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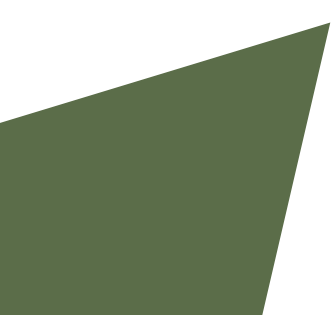
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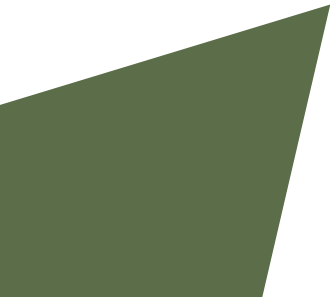
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**Critical Analysis of Civil use of Drones: In relation to existing international
laws and conventions and guidelines**

Ruchira Bali

“Any sufficiently advanced technology is indistinguishable from magic.”- Arthur C. Clarke, Profiles of the Future: An Inquiry Into the Limits of the Possible

INTRODUCTION

Since ages inventions have been made or attempted at by humans, as being exploratory and curious part of human nature, and with evolution of science and technology, the venturing into innovation, research and development has multifold increased. Many of the development, evolution and improvement in technologies and processes have eased in the functioning the society, at the same time, caution is also necessary, as automation poses several security threats and framing applicable rules to practically govern them in the light of ever developing coding languages and artificial recognition features and systems is even more difficult. As such developments have significantly impacted day to day life both positively and negatively and latest of those inventions has been the introduction of the drone system. Drone technology is one such area that has increased the efficiency in our day to day working, in military reconnaissance and navigational activities and e-commerce delivery systems.

Drones can be defined as unmanned aerial vehicles (UAVs) that are remotely controlled, or fly autonomously through software-controlled flight plans in their embedded systems, and onboard sensors and GPS.¹

They can be categorized as follows:

- a) Rotor-single or multi rotor- For example: tricopters, quadcopters, hexacopters, and octocopters.
- b) Fixed Wing- this includes hybrid VTOL (vertical takeoff and landing) drones that do not require runways.
- c) Personal/Hobbyist- most of them are available for consumer use, offering HD video/ or still camera capabilities, or can be used for simply flying around. It weighs around 500gm to 5Kgs.
- d) Commercial/Enterprise- these are much more capable and stronger. In 2018, Boeing prototyped an Unmanned Cargo Air Vehicle. (VTOL) which is capable of transporting up to 250 Kg payload.

¹ CH-06 Information Technology, *Drones*, Pg No. 325, Manorama Yearbook, 2020, ,

- e) Tethered Drones- they can provide direct power supply, for instance, the Safe T- tethering stations for drones from Elistair can provide up to 2.5 kW of power and can fly heights of more than 200ft, with the fast data transfer rate of up to 200 Mb/s.

Drones are primarily used for un-armed purposes like intelligence, reconnaissance and general surveillance or for armed purposes such as targeted killing, anti-aircraft targets, and as weapons.² A drone system can also be defined as a system including a standing location where drone at least delivers and acquires a parcel, and inclusive of a homing device which interacts with the drone to assist it in identifying the location of delivery point being independent of another source. The homing device enables the drone to smoothly land during a flight plan.³ Drones are also referred to as Unmanned Aerial Vehicles (UAVs) or Remotely Piloted Aircrafts in the common parlance.⁴ In recent times, they have also enabled in increasing the efforts in combating the COVID -19 pandemic effectively, for instance the Chennai police had adopted usage of drones for carrying out relief works. It enabled in monitoring effectively the activities of the people, spreading awareness announcements amid the recently imposed nationwide lockdown.⁵

While the conduct of the drones for military purposes have been covered under the ambit of the International Criminal Law, those relating to the non -armed uses have been referred to under International Humanitarian Law.⁶ For instance, they can even aid in locating the victims endangered from natural disasters. In another instance, they can be used for dropping humanitarian pallets in areas which are majorly inaccessible due to poor transport connectivity or due to other natural calamities, conducting search and rescue operations, traffic monitoring, weather monitoring, firefighting etc.

While to say that specific legislation concerning the activities of the drone is not presently in existence, due to lack of jurisprudential development in this regard. It becomes even more pertinent as to dealing with the regulatory challenges as it affects the public and national security and also to protect the areas of national, historical and natural importance.

² Gill, T. D., & Fleck, D. (2010). *The Handbook of The International Law of Military Operations*. Oxford: OUP.

³ As defined by the Amazon Technologies in its Patent application numbered and dated ; US20150120094, filed on 30th September 2014 and Published on 30th April 2015; Also refer <https://www.google.com/patents/US20160033966#backward-citations>, Last retrieved on 22nd December 2017 18:26

⁴ Leander, A. (2013). *Technological Agency in the Co-Constitution of Legal Expertise and the US Drone Program*. Leiden *Journal of International Law*, 26, 811-831. <http://dx.doi.org/10.1017/S0922156513000423>

⁵ Christian Borbon, *Drones help Chennai police to battle COVID-19*, GulfNews, Published on 4th April, 2020; <https://gulfnews.com/photos/news/drones-help-chennai-police-to-battle-covid-19-1.1586003095881?slide=1>

⁶ Refer Article 8 of the Rome Statute.

Globally, standards to regulate certain operations of the drone are being considered by the International Civil Aviation Organization.⁷ In 2011, ICAO issued a circular titled Unmanned Aircraft Systems (UAS) (CIR328). This circular directs the states to clarify its stances on the usefulness and utility of the drone for the respective countries, through comments. This was an effort to proceed with the development of the fundamental international regulatory framework through Standards and Recommended Practices (SARPs), with supporting Procedures for Air Navigation Services (PANS) and guidance material, to underpin routine operation of UAS throughout the world in a safe, harmonized and seamless manner comparable to that of manned operations.⁸

Efforts have been taken to harmonize the rules of regulation of the uses of drones. The peculiar example is that of Europe.

In India efforts have been advanced through this very purpose and the consequential decision was undertaken by the Directorate General of Civil Aviation in November 2017 by issuing certain guidelines in the relation to the permitted usages and constraints to the uses of drones. Peculiarly the important step being that of making it mandatory for the UAVS members to have unique identity numbers. It further states that permission must be obtained from local authorities for all flights below 200 feet over ground level, and from the DGCA for using the drone at or above 200 feet above ground level. Given that prior approach seemed designed more to suppress than encourage drone use, the issuance of these guidelines is indeed a welcome step from the DGCA. But the issues prevalent even in these guidelines are as follows:

DGCA GUIDELINES AND THE ‘MULTIPLE’ CHALLENGES AHEAD

The guidelines conceive an unmanned aircraft as “an aircraft which is intended to operate with no pilot on board”. This requires certain components such as a remotely piloted aircraft (RPA), a command and control unit, and personnel for its operation, all of which form the unmanned aircraft system (UAS). A UAS may function either autonomously or be remotely piloted. However, the DGCA guidelines are focused almost entirely on remotely piloted drones, and hence require that they be operated within the visual line of sight (VLOS). This is a narrowness of focus the DGCA must address, to encourage the autonomy of the drones and bring more clarity into the regulations for autonomous drone-flights.

⁷ <https://www4.icao.int/uastoolkit/Home/BestPractices>; Last Retrieved on 22nd December 2017 19: 31

⁸ ICAO, Unmanned Aircraft Systems (UAS), Circular 328 AN/190 (2011), [https://www.trafikstyrelsen.dk/~media/Dokumenter/05%20Luftfart/Forum/UAS%20-%20droner/ICAO%20Circular%20328%20Unmanned%20Aircraft %20Systems%20UAS.ashx](https://www.trafikstyrelsen.dk/~media/Dokumenter/05%20Luftfart/Forum/UAS%20-%20droner/ICAO%20Circular%20328%20Unmanned%20Aircraft%20Systems%20UAS.ashx), *archived at* <https://perma.cc/J5EM-TSAY>.

THE PRIVACY PARADOX

Although autonomous drones promise new possibilities, drones are an intrusive technology with great privacy implications for individuals. However, the DGCA draft-guidelines clearly miss the issue, only stating that ‘privacy must be given due importance’ and do not lay out any procedure for how privacy rights of citizens can be identified and protected.

Solutions to this problem could take the form of amendment to the Information Technology Act, 2000 in case of data threats or the insertion of provisions regarding drone surveillance in the Privacy Bill, 2011 which is still tabled in the Parliament. But both these methods are cumbersome. Hence, the best way is for the DGCA to come up with privacy regulations for drone surveillance while sticking to the basic principle of ‘reasonableness’. i.e., ‘reasonableness’ of drone surveillance must be tested and the expectation of the citizen’s privacy must be reasonable too. The dichotomy between these two aspects requires careful consideration and clear addressing. Also, few judgments that can be taken from the both the US an Indian perspective provide the claim that the ownership of airspace exists over a limited to a limit as necessary for the ordinary use and enjoyment of the land and the structures on it.⁹

FREQUENCY BANDWIDTHS VERSUS SATELLITE LINKAGE

The DGCA also mentions that UAS require data-link for their proper functioning. This data-link could take the form of radio or satellite communication. As far as radio frequencies are concerned, bandwidth is already a scarce resource and with the potential proliferation of drones, this problem is likely to be exacerbated.

With this advent in the approach towards the use of drones for civil aspects the need for the development for stringent guidelines and increased deliberation over the issue internationally as well in India would be discussed about in this.

⁹ Indrachand Jaju v. Te Sub-Divisional Officer, (1988) 1 GLR 1. Also refer the case of Florida v. Riley, 488 U.S. 445, 450 (1989). As well The Fourth Amendment in the U.S. Constitution declares: “The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.” See also the decision of the court in Dow Chemical Co. v. United States, 476 U.S. 227 (1986), holding that the use of an aerial mapping camera to photograph an industrial manufacturing complex from navigable airspace would not require a warrant under the Fourth Amendment. Here, the court acknowledged that “surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public, such as satellite technology, might be constitutionally proscribed absent a warrant.”

SYNOPSIS

REASON FOR PUBLIC DEBATE AND CONVERSATION OVER THE ISSUE

The usage of drones has always been an issue of contention for a long time since its inception. Majorly, the reasons being that of security, peace, proprietary, reputational interests of an individual and regional stability.¹⁰

However, with the advent of technology and societal awareness and political development, the civil uses have been brought to the domain of public debate and discussion and deliberation of the lawmakers over the regulation of its uses, These UAS have decentralized airspace access, allowing agriculturists, construction workers and others to integrate the aerial monitoring to their daily work.¹¹

The problem over the issue of Civil uses of drones also arises due to the legal lacunae present in the legislations, as the Common law does not provide for clear demarcation for commons from owned airspace which will have an impact over the proprietary rights of the individual. It will too raise concerns over privacy over its potential of being deployed over for unlawful purposes like data capturing and analytics , thereby leading to violation of right to privacy and confidentiality of information as enshrined under Article 21 of the Indian Constitution and Article 3 of the Universal¹² Declaration of Human rights and International Covenant on Civil and Political Rights.¹³

Additionally, major concerns too lie in the area of safety and security of the operations carried out by the drones, as there is uncertainty of the safety caused due to lack of clear guidelines on mid air collisions and injury to the property or persons in case of any undesired event or situation or accident. That means lack of indemnity or insurance available in this regard.

REASON FOR GROWTH OF DRONES

The reasons for the growth and advancement in the use of drones lies in the following Advancements in fields such as automation, robotics, miniaturization, materials science, spectral and thermal imaging, and light detection and ranging have resulted in drone-enabled solutions in

¹⁰ Ananth Padmanabhan, *Civilian Drones and India's Regulatory Response*, Carnegie India, Published in March 2017, <http://carnegieindia.org/2017/03/10/civilian-drones-and-india-s-regulatory-response-pub-68218>; Last Retrieved on 24th December 2017 at 22:55 PM

¹¹ Ibid

¹² Article 12 of UDHR and Article 17 of ICCPCR

¹³ Ibid

areas as diverse as the agriculture, power, infrastructure, and telecom sectors, as well as crowd and disaster management.

In India for instance there has been a growth in the demand for the drones in the investment and the growth sector and depictive of this fact is that Recently, one of India's leading power transmission companies sealed a deal with a global player to use large-scale, long-distance drone flights for inspection of utility assets.¹⁴In a country with a power transmission network of more than a million circuit kilometers witnessing annual double digit growth, drones can potentially help in avoiding grid blackouts.¹⁵

DRONES REGULATION IN OTHER COUNTRIES:

Various countries have different ways of handling or regulating the increasing use of the drones. While some like United States had raised concerns in relation to privacy and security. However, to tackle the sentiment of developing Anti drone Technology, the US promoted the federalism approach in Drone regulation. As many of those anti drone technologies would have run afoul of federal and state laws.¹⁶ In Singapore, the new UAV guidelines, part of the Unmanned Aircraft (Public Safety and Security) Act, are extremely permit-heavy and have strict restrictions on the movement of drones in mainland Singapore.¹⁷

Under the International Law, the concept of rule of law is very much emphasized upon and hence, the regulation of any kind of activity be it economic or social becomes essential, which is based upon common ideas of interpretation, But when those are violated by the very prominent countries like US have a deep impact on the framing of strategies of global policies regarding various issues of contention. One such being the US DRONES strike.¹⁸Majority of the strikes have violated the norms and the most basic of the rights enshrined under the UN Charter, ICCPCR, and UDHR. This is not because recent U.S. drone strikes “violate” international law; ironically, they might be less destabilizing, from a rule-of-law perspective, if they could be easily categorized as blatant instances of rule-breaking. Rather, U.S. drone strikes challenge the international rule of law precisely because they defy straightforward legal categorization.

¹⁴ “Sterlite Power to Use Drones (Unmanned Aerial Vehicles or UAVs) for Power-Line Monitoring in India,” EnergyInfraPost, August 8, 2016, <http://energyinfrapost.com/sterlite-power-sharper-shape-use-drones-power-line-monitoring-india/>.

¹⁵ IBid

¹⁶ <https://www.lexology.com/library/detail.aspx?g=2ebbeb3c-eb91-465e-ab48-de253fd12179>; Also refer to the Drone Slayer Case , the defendant William Meredith used a shotgun to shoot down a UAS which he believed was invading his property. Other types of emerging technology include nets and similar devices to try and ensnare UASs. However, UASs are still considered “aircraft” by the Federal Aviation Administration (“FAA”), and it is a federal offense to damage, destroy, or disable an aircraft operating in **U.S. airspace. 18 U.S.C. § 32.**

¹⁸ Ethics & International Affairs,28 , no. 1 (2014), pp. 83 -103.;

In fact, drone strikes—or, more accurately, the post-9/11 legal theories underlying such strikes—constitute a serious, sustained, and visible assault on the generally accepted meaning of certain core legal concepts, including “self-defense,” “armed attack,” “imminence,” “necessity,” “proportionality,” “combatant,” “civilian,” “armed conflict,” and “hostilities.”¹⁹ This happens when the terms to describe a states’ behavior during a particular manner, loses its fixed meaning and becomes vague then, and which will lead to the superpower nations like the US to challenge the commonly accepted meanings of key concepts.

So it becomes a choice on the other state, if one or more State challenge the terms, in the instant case, the drones regulation, to either accept or reject the meanings of such concepts.

The International Telecommunications Union (ITU) is already considering specific regulatory provisions for drone frequencies. The DGCA must follow this lead and come up with a clear regulation on the mode of data-linking to be adopted because satellite communication lends greater accuracy of signals to line of sight communication, but radio frequency communication is certainly cheaper. But for the latter, the DGCA must have comprehensive agreements with the Telecom Regulatory Authority of India (TRAI) if radio frequencies are likely to be shared for drones.

DGCA must also harmonise its regulations with the International Civil Aviation Organisation (ICAO). Being an international regulatory authority, the ICAO’s mandatory guidelines on drones would also clarify situations of cross-border usage of drones, and Article 12 of the Chicago convention gives Jurisdiction over the ‘High Seas’ to the ICAO.

Though, the DGCA has prohibited the usage of drones across international borders, this is in a context of a lack of binding regulations by the ICAO. But with clarification of the international regulatory space, the effect on international trade could be great, and thus the DGCA must tackle this aspect as well in the coming future.

In Singapore, the new UAV guidelines, part of the Unmanned Aircraft (Public Safety and Security) Act, are extremely permit-heavy and have strict restrictions on the movement of drones in mainland Singapore.²⁰ While in Poland Drone laws in Poland dispense with registration for drones lighter than 25 kilos but insist on an operator’s license when the drone is heavier.²¹ The operation of UAVs for commercial purposes requires the pilot to obtain a certificate of competence, which

¹⁹ Rosa Brooks, Drones and the International Rule of Law ,Pg no 83 ,Georgetown University Roundtable Conference.;

²⁰ “Unmanned Aircraft (Public Safety and Security) Act,” Civil Aviation Authority of Singapore, 2015, <http://www.caas.gov.sg/caasWe>

²¹ Government of Poland, “Aviation Law Act, 2002,” <http://www.dziennikustaw.gov.pl/DU/2012/933>.

applies to both line-of-sight and beyond-line-of-sight operations.²² However, the latter is permitted only in segregated airspace.²³ In the UK, a person in charge of an unmanned aircraft with a mass of more than 7 kilos cannot fly the aircraft without specific permission, or at a height of more than 400 feet except in some very limited instances.²⁴ In addition, the operator must be reasonably satisfied that the flight can be made and cannot drop an article or an animal from the aircraft so as to endanger people or property. While, there is no specific rule in Israel as such.

SUGGESTIONS

Keeping into the above-mentioned limitations of the guidelines issued by the Aviation Authority in India, the following suggestions along with the those already given above should be looked into.

- The increasing realist approach being adopted by the legal professionals in understanding for developing those set of laws which would maximize the benefits for the end user and minimize the cost for the end user and therefore, being stringently following the Lockers rule of law will not be reliable in the present times.
- Due to the absence of clear common law rules, Indian States could very well step into the shoes of regulating UAS activities, which would thereby result in Drone federalism as prevalent in the United States.
- To avoid a situation where multiple states regulate the concept of UAVs, India can undertake review of possible activities of drones that invite inconsistent policymaking and rulemaking and bring them in line with the interests of the innovations consistently.
- Rule, “Airspace in an Age of Drones.” The rule interestingly argues that even a sui generis rule could be crafted for drones, which differentiates them from aircraft and treats them as more akin to projectiles. In the case of the latter, absence of the landowner’s consent results in absolute liability for actionable trespass rather than a conditional liability built on a showing of the dual factors listed in the Second Restatement of Torts should be applied in India or at least an effort should be made to do so.

²² Ibid

²³ Ibid

²⁴ UK Civil Aviation Authority, “Air Navigation Order 2016 and Regulations,” August 2016, <https://www.caa.co.uk/News/Air-Navigation-Order-2016/>.