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WINGS AND SHADOWS: THE INTERSECTION OF DRONE REGULATIONS AND PRIVACY RIGHTS IN INDIA

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ABSTRACT

The right to privacy is the bedrock of personal freedom and dignity. In a world where every click, conversation, and movement may be recorded and analyzed, the right to privacy is essential for fostering a society in which individuals can safely explore their ideas, form personal identities, and express dissent without fear of undue surveillance or exploitation. The rapid proliferation of drone technology has catalyzed both innovative applications and complex challenges, particularly concerning privacy rights. This study examines the evolving legal frameworks that govern drone operations, scrutinizing how the intrusion into personal privacy and unauthorized data collection. By analyzing statutory regulations, case law, and technological trends, the research highlights the inherent tension between the benefits of aerial surveillance and the protection of individual privacy. The paper further explores proposed legal reforms aimed at harmonizing technological advancement with robust privacy safeguards, ultimately advocating for adaptive legislation that can keep pace with innovation while ensuring civil liberties remain intact.

Keywords: Drones, Privacy Right, Aircraft, Data Protection, Drone Policy, Unmanned Aerial Vehicles, Regulation, Civil Aviation.

1. INTRODUCTION

The unmanned aircraft vehicles (UAV) which can be operated without a pilot on board are usually called as drones. The subsets of unmanned aircraft are Remotely Piloted Aircraft (RPA), Autonomous Aircraft and Model Aircraft. The use of the above unmanned aircraft vehicles is of recent development in aviation field. The flying of drones raises several issues pertaining to security, privacy, regulation etc. This article examines the extent to which the present legal framework is useful in tackling the issues relating to protection of data security and privacy. The legislative mechanism to overcome the issues arising out of the use of drones with special reference to data security and privacy in United Kingdom is also compared here. This paper explores the rapid expansion of unmanned aerial vehicles (UAVs, or drones), the public safety and privacy concerns they raise, and the evolution of the regulatory framework focusing especially on the Indian scenario, which offers a rich case study for the challenges and opportunities in drone regulation. The paper concludes with recommendations for adaptive regulatory frameworks aimed at mitigating privacy concerns while fostering innovation.

2. DRONE REGULATION IN INDIA

The drones were used for the first time for military purposes during the Kargil War of 1999. Later Indian Air Force deployed manned English Canberra PR57 aircraft along the Line of Control. After that India used IAI Heron and Searcher drones supplied by Israel. In 2013 Indian Air Force made contract with Israel Aeroplane Industries for a new series of Heron drones. With the use of

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these drones India deployed these drones for surveillance of Maoist rebel in the areas of Andhra Pradesh, Odisha, Chhattisgarh etc. However, there was no regulatory mechanism with respect to the use of drones. Therefore, in 2014, the Directorate General of Civil Aviation (DGCA) following the directions from the Ministry of Civil Aviation prohibited the aerial surveillance by using drones. However, in 2018 the Ministry of Civil Aviation released Drone 1.0 policy under which the flying of drones is allowed by individuals and companies in specified areas.

The draft regulations in 2018 proposed a 'digital sky' platform to complete the formalities required for getting licence to operate drones. It is required that the operators should get unique identification number (UIN). While flying the policy required that the drones must be within the visual line of control (VLOS). Recently, Ministry of Civil Aviation has introduced Drone Regulation 2.0 in 2019.

3. CATEGORIES OF DRONES

The Directorate of Civil Aviation classified drones. The generally accepted classification of drones is on the basis of weight. Accordingly, nano drones are those the weight of which is less than or equal to 250 gram. The weight of micro drones ranges between 250 gm to 2kg. The weight of drones if comes between 2kg and 25 kg is categorized as small drones. The weight of medium drones comes between 25 kg and 150 kg. The large drones are weigh more than 150 kg. Consumer drones are s the most familiar category. Built for ease of use, these models focus on stability, intuitive controls, and high-quality imaging. The DJI Mavic Air 2 / Mavic 3, DJI Mini 3 Pro, Parrot Anafi etc comes under this category. Commercial drones serve industries where precision, repeatability, and data collection are paramount. These purpose-built systems are designed to operate in demanding environments and often come with specialized sensors such as multispectral cameras, LiDAR systems, or thermal imagers to gather actionable insights. DJI Matrice 300 RTK, senseFly eBee X, Skydio 2+ etc comes under this category. The military drones have a storied history and continue to drive innovation in unmanned flight. From high altitude long endurance drones to stealth combat systems, these UAVs perform tasks that range from surveillance to active engagement in conflict zones. General Atomics MQ-9 Reaper, Northrop Grumman RQ-4 Global Hawk, Northrop Grumman Fire Scout are examples of military drones.

4. SKY IS THE LIMIT--USES OF DRONES

The drones are used for many purposes where man failed to perform his activities and it is used by both private and public entities. It is mainly used in agricultural areas for inspection, spraying disinfectants etc. It is also used for assessing damages to settle the insurance claims. The uses of also include media and entertainment, infrastructure inspection, mining etc. Drone technology has become a hallmark of modern innovation, fundamentally transforming multiple facets of our lives. At its core, drones offer an unprecedented ability to collect aerial data quickly, safely, and efficiently, replacing methods that once required more time, resources, or even risking human lives. This transformative impact makes them indispensable in sectors where rapid, high-resolution information is crucial.

One of the most significant contributions of drones is their role in enhancing the safety and reducing the costs. In the case of disaster management, drones can swiftly assess damage in hazardous zones, create accurate maps for rescue operations, and deliver critical supplies when conventional vehicles cannot reach affected areas. Their capability to operate in environments that would be too dangerous or expensive for human intervention not only speeds up response times

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but also saves lives. In agriculture, drones are pushing the boundaries of precision farming. Equipped with multispectral sensors, they provide farmers with real-time health assessments of their crops, enabling targeted interventions. This precision reduces overuse of fertilizers or pesticides, promotes sustainable practices, and ultimately boosts productivity while preserving the environment.

The drones are also revolutionizing fields such as infrastructure inspection and urban planning. They can efficiently monitor and inspect bridges, power lines, or construction sites, delivering high-resolution images that inform maintenance and safety decisions. This reduces manual inspections that could be dangerous or inefficient, paving the way for smarter, more proactive urban and industrial development. Moreover, the integration of drones with emerging technologies like artificial intelligence and swarm robotics hints at a future where networks of autonomous devices can coordinate complex tasks from traffic management in smart cities to coordinated search-and-rescue operations in emergencies. This convergence of technologies underscores drone technology's role as a catalyst for innovation, bridging the gap between the physical and digital worlds.

Therefore, drone technology is significant in today's society because it enhances operational efficiency, increases safety, and fosters sustainable practices across diverse sectors. Its ability to gather and process data rapidly is indispensable in a fast-paced world where timely information is paramount. As drones continue to evolve and integrate with other cutting-edge technologies, they promise to unlock new opportunities and reshape our society in ways we are just beginning to imagine.

5. DRONE REGULATION IN UNITED KINGDOM

In U.K the term 'drone' is used as an alternative to 'Unmanned Aerial Vehicle' (UAV) or 'Unmanned Aircraft' (UA). In United Kingdom the flying of drones are permitted both for private and commercial purposes. An Interesting use can be seen in the case of Google and Facebook companies. The Titan Aerospace, an American company and Asunda, a U.K. company are looking for a high altitude long endurance flights. They are trying to develop drones which can stay in air without landing for many years to give internet access in the areas where there is no internet access.

The use of drones are mainly governed under Civil Aviation Act 1982 and the Air Navigation Order 2016, as amended in 2018. The regulations for the use of drones have issued by the Civil Aviation Authority (CAA). The general guidelines for the flying of drones can be summarised in following way.

The flying of drones near people, or their property is prohibited. It is also required that the drones mush be kept in flight within the visual line of control. The U.K. Government drafted "Drone Code" guide to make aware the people about the use of drones on a proper and safe mode. On July, 2018, the Government imposed ban on the flying of drones above 400 feet and within 1kmn of airport. All drone operators have to register and pilots have to pass an online pilot competency test from 30th November 2019. The government has a proposal to introduce geofencing which automatically prevents drones from going away from the allowed space to fly. The government of U.K. is in the stage of finalising Draft Drones Bill, 2019 and also consulting the use of Counter Drone Technology.

The Aviation and maritime Security Act 1990 provides punishment for intentional use of device to commit an act of violence which cause death or other serious injury would attract fine and imprisonment. The small drones are subjected to certain restrictions. The flying of small drones is

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prohibited within 50m of persons or buildings. It is prohibited within 150 m of the densely populated areas. The dropping of any article or animal from the drones are also prohibited. It is not permitted to fly within 1km of airport boundaries from 3rd July 2018 onwards.

6. DRONE POLICY 2021

India's Drone Rules, 2021, promulgated by the Ministry of Civil Aviation, signify a watershed moment in the regulation of unmanned aerial systems (UAS) within the country. By establishing a detailed framework for the classification, certification, and usage of drones, the policy aims to balance rapid technological innovation with safeguarding national security and public safety. It encompasses several objectives. By reducing paperwork and expediting licensing procedures, the policy aims to lower the entry barriers for start-ups and individual innovators, thereby stimulating research, development, and commerce in the drone industry. The guidelines incorporate provisions for surveillance and restricted airspace, aimed at mitigating risks from both accidental mishaps and potential misuse. Recognizing the versatility of drones in sectors like agriculture, mining, infrastructure, and even sports broadcasting (for live aerial cinematography), the policy is seen as a catalyst for job creation and economic expansion, especially in rural and remote areas. In line with the broader policy of Aatmanirbhar Bharat, the Drone Rules encourage indigenous manufacturing and technology development, propelling India toward a globally competitive drone hub by 2030.

7. DATA SECURITY AND PRIVACY RIGHT –ISSUES PERTAINING TO DRONES IN INDIA

In India, the right to privacy is a basic human right which has now been declared in Justice K. Puttaswamy v. Union of India as fundamental right under the life and personal liberty of Article 21 of the Constitution of India. The right to privacy has got international recognition under various conventions such as Universal Declaration of Human Rights (UDHR) , International Covenant on Civil and Political Rights (ICCPR) etc. The drones can be easily used for the surveillance purposes either by the private agencies or by the government agencies. A well technologically developed drones can capture still images ,moving pictures, thermal imaging, sound data, telephonic conversations, and other data as and when it use high defined devices. It clearly intrude into the privacy rights the people.

As India lacks an efficient Data Protection legislative regime. The Bill relating to the Personal Data Protection Bill 2021 is still pending. The Bill seeks to protect the privacy of an individual except in the cases of sovereignty, integrity and security of India. It says that collection, retention, use and transfer of data collected can only be done with the consent of the individual only. The drone regulations only says that the privacy right of individuals should be respected. Drones today can capture high-resolution images, video, and even thermal readings from considerable distances. These capabilities facilitate advances in sectors like agriculture, surveillance, and emergency response; however, they also pose significant privacy risks ranging from inadvertent data breaches to deliberate surveillance.

8. PRIVACY AND DATA PROTECTION IN UK IN CONNECTION WITH DRONES

In U.K. the privacy in respect of data is protected under Data Protection Act 2018(DPA). The personal data collected by Small Unmanned Aircraft (SUA) operators and remote pilots must be handled in accordance with Data Protection Act, 2018. For commercial drone operators location

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or personal images is protected by General Data Protection Regulations and the Data Protection Act 2018. In this country also it is accepted that the drone can capture very clear images, access more locations, and track the people more effectively without the knowledge of the people. In UK, currently there are laws which protects citizen privacy as:-
(1) Article 95 of the ANO 2016 (Air Navigation Order 2016) which restricts a small surveillance drone from being flown over or within 150m of congested areas, an organised open-air assembly of more than 1000 people, or within 50m of any vessels, vehicle, structure or people (2) In addition to complying with the aviation-specific rules, a drone user must also comply with the law more generally. For example, if a drone user is flying over the property of another person, their action could amount to trespass if the aircraft is not flying at a height which is reasonable in all the circumstances, even if the provisions of the ANO 2016 have been complied with; and (3) The Countryside and Rights of Way Act 2000 also restricts any undertaking of commercial activity, such as filming or photography, on open access land without the permission of the landowner. By an Amendment order in May 2018, the Government introduced into ANO a 400 feet height restriction across U.K. and 1 km restriction around airport in case of small drones. The UK government is planning to introduce the Drones Bill, 2019 to regulate the use of drones without any hindrance to the safety, security and privacy right of others.

9. ANALYSIS OF PRIVACY PROVISIONS IN THE IT ACT

The rapid expansion of digital technologies has transformed the way information is collected, stored, transmitted, and processed. The Information Technology Act, 2000 (hereafter referred to as the IT Act) was enacted in India as an enabling framework to legitimize electronic transactions and combat cybercrimes. However, as electronic records and data have become central to almost every facet of life, concerns over privacy have also risen. The IT Act contains provisions that range from legal recognition of electronic signatures to penalties for unauthorized data disclosures, but its effectiveness in protecting electronic privacy remains a topic of debate. The protection of privacy under IT Act mainly covered under S.43A and S.66A in the form of corporate accountability and liability for privacy invasion respectively. Section 43A is significant in holding organizations accountable for failing to protect sensitive personal data. With the increasing reliance on digital infrastructures, a breach can have widespread consequences ranging from financial loss to personal embarrassment. Although the section provides for compensation to affected parties, critics argue that it lacks the robust enforcement mechanisms found in modern global privacy laws. This calls into question whether the current remedial measures are sufficient given the technical complexity of data security in today's environment. Section 66E criminalizes the violation of privacy by penalizing acts such as the unauthorized capture, publication, or transmission of private images or information. While this section underscores the importance of respecting individual privacy, its effectiveness depends largely on strict implementation and judicial interpretation. Notably, evolving digital practices have raised several questions regarding the adequacy of these criminal sanctions, particularly against technologically sophisticated invasions of privacy.

10. CONCLUSION AND SUGGESTIONS

In the modern technological era, the use of drones cannot be avoided where man fails to reach. However, the use of drones points out the issues of privacy and data protection. Globally, many countries introduced data protection laws to overcome the above issues. The United Kingdom

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drone laws are trying to keep up with the rules and principles of data protection laws. In India, primarily, a comprehensive law on data protection is the need of the hour. It will support to a great extent the formulation of law and policy relating to drones also. Since drones are capable of collecting vast amounts of personal data, guidelines around data management and privacy require continual refinement. In relation to drone privacy, a clear understanding of authorized data capture in private spaces which does not constitute invasion of privacy is required. The drone operators are required to disclose data collection practices and they should adhere strictly the data protection protocols. Also the regime requires expertise of technologists, legal experts, ethicists, and community representatives in the policymaking process.

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Article, 12 UDHR says, "No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence. Everyone has the right to the protection of the law against such interference or attacks."

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