

Chapter 18

Autonomous Systems in a Military Context (Part 1): A Survey of the Legal Issues

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ABSTRACT

While some are reluctant to admit it, we are witnessing a fundamental shift in the way that advanced militaries conduct their core business of fighting. Increasingly autonomous ‘unmanned’ systems are taking on the ‘dull, dirty and dangerous’ roles in the military, leaving human war fighters to assume an oversight role or focus on what are often more cognitively demanding tasks. To this end, many military forces already hold unmanned systems that crawl, swim and fly, performing mine disposal, surveillance and more direct combat roles. Having found their way into the military force structure quite rapidly, especially in the United States, there has been extensive debate concerning the legality and ethicality of their use. These topics often converge, but what is legal will not necessarily be moral, and vice versa. The authors’ contribution comes in clearly separating the two parts. In this paper, they provide a detailed survey of the legality of employing autonomous weapons systems in a military context.

INTRODUCTION

This paper, the first in a two-part series, surveys the expected legal implications of employing increasingly autonomous systems (including vehicles, weapons and other systems) in domestic and overseas operations, both in armed conflict and in military operations other than war. The intention is to present a broad overview touching on many areas of potential concern rather than detailed analyses of specific topics. The points raised cover the domestic law of Australia (our home nation), a number of other nations and relevant international legal regimes, including the law of armed conflict, arms control law, international human rights law, and others. The paper outlines the ways in which the nature of a military’s

DOI: 10.4018/978-1-5225-8365-3.ch018

legal obligations, and its ability to meet those obligations, may be affected by the use of equipment, principally weapons and vehicles, with a significant capacity for autonomous operation.

The autonomous behaviours of interest in this discussion are those that are ‘on the horizon’ as well as those that have already been implemented in working systems. Specifically, consideration is given to the behaviours of systems currently in use, those that exist as prototypes and those that are the subject of a formal development program, such as a Defence Advanced Research Projects Agency (DARPA) program.

Due to the relative novelty of systems with a legally significant capacity for autonomous operation and the forward-looking nature of this discussion, the points made here come with an unavoidable margin of error. As of October 2015, there is no case law relating specifically to the types of autonomous systems under discussion, and thus no directly relevant precedent on which to base advice. Similarly, regulatory efforts by domestic legislatures and international treaty-making bodies are at very early stages and are subject to change. Areas of particular uncertainty are identified in the relevant sections below, and recommendations for further research are made.

Where there are no legal rules directed specifically at autonomous systems, regulatory efforts directed at remotely operated systems, particularly vehicles, are likely to be applicable to autonomous systems, as autonomous systems of the types under discussion would also typically operate without a crew. The effects of legal instruments relating to uncrewed vehicles and other systems are noted where relevant.

The legal discussion is presented in three main sections. The first covers some preliminary issues: how autonomous systems are understood and defined for legal purposes, and why they raise particular legal questions. The second discusses the legal implications of acquisition and use of autonomous weapon systems; broadly, issues arising under the law of armed conflict, arms control law and human rights law. The third discusses matters arising in relation to use of autonomous vehicles under various national laws and international law. The discussion covers both ‘hard’ law (legally binding, enforceable rules) and ‘soft’ law (undertakings or agreements that are not legally binding but may still carry significant moral or political weight), and the difference is noted where relevant. The reader should also note that points of law that apply to non-conflict applications would generally continue to apply during armed conflict unless specifically overridden by a rule of the law of armed conflict.

PRELIMINARY LEGAL ISSUES

Understanding and Defining Autonomous Systems

There are scant references to autonomous systems in the legal instruments which currently govern their use, and considerable uncertainty among legislators and others who must decide how to deal with weapons, vehicles and other systems with increasing abilities to operate autonomously. Given the pace of technical development, there is an urgent need for lawyers to understand the nature and operation of autonomous systems, but significant challenges face those who attempt to do so. Such systems utilise advanced technologies from well outside the typical field of expertise of lawyers, such as robotics and artificial intelligence, and with the state of the art in those areas advancing rapidly, any detailed legal analysis is at risk of becoming obsolete before it is complete. It is perhaps understandable, then, that discussions about legal issues relating to use of autonomous systems often suffer from a lack of clarity about what machine autonomy is and how it affects the operation of a weapon, vehicle or other device. There is a general understanding among legislators, legal authors and others that autonomous systems

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