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Appropriate regulatory responses to the drone epidemic

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ABSTRACT

Parliaments and regulators have been very slow to address the public safety and behavioural surveillance threats embodied in drones. On the basis of a pragmatic set of Principles for the design of a regulatory scheme, it is proposed that countries apply existing regulatory arrangements and, where necessary, amend and extend them.

1. Introduction

The last decade has seen rapid developments in the area of remotely-piloted aircraft, commonly referred to as 'drones'. Technological innovation encouraged early adopters, unit costs dropped, prices fell sufficiently that more purchasers were attracted, and the familiar innovation-diffusion spiral occurred.

Drones are inherently dangerous, and action is needed to ensure public safety. Many drones have been designed to carry cameras, and a very common use of drones is to gather visual images and video. This represents a new and substantial threat to behavioural privacy. Unfortunately, regulatory adaptation is far slower than technological and economic change. Although knee-jerk reactions would be harmful and probably ineffective, far more rapid response is needed than parliaments and regulatory agencies have offered to date.

Computer Law & Security Review has featured multiple contributions in relation to drones, in particular the Special Issue in [2014] 30 CLSR Issue 3 (June/July 2014). The set of prior CLSR publications comprises Finn and Wright (2012), Pagallo (2013), Wright (2014), Clarke (2014a, 2014b), Clarke and Bennett Moses (2014), Clarke (2014c), Volovelsky (2014) and Custers and Vergouw (2015). All of the papers to date have been academic, in both the good and bad senses of the word – careful, evidence-based, reasoned and thorough, but not necessarily pithy, to-the-point and likely to stimulate active responses from policy-makers.

This short paper accordingly offers some crisp, constructive suggestions about measures that can and should be taken in order to protect public safety and behavioural privacy. The larger, more sophisticated and more expensive categories of drones attract attention from regulators, and are either already subject to, or can be readily brought within, existing regulatory schemes. The primary focus of this paper is accordingly on small and micro-drones, particularly where their use is of a hobbyist or self-entertainment rather than a commercial nature. The first section proposes some principles. These are then applied in order to identify specific measures that the public can stimulate parliaments, governments and regulators to investigate and implement.

2. Principles

Previous papers have surveyed drone technologies, their uses, their impacts, and existing regulatory mechanisms. The problems may be addressed in a number of different ways, and

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various approaches are evident in the slow processes that are in train in countries around the world. Some means are needed for selecting among the possibilities, and in particular for achieving balance between complacency on the one hand and undue interventionism on the other.

A comprehensive set of criteria for a regulatory scheme was proposed in Clarke and Bennett Moses (2014) Table 2. The following six Principles are offered as a simpler and more pragmatic basis for filtering the alternatives.

(1) **Drones are inherently dangerous.**
Drones have mass and velocity, have no natural rest state, and control of them is challenging.
So: Drones need to be subject to regulation.

(2) **Drone operators are capable of accidentally causing serious harm**
The operation of drones requires expertise, skill and focus, and shortfalls against any of those requirements create risk of harm not only to the drone, but also to individuals and objects in its vicinity.
So: Drone operators need to be subject to regulation.

(3) **Drones are capable of being used to carry payloads and to perform functions that are socially and/or economically harmful**
Goods may be smuggled into prisons, emergency service operations may be interrupted, drones may be used as weapons, and individuals may be subjected to surveillance and perhaps pursuit.
So: Drone applications need to be subject to regulation.

(4) **Drones are already commoditised, inexpensive and desirable**
Commercial uses of moderately sophisticated drones are multiplying, and many members of the public have acquired and flown consumer-level devices.
So: Drones, drone operators and drone applications need to be subject to regulation now, not later.

(5) **Drones are capable of doing a range of economically valuable and socially useful things**
Proven applications exist of image and video capture for emergency management, geo-physical surveys, and maintenance inspections. Effective tools for search, and for mapping and monitoring of native flora and weed infestations, are rapidly emerging.
Regulators should not intervene in uses of devices, whether for commercial or for hobby and entertainment purposes, except where a reason exists, in particular risk to public safety or behavioural privacy.
So: The regulatory measures need to be justified, proportionate, not excessive and not unduly expensive, but also targeted, effective, efficient and enforceable.

(6) **Regulation can be economically implemented by utilising existing mechanisms**
The impacts and implications of novel forms of regulation need to be carefully evaluated, whereas those of existing mechanisms are more readily grasped, refined and extrapolated.
So: Advantage needs to be taken of existing regulatory frameworks wherever practicable, and new regulatory frameworks created only where necessary.

3. Regulatory options

The Principles proposed in the previous section can be applied in jurisdictions that have a wide variety of characteristics. For example, some countries have highly restrictive regulatory regimes, some have 'light touch' regulatory regimes that are far less prescriptive or constraining, and some have very limited existing law or policy that affects drones and their operation and use.

This section suggests approaches that can be taken in jurisdictions that have at least some existing regulatory frameworks of at least potential relevance to drones. The proposition is that countries need to consider the existing regulatory framework in each of the nine areas discussed below, evaluate those frameworks' applicability to drones, and devise measures that will achieve an appropriate balance between permissiveness of, and control over, drone usage.

The term 'regulatory framework' is used in the manner discussed in Clarke and Bennett Moses (2014) section 3. However, organisational self-regulation and industry self-regulation appear highly unlikely to achieve a satisfactory balance between innovation on the one hand, and negative impacts on safety and behavioural privacy, on the other. The primary emphasis is accordingly on formal regulation and on 'co-regulation' whereby industry or user organisations perform regulatory functions within a framework set by a government agency.

(1) Toys, vehicles and equipment

In many jurisdictions, manufacturers, importers and retailers of many kinds of devices are subject to one or more regulatory frameworks relating to safety, including industry standards for such things as controllability, sharp edges, kinetic energy and flammability.

Countries need to ensure that manufacturers, importers and retailers of drones are subject to such frameworks.

This might need to include a legal responsibility to provide customers with documentation, training and information (e.g. about the law, and about contact-points for regulatory, licensing and support organisations), prior to passing possession of the device to the customer.

Particularly for the more dangerous categories of drones and drone applications, this might need to extend as far as a requirement to sight a customer's insurance and/or licence to operate that category of drone, before the organisation can pass possession of the device to the customer.

(2) Aircraft

In most if not all jurisdictions, aircraft, at least above some size threshold (e.g. 100 kg), are subject to a substantial regulatory framework, including requirements in relation to matters as diverse as airworthiness, maintenance procedures, financial viability, and insurance.

Countries need to ensure that manufacturers, importers, retailers, purchasers and operators of drones of similar size, or otherwise with a similar potential impact, are subject to such a framework.

In addition, countries need to ensure that manufacturers, importers, retailers, purchasers and operators of medium-