiding that the moral pitfalls of unmanned systems use, followed by designers, engineers and their commanders/operators.

THE MORAL APPEAL OF AUTONOMOUS SYSTEMS

In making a moral assessment of any technology, it is necessary to engage in a process of discovering and documenting the potential benefits that are thought to accompany its use, as the justification for the use of a technology should always be closely tied to the advantages it yields. One of the most frequently touted benefits of exploiting unmanned systems is that they hold potential to mitigate the human cost of war, assessed physically, psychologically or otherwise, with the level of mitigation largely dependent on the degree of separation between the operator and their system. In this regard, all unmanned systems share the same benefit, with increasing levels of autonomy simply facilitating the waging of war over greater distances and adding to the number of systems available to spare people's lives.

But aside from having a tragic human toll, war can also be staggeringly expensive and unmanned systems may be able to alleviate the financial burden. Military budget figures demonstrate that the largest contributor to the overall operational cost of a manned system, accounting for roughly one-third of the total, is the number of personnel directly and indirectly required to operate and support it (United States National Research Council, 2005, p. 97). Today, in terms of basic workforce requirements,¹ autonomous systems are not all that different from a manned aircraft, with the exception that unmanned vehicle operators are safer and those working part of a long mission can go home to their families after their shift, whereas traditional aircrew cannot. However, unmanned systems have a great deal of currently unrealised potential to reduce these personnel costs over the long term, and improved autonomous operation is the key with which it is to be unlocked. Mechanisms for achieving workforce reductions are already in development. Studies have been conducted demonstrating that one operator is capable of flying up to four unmanned aerial vehicles at any given time, so long as the tasks are not overly demanding and they are supported by the right technology (Goncalves et al, 2011, p. 535). Industry is therefore developing more autonomous systems and software, which will permit operators to spread their attention across a greater number of systems, potentially to a point whereby humans are virtually removed from the operating chain. This means that while forward capital costs cannot be avoided,² there will be fewer people to equip for traditional battlefield service,³ drawing fewer military-funded deployment benefits and working fewer paid hours, all of which reduces overall operational costs. Research conducted for the US military also contends that more automated systems would, additionally, enhance human warfighting capability, because they can integrate more information from a variety of sources far faster when assisted by computers that are not vulnerable to human emotion, which can cloud judgement as well as lead to poor operational decision making (Arkin, 2009, pp. 29–30). Computerised systems do not forget orders, get tired or become afraid (Weiner, 2005).

Having outlined some of the likely benefits associated with the use of autonomous unmanned systems, it is now important to highlight why these are of moral importance. For the moment, we will focus on only one of these benefits: reducing the risk of harm to soldiers. While contentious for reasons that will be outlined in the following sections, most would presumably agree that, if the use of autonomous

17 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/autonomous-systems-in-a-military-context-part-2/226846

Related Content

A Simulation Study on Boarding and Deplaning Utilizing Two-Doors for a Narrow Body Aircraft

Yuhang Liang and Massoud Bazargan (2016). *International Journal of Aviation Systems, Operations and Training* (pp. 25-35).

www.irma-international.org/article/a-simulation-study-on-boarding-and-deplaning-utilizing-two-doors-for-a-narrow-body-aircraft/184762

Drones in the U.S. National Airspace System

David Stuckenberg and Stephen Maddox (2014). *International Journal of Aviation Systems, Operations and Training* (pp. 1-22).

www.irma-international.org/article/drones-in-the-us-national-airspace-system/138606

Space Tourism: Hurdles and Hopes

Robert A. Goehlich (2014). *International Journal of Aviation Systems, Operations and Training* (pp. 17-34).

www.irma-international.org/article/space-tourism/111988

A Mathematical Model for Demand Distribution in An Air Transport Network: An Application to Sardinia

R. Devoto, M. Fantola, A. Olivo and N. Rassu (2017). *International Journal of Aviation Systems, Operations and Training* (pp. 28-53).

www.irma-international.org/article/a-mathematical-model-for-demand-distribution-in-an-air-transport-network/203058

Analysis of Decision-Making of Operators in Socio-Technical Systems

Tetiana Shmelova and Yuliya Sikirda (2018). *Socio-Technical Decision Support in Air Navigation Systems: Emerging Research and Opportunities* (pp. 1-32).

www.irma-international.org/chapter/analysis-of-decision-making-of-operators-in-socio-technical-systems/196092