Aerial terrorism is gradually emerging as a potent form of terrorism capable of causing significant damage to human life and infrastructure. Aircrafts and UAVs can be easily used as guided missiles to target key locations and installations; and more importantly, to communicate a political message. Dealing with such threats can be difficult as it becomes complicated to fully understand the nature and scope of unconventional acts of terrorism. Nonetheless, there is a need to frame mechanism to assess such threats and prepare suitable responses to pre-empt the likelihood of such terror incidents.

Terrorism has a long history. However, the form of terrorism over the years is constantly found evolving. The act of terrorism could be seen as an unreasonable act mostly driven by ideological objectives. For last four to five decades various governments, policy makers and thinkers are found attempting to define terrorism but with partial success. It could be broadly argued that various definitions of terrorism emerging out of these efforts essentially restrict their definitional parameters to the acts performed by the non-state actors. On the whole, there could be various categories of terrorism and they could include civil disorders, political or non-political terrorism, religious terrorism or state-sponsored (covert) terrorism. It has been observed that one of the ways of studying terrorism is to emphasise more on the techniques used for this act. Hence, modern day analysts are concentrating more on studying the tools and tactics used for the acts of terrorism to understand the philosophy and modus operandi of various terrorist groups instead of being entrapped into defining terrorism.

One of the ways to study terrorism is the emphasis on the techniques used for this act.

At present, terrorism is being used by the radical groups as a tool for pursuing political objectives. The basic tools and tactics used by the terrorist groups over last couple of years have more or less remained same. However, with the advent of various new technologies, the terrorists are found incorporating them into their acts. Terrorists are resorting to
brutal means like attacking the airports, hijacking and bombing of aircrafts in order to exert pressure on the political structure. Also, terrorists have understood the increasing dependence of the states on modern technologies and hence, are also making technology infrastructures as their potential targets in order to deny the state its usage and to create fear and panic.

Cyber terrorism, biological or chemical terrorism, nuclear terrorism, suicide terrorism, narco terrorism and maritime terrorism are some forms of terrorism based on the tool and techniques employed by the terrorists to carry out their ghastly missions. One such important category is ‘aerial terrorism’ which for last few years has succeeded in creating mayhem and is considered as a most potent form of terrorism which could create significant damage to human life and infrastructure and also create dread and mass disruption to the lives of not only one state but many states simultaneously. Aircrafts, because of their mobility and susceptibility, have become their preferred targets.

No perfect definition for aerial terrorism exists. Aerial terrorism could be said to include hijacking aircraft(s), sabotage of airplane(s), causing damage to aircraft(s) or airport lounges, gunning down passengers at airports and turning aircrafts into guided missiles aimed at financial and/or governmental institutions.

The classic case of aerial terrorism in the entire history could be said to be the 9/11 attacks on the World Trade Centre (WTC) in the United States. In the twenty first century, the threat of aerial terrorism is looming large over many states in the world. Though aerial terrorism registered itself back in the annals of history but its incremental threats have been recognised only after the terrorist blitz on the World Trade Centre and Pentagon. The carnage of 9/11 is a graphic reminder to the world of the damage that can be done by civil aircraft laden with fuel as a terror tool. Subsequently, various stringent security measures have been taken all over the world in regard to air travel. Such security measures have shown a good impact and terrorists have not achieved any major success with this form of terrorism during last 7-8 years. However, this does not prove the total elimination of threat. Particularly, it is feared that the terrorists could use small crafts like the Unmanned Aerial Vehicles (UAV)/drones or gliders or even toy planes to avoid detection by any radar network. The existing air defence networks are not efficient to curb such attacks. This paper attempts to analyse this threat. The paper also makes specific reference to Indian context particularly at the backdrop of November 26, 2008 terror attacks in Mumbai.
Historical Background of Aerial Terrorism

Notwithstanding its limited history, there have been numerous instances of aerial terrorism. During the World War II, the Axis forces used aircrafts to be crashed into buildings resulting in tragic civilian casualties. After WW II, civilian aircrafts became particular terrorist target. According to one estimate, between 1949 and 1985, there were nearly 800 incidents of hijacking with over 60 per cent success rate. During this period, 87 bombing incidents involving aircrafts led to the deaths of 1539 individuals. Since 1985, there has been an increase in hijackings as well as number of attacks on the aeroplanes. In 2000, 24 incidents of hijacking took place with 42 cases of interferences with civil aviation. During 2001-2003, the level of interferences has remained static. Notwithstanding the gravity of offences, no single set of motives can be identified as the cause of aerial terrorism. Hijacking of planes has been undertaken by those fleeing communist or dictatorial and oppressive regimes. Sometimes those acts have been created by those of an unstable mind. At other times, financial gain has been the driving force behind aerial hijacking. These hijackers are also called as 'sky bandits'. In some cases, aerial hijacking is carried out for personal reasons as opposed to ideological motives. The last quarter of twentieth century, however, witnessed a marked change in nature of aerial piracy and also in hijackers' psychological motivations.

The 9/11 event indicates the shift of modes from ‘hijacking for bargaining’ towards that of ‘strategic tool’.

Mostly, till 1980s the form of aerial terrorism was used for the purposes of either demand like release of prisoners resulting from a terrorist attack aimed at achieving politically-orientated objectives or for the sake of publicity. It was found by terrorist organisations that internationalisation of the issue becomes easier if acts like hijacking are carried out. However, 9/11 event indicates a possible shifting of modes from “hijacking for bargaining” towards a 'strategic tool' mode. The act of aerial terrorism could be done even with an aim to use the hijacked aircraft as a guided missile and cause mass-murder and chaos. Having understood in the past that what impact an aerial terror attack could do and having tested significant success in this field it’s unlikely that the terrorist organisations will forgo using this option again. May be the present level of alertness by the states is forcing them to keep this option dormant for some time. Terrorists could look for more innovative but unconventional ways to use this form of terrorism by bringing in the element of surprise. For them aircraft remains a high priority target or an instrument to cause terror. They know that along with human deaths huge amount of infrastructural damages could be carried out by undertaking such act and they could gather more amount of international publicity for their cause. Apart from attacks on commercial passenger aircraft or using such aircrafts for carrying damage it is likely that
Apart from attacks on commercial passenger aircraft, terror groups could consider private aircraft as an alternative. Normally such aircrafts are small in size and are mostly owned by private flying clubs. Also, some small aircrafts do not need a standard runway as could use large grounds/abounded airfields for their flying activities. Terrorist groups could make use of such small aircrafts for carrying out acts of terrorism. Today, for a terrorist organisation having reasonable expertise could manufacture small aircrafts/toy crafts on their own because all hardware required for this purpose including the engine is openly available in the market and with minor modifications a craft could be built for specific purpose.

The Japanese Kamikaze (‘Divine Wind’) pilots intentionally crashed their aircraft full of explosives into Allied ship pilots during the World War II. This could be said to be the first known act of usage of aircraft as a missile. However, such suicidal act was not considered as terrorism as it was aimed at strategic military targets and the act was carried out by men in uniform. Therefore, Al-Qaeda’s attack on the World Trade Centre could be said to be the first ever example of using an aircraft in a ‘weapon’ mode.

In short, the terrorists’ do have intentions to use the aircraft as a tool of terror—only the format of its usage could vary from converting one as a ‘bomb’ or using it for the purposes of hijacking. There are few cases such as in the Trans World Airlines, TWÀ Boeing 847 hijacking to Beirut by Amal/Hezbollah (June, 1985), where the terrorists threatened to crash the jet following Beirut airports refusal to permit the jet to land, and the terrorists, who claimed to be suicide terrorists, declared that they would crash the jet into the Ba’adba Presidential Palace. In another incidence, Abu Nidal, hijacked Pan-Am, the Jumbo Jet, which he intended to crash into the centre of Tel-Aviv. However, in reality nothing of that sort happened. But, such cases give an idea that the terrorists do have such type of intentions.

It is argued by a few, that the practice of using the aircraft as a flying missile could be said to be affiliated with fundamentalist religious terrorism frameworks. On the other hand, it is worthwhile mentioning that fundamentalist religious terrorist organisations also used ‘traditional tactics’ such as hijacking, as in the case of TWA’s flight 847 hijacking to Beirut (June 1985) or HUM’s (Harakat Ul-Mujahidin) hijacking of the Air-India Airbus (December 24, 1999). These organisations are religious fundamentalists and HUM is a member of Osama bin Laden’s International Network. Despite this fact, HUM used ‘rolling action’ (hijacking) rather than ‘immediate action’ (total destruction by using the aircraft as a flying missile).
Recent Developments

Post 9/11, the major incidence which caught the attention of entire world in regard to aerial terrorism was that of the 'shoe bomber'. However, this attempt by a person called Richard Reid proved unsuccessful and he was arrested on December 22, 2001 for attempting to destroy a Boeing 767 on American Airlines Flight 63, a flight from Paris to Miami by igniting explosives hidden in his shoes. The 9/11 incidence and events like this have forced the states all over the world to take stringent measures in regard to security at the airports and in the air. Skies are being constantly watched for any likely untoward incident. This global fight against aerial terrorism has shown good results and few major attempts by terrorist groups to cause damage through aerial route have been averted. There was a plan to carry liquid explosives on to planes at London's Heathrow airport destined for the United States and Canada, knowing the devices would evade airport security protocols. This transatlantic terrorist attack on August 10, 2006 was foiled giving indications that security at airports has become a very serious business.

The 9/11 incidence had caught the entire world napping as far as security in air is concerned. Albeit, the terrorist organisations had planned earlier of using aircrafts as bombs, but failed in their endeavour. Private airliners were used as 'bombs' to cause mass casualty and to inflict colossal damage to critical infrastructure. This act could be said to be unique example to illustrate that terrorist organisation could convert an aerial platform itself into a terror tool. This act is termed as 'aerial terrorism' because it happened in mid-air. However, the classic case of aerial terrorism could be considered as the 'airpower' available with the most dreaded terrorist organisation LTTE and acts of terror carried out by them so far by using airpower. LTTE could be said to be having the world's first terrorist air force. Tamil Tigers demonstrated their capability of attacking from air on March 26, 2007 when they launched an air assault on a Sri Lankan Military base close to Colombo by two crude aircrafts. Subsequently, also they have carried few more air raids. On July 24, 2001, LTTE had attacked the Air Force base in Katunayake and the Bandaranaike International Airport, on the outskirts of Colombo. Eight military aircraft, including Kifir Jets, and six Airbus passenger aircraft were destroyed or damaged in the attack.

Sri Lankan military leaders believed that the Tigers had conducted an extensive reconnaissance of the area and had planned the attack for nearly 7-8 months. The then Prime Minister Wickremanayake had ordered the air raids on Wanni area based on credible intelligence reports that the Tigers were assiduously building up their strength to recapture Jafna. The LTTE attack was
in retaliation to the air strikes launched by the Sri Lankan Government on Tiger positions in Wanni area. For LTTE an air attack on them implied escalation in the conflict so their response was equally severe and this could be one of the reasons for them to use airpower.

In a more recent development, two of the LTTE’s Black Tigers’ Pilot on a suicide mission attacked the Sri Lankan Air Force Headquarters, Colombo and main base in Katunayaka near international airport. They used Czech Zlin-143 light aircraft with improvised bomb sections. However, the mission was a ‘total failure’ as neither aircraft could bomb or crash into their targets. Their hostile entry was detected by radar and was hit by Sri Lankan Air Force (SLAF) anti-aircraft guns before they could crash into the targets. The LTTE’s 9/11-style attack showed that the guerrilla group still had significant fighting capability, as well as the audacity to take the battle into the rival camp.

This usage of aircrafts for fighting terror cause could be a unique example but it clearly signifies that nothing is impossible for terrorist organisations that have to carry out such acts and would also opt for most difficult proposals of having to invest in to covertly manage aircrafts and develop ground infrastructure for the purpose.

**Aerial Terrorism and India**

Aerial terrorism is not new to India, only silver lining is that such incidences are in the minority. One of the worst aviation disasters in history killing 329 people was an Air India Boeing 747-237B jetliner, Emperor Kanishka. It was blown off the Irish Coast on June 23, 1985. Terrorists working for the Sikh separatist movement were involved in this act. Post December 1999 hijacking of IC-814 the famously known Kandahar hijack incident, India has not witnessed any significant terrorist incident which could be related to 'Aerial Terrorism'.

*(Refer to Table No. 1)*

After 26/11, as a routine security drill ‘tightening of security' measures were adopted all over India essentially as a precaution to protect critical infrastructures. Intelligence reports had also predicted that airports could be targeted around the anniversary of Babri Mosque demolition on December 6.16 Indian Defence Minister had issued a statement mentioning that India is making concerted efforts to prevent another Mumbai-style terror attack by adequately equipping its security forces and beefing up the intelligence network and is aware that next threat could even come from air.17 The Defence Minister had also

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| Indian government has declared a no-fly zone around a 10 kilometres radius of the Kalpakkam Nuclear Installation in Tamil Nadu. |
The above table indicates that from 2008 onwards the state has received steady inputs either in the form of claims made by terrorist organisations or intelligence inputs regarding possibility of aerial terrorism. It appears that the groups operating in India are mostly interested in causing damage to the critical infrastructure along with the civil population preferably constituting a mix of Indians and foreigners. Airports become an extremely lucrative target in this regard.

**Table 1: List of Aerial Terrorism in the Indian Context**

<table>
<thead>
<tr>
<th>Date</th>
<th>Name of Organisation/ Individual</th>
<th>Nature of Threat</th>
<th>Preparation Level</th>
<th>Support Base</th>
<th>Source of Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 1, 2008</td>
<td>Deccan Mujahideen</td>
<td>Planned to conduct blast at Indira Gandhi International Airport</td>
<td>Aim was to use auto filled with explosives</td>
<td>SIMI</td>
<td>Intelligence input, Delhi Police received an email</td>
</tr>
<tr>
<td>April 21, 2008</td>
<td>Safdar Nagori (all India chief of the SIMI) and Shibly Peedchal Abdul (South India chief of the SIMI)</td>
<td>Plot to blast the Hubli Airport</td>
<td>Aim was to use explosives</td>
<td>SIMI</td>
<td>Maharashtra Police’s Anti-Terrorism Squad(ATS)</td>
</tr>
<tr>
<td>February 11, 2008</td>
<td>People’s Consultative Group member - Lachit Bordoloi</td>
<td>Planned to hijack an aircraft</td>
<td></td>
<td>ULFA</td>
<td>Confessions made by ULFA member, Manoj Tamuli</td>
</tr>
<tr>
<td>January 28, 2008</td>
<td>Mohammed Ghouse and Assadullah Abbu Bukar, LeT members</td>
<td>Planned to bomb the Hubli Airport</td>
<td>Aim was to use explosives</td>
<td>Lashkar-e-Taiba</td>
<td>Intelligence input and Karnataka Police</td>
</tr>
<tr>
<td>December 17, 2007</td>
<td>No organisation took the responsibility</td>
<td>Plan was to carry out explosions at Indian airports</td>
<td></td>
<td>Al-Qaeda and LeT-suspects</td>
<td>An anonymous email received at a call centre of Air India</td>
</tr>
<tr>
<td>January 6, 2007</td>
<td>Imran alias Bilal, a terrorist from Kashmir</td>
<td>Planned to bomb Bangalore Airport</td>
<td>Aim was to use explosives and satellite phones</td>
<td>Banglore police, working in coordination with Central and State intelligence agencies</td>
<td></td>
</tr>
<tr>
<td>November, 2001</td>
<td>Jaish-e-Mohammed</td>
<td>Target VIPs at the airport</td>
<td>Aim was to use toy-plane, operated by remote control</td>
<td>Pakistan’s Inter-Services Intelligence</td>
<td>Confessions by Militants and Wireless intercepts</td>
</tr>
<tr>
<td>January 15, 2000</td>
<td>Ibrahim Athar from Bahawalpur, three other terrorists from Karachi and one from Sukkur City</td>
<td>IC-814 Indian Airlines plane hijacked</td>
<td></td>
<td>Inter Services Intelligence of Pakistan</td>
<td></td>
</tr>
</tbody>
</table>
expressed an opinion that there is need to have greater synergy amongst defence forces and internal security agencies and for beefing up the coastal and aerial security. In order to avoid any damage to India's nuclear installations in case of a possible hijack, the Indian government has declared a no-fly zone around a 10 kilometres radius of the Kalpakkam nuclear installation in Tamil Nadu and all flying activity up to a height of 10,000 feet over the Kalpakkam area has been prohibited. Such measures are usually taken when the threat potential is very high.

**Threat of Unmanned Aerial Vehicles**

Unmanned Aerial Vehicle is a powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or non-lethal payload. Though cruise missiles are considered UAVs, ballistic or semi-ballistic vehicles and artillery projectiles are not considered unmanned aerial vehicles.

In present century, there is a growing interest in Unmanned Aircraft Vehicle (UAV) in most of the developed and developing states. Presently, UAVs are proving as an efficient application for a wide spectrum of military missions. The lethal version of these crafts is available and is known as UCAVs (Unmanned Combat Aerial Vehicles). From a technical standpoint, the use of UAVs to deliver weapons of mass destructions (WMDs) is a feasible task for terrorists. In fact, terrorist UAVs may cause considerable damage even if they carry conventional payloads. The most worrisome situation stems from model aircraft, where uncontrolled access to the knowledge, skills and equipment required for mini-UAV assembly exists. Existing air defence systems are ineffective against terrorist mini-UAVs, since they are developed to detect different kinds of threats. This is where the real challenge exists for the state. The main effort of dealing with the threat of terrorist UAVs needs to be on preventive measures. Under such circumstances, the role of actionable intelligence becomes very important. Also, there is a need to make the public aware of this likely threat and its potential consequences.

Terrorists are planning to convert anti-ship cruise missiles or small manned airplanes to land attack missiles and create a strong psychological pressure by scaring people and putting pressure on politicians. The military routinely guards equipment at military and production facilities and protects sensitive information about such facilities and equipments. International regimes such as the Missile Technology Control Regime (MTCR) and the Wassenaar
Agreement aim at preventing such threats. In particular, the MTCR prohibits export of any UAV capable of delivering a payload weighing more than 500 kilograms and it restricts exports of all UAVs capable of flying further 300 kilometres. In addition, it restricts a list of technologies and accessories, which is regularly revised at MTCR sessions.

The following table depicts media reports of terrorist attempts to employ UAVs in different parts of the world.

<table>
<thead>
<tr>
<th>Date</th>
<th>Name of Organisation/ Individual</th>
<th>Nature of Threat</th>
<th>Preparation Level</th>
<th>Support Base</th>
<th>Source of Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995<strong>21</strong></td>
<td>Aum Shinrikyo, the Japanese Terrorist Group</td>
<td>Attacked the Tokyo subway</td>
<td>Planned to use remote-control helicopters to spray sarin gas (dangerous chemicals from air)</td>
<td>Japanese Terrorist Group</td>
<td>Literature available on this subject</td>
</tr>
<tr>
<td>2001<strong>22</strong></td>
<td>Osama bin Laden</td>
<td>Planned to kill George W. Bush and other heads of state at the G-8 Summit in Genoa, Italy</td>
<td>Considered using remote-control airplanes packed with explosives</td>
<td>Al-Qaeda</td>
<td>Intelligence inputs</td>
</tr>
<tr>
<td>June, 2002<strong>23</strong></td>
<td>Al-Qaeda</td>
<td>Planned to attack passenger aircraft</td>
<td>Considered using model airplanes</td>
<td>Al-Qaeda</td>
<td>Reuters News Agency</td>
</tr>
<tr>
<td>August, 2002<strong>24</strong></td>
<td>Revolutionary Armed Forces of Colombia or FARC</td>
<td>Exact target not known</td>
<td>Possession of nine remote-controlled unmanned aircraft</td>
<td>Colombian Army Unit</td>
<td></td>
</tr>
<tr>
<td>December, 2002<strong>25</strong></td>
<td>Palestinian Terrorist Group</td>
<td>Attacked built-up Israeli area</td>
<td>Model planes for conversion into miniature air bombers with explosive payloads</td>
<td>Counter terror report</td>
<td></td>
</tr>
<tr>
<td>November, 2003<strong>26</strong></td>
<td>A British National held at Camp Delta, Guantanamo Bay, Cuba</td>
<td>Attack the House of Commons</td>
<td>Acquire a drone to attack with anthrax</td>
<td>Al-Qaeda</td>
<td>London Independent Newspaper</td>
</tr>
<tr>
<td>March, 2004<strong>27</strong></td>
<td>A Palestinian Extremist Group</td>
<td>Attack a Jewish settlement in Gaza sect</td>
<td>Use of a UAV loaded with explosives</td>
<td>Palestinian Extremist Group</td>
<td>Israeli Intelligence</td>
</tr>
</tbody>
</table>

**21** Ajay Lele and Archana Mishra
The above table indicates that the terrorists have considered UAV as tool for terrorism. It has become a herculean task for the US government as well as other countries to curb proliferation UAVs/toy planes/gliders, etc. Such remotely operated vehicles loaded with conventional/unconventional payloads in the hands of terrorists could cause considerable damage.

**Conclusion**

The present international system in a rapidly changing world order is characterised by multivalence, interdependence and political cooperation. In the present system, no particular country or forum can ensure global security alone. The structure of the international system is not only changing rapidly but the challenges are also evolving very fast. For a better world, it is essential to resort to a pluralistic security order based on a cooperative approach to security.

The tools and tactics used by the terrorist organisations in the twenty first century are showing signs of shifting focus from the predictable form of terrorism to a form where modern technology is being used intelligently. Information technology based tools and modern communication system are being employed by terrorists to improvise the existing forms of threat. Terrorists are found using new technology to their advantage while involving themselves in maritime, aerial, cyber or few other forms of terrorism.

Till date the world has witnessed terrorists using aerial form of terrorism with some success. At the same time, the counter terrorism mechanisms employed by states are found gaining success. Such measures appear to have deterred the terrorist groups and have also succeeded in averting some major plans of the terrorist groups to cause damage. However, with easy availability of hardware required to build an unmanned aerial vehicle or a toy plane the possibility exists that the terrorist groups could opt for new techniques to effect aerial terrorism.

This is not to say that the terrorists would discontinue with the techniques used all these years for action attacks such as aerial attacks which cause mass casualties. Terrorist groups such as Al-Qaeda or LeT may still resort to such terror means in future in order to produce destruction in the form of life and property of catastrophic magnitude and to send a political message. They could try to find the unconventional ways to defeat the counter terrorism apparatus devised by nation states in this regard. In view of this, it is essential for states to strengthen their intelligence gathering mechanisms. More importantly, there is a need to comprehend the likely possibility of attacks by using the UAVs or toy planes in developing counter terrorism strategies.

At the same time, it may be noted that the usage of UAVs and UCAVs as tool for
terror is not going to be an easy task for the terrorist organisations. This is mainly because preparing and conducting an aerial attack using UAVs is not an easy task and requires ground infrastructure for launch and control of these crafts. However, such a threat cannot be repudiated in totality. The preparedness level of various terrorist groups in recent past indicate that they do not lack in resources, technical support systems and more importantly will to act recklessly.

The 9/11 type attacks were viewed as too flamboyant and implausible to happen. It is said that 9/11 should not be judged only as a failure of intelligence. In fact, it was more of a failure of ‘imagination’ on the part of the state than ‘intelligence’.

It is not necessary that the next aerial threat would follow a 'conventional' path. An out-of-box threat and risk assessment is needed in this regard. The terrorists have become tech-savvy and are using modern technology instead of the traditional ones. For the last couple of years the acts of terrorism were found more imagination based, but 26/11 has demonstrated that now such acts have switched to more knowledge based techniques. In the wake of recent acts of terrorism using aerial route in various parts of the world (mostly unsuccessful post 9/11, but the moot point is that attempts are still being made) India needs to remain prepared to address the threat of aerial terrorism.

Notes
2. During WW II three major Axis Powers were Germany, Italy and Japan.
5. Ibid.
6. Ibid.
Aerial Terrorism and the Threat from Unmanned Aerial Vehicles

19. These regimes are discussed in more detail at http://www.mtcinfo/ and http://www.wassenaar.org/
23. Ibid.
27. V. Izraile predotvraschvon terakt s ispol’zovaniyem BLA (Terrorist act with UAV employment has been prevented in Israel), Polit. Ru, March 10, 2004.