

BLUE ON BLUE: FRATRICIDE IN WAR

SHIV SASTRY

Fratricide in war, in which personnel are killed or hurt by fire from “friendly forces” or forces fighting on their own side, is more common than is generally known. The word fratricide is derived from the Latin words *frater* meaning brother, and *caedere* meaning to kill. Another word for fratricide is amicide, derived similarly from *ami*, meaning friend.

Military forces in every nation are acutely aware that they are constantly handling weapons that can cause the most unspeakably terrifying injuries. They are conscious of the issue of fratricide and institute measures to prevent or mitigate the chances of friendly fire incidents. But unknown to most, such incidents are surprisingly common, and misinformation can affect the morale of the fighting forces and the mood of an entire nation at war. For this reason it is essential that the larger public, outside of the armed forces, has some awareness of how and why friendly fire accidents can happen, how common they have been in the past, and what can be done to avoid them.

In these days of instant communication via social media and hundreds of amateur self-styled military enthusiasts and experts, even the more knowledgeable ones who recognise acronyms like IFF, or Identification Friend or Foe, imagine that technology is infallible, and fratricide simply cannot occur unless the forces are incompetent or do not use technology. This unfair portrayal is not good for the fighting forces or the nation at war. It is, therefore, important to explore the issue in some detail.

Dr **Shiv Sastry** is a retired surgeon with a long-term interest in military aviation and high altitude medicine. He is the author of several aviation related articles and is an avid vlogger on aviation related topics.

To start with, we can look at a list of recorded incidents of fratricide through the history of conflict reported in open source literature as an illustration of how common it is. The list is long, so only selected incidents are mentioned here to give a broad picture of how, where and when fratricide has occurred in battle.^{1, 2, 3}

- In 1788, thousands of Austrian soldiers were killed by their own troops after they were mistaken for Turkish troops.
- Twenty-eight American soldiers were killed in 1943 in an American-Canadian joint invasion of the Aleutian Islands after all the Japanese troops had vacated the island.
- In an incident from World War II, a US Army tank destroyer platoon attacked US Army tanks but stopped when they realised that the tanks were from the same side. But the tanks fired back and overran the platoon and an adjacent US Army platoon. Meanwhile, US aircraft attacked the tanks.
- In March 1945, seven US B-24 Liberator bombers bombed neutral territory Zurich in Switzerland after they lost their way in poor weather.
- In 1982, a Royal Air Force Jaguar was shot down by a German F-4 Phantom interceptor due to a series of errors in which a live armed aircraft was used in an exercise. The Jaguar pilot survived with a minor cut on his chin.
- In 1994, two US F-15s shot down two US Blackhawk helicopters with working IFF, carrying UN personnel in broad daylight, mistaking them for Iraqi operated Russian Mi-24 Hind helicopters. The helicopters were using the wrong IFF code which had been changed without their knowledge and an Airborne Warning and Control System (AWACS) controlling the helicopters and F-15s did not prevent the incident.

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1. Michael J. Davidson, "Friendly Fire and the Limits of the Military Justice System", *Naval War College Review*, vol. 64, no. 1, Winter 2011, pp. 122-141, <http://www.jstor.com/stable/26397178>
 2. Air Marshal Jagjeet Singh and Group Captain Shailendra Mohan, *Indo-Pak War 1971: Reminiscences of Air Warriors*, Air Force Association (Pentagon Press, 2022).
 3. LCDR William Ayers, III, United States Navy, "Fratricide: Can it Be Stopped", https://www.globalsecurity.org/military/library/report/1993/AWH.htm?ezoic_amp=1

- In April 2002, US F-16s dropped a laser guided bomb, killing and wounding Canadian soldiers after a series of miscommunications. The pilots were at the end of an 8-hour mission and were thought to be on Amphetamine pills (Go pills) given to pilots for long missions.
- In 2003, an American Patriot air defence missile system shot down two allied aircraft, and, in one case, a Patriot missile system was disabled by US aircraft.
- In a 2004 case of US Army fratricide in Afghanistan, a corporal was killed due to lack of situational awareness of the parties involved and misinterpretation of communications. Supporting fire by a friendly group was interpreted by muzzle flashes as enemy fire.
- In the 1971 India-Pakistan War, Wing Commander Balasubramaniam reported that a flight of Hunter aircraft was fired upon by their own anti-aircraft guns on December 3, 1971, while the aircraft were on a flight from Hindon to Pathankot. Later, an Indian Hunter aircraft, misidentified as a Pakistani aircraft was nearly shot down by another Hunter, but the incident was avoided at the last minute by proper visual identification.

Overall, 75,000 French casualties in World War I were thought to have been caused by their own artillery. Fifty-three US naval vessels were sunk or damaged in World War II by friendly fire. Fratricide is said to have caused 2 per cent of all US killed in action in Korea and 2.9 per cent in Vietnam. The latter figure means that about 1,800 US personnel were killed by so-called “friendly fire” in Vietnam, while 25 per cent of all US fatalities in Operation Desert Storm were caused by friendly fire. Five percent, or 1 in 20 of all US casualties are thought to have been caused by “friendly fire” incidents.

CAUSES OF FRATRICIDE

Fratricide arises from three causes:

Human factors.

Environmental factors.

Technology.

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Human Factors

Combat is a high stress situation, with soldiers often being in a state of confusion or fear. With adrenaline pumping, the body prepares itself for a “fight or flight” reaction. It is easy to make mistakes in such a situation. Training aims at mitigating such factors by indoctrinating soldiers with fire discipline, training them when to fire and what to fire at. Critical in this

regard would be the order to fire received from a senior, and discipline maintained by those down the chain of command to follow orders. Colonel Mandeep Singh⁴ writes of an incident in World War II in which scores of C-47 transport aircraft carrying troops were destroyed and over one hundred paratroopers killed simply because a lone machine gunner opened fire thinking they were enemy aircraft, and his action was followed by the other gunners. This was a classic case of lack of fire discipline. But there are often multiple factors that lead up to an incident of fratricide.

In his book *On Killing: The Psychological Cost of Learning to Kill in War and Society*,⁵ Lieutenant Colonel David Grosman compares the readiness to kill, or use a lethal weapon, based on distance from the target. Humans normally hesitate and balk from killing at very close quarters, in face-to-face or hand-to-hand combat. Curiously, the data shows that incidents of fratricide are most common at about 500 m, and decrease with increasing range but, once again, the chance of fratricide increases with beyond visual range targets.⁶ The explanation is that in combat, the shooter is faced with a situation where he can see a target but unless he shoots first, he may himself get shot. However, at very close ranges, where identification

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4. Colonel Mandeep Singh, “Of Fratricide and Air Defence Command”, <http://www.indiandefencereview.com/of-fratricide-and-air-defence-command/>
 5. Lieutenant Colonel David Grosman, *On Killing: The Psychological Cost of Learning to Kill in War and Society*, Copyright 1995, 96 (New York: Back Bay Books, Little, Brown and Company, Hachette Book Group USA, 1271 Avenue of the Americas).
 6. “Who Goes There: Friend or Foe?”, June 1993, OTA-ISC-537, Ch 3: Avoiding Fratricide: General Considerations, p. 29, <https://www.princeton.edu/~ota/disk1/1993/9351/9351.PDF>

is easier, the risk of fratricide is lower. As the distance increases, the readiness to use a lethal weapon increases to the extent that at very long ranges, it becomes easy for a weapon user to feel that they are not really killing humans. This goes a long way towards explaining how long distance weapons such as artillery, tanks, missiles and aircraft are involved in the most costly incidents of fratricide.

Adding to the confusion are battles in which both sides use similar or even identical equipment, which can make the identification of friendly forces and differentiating them from adversaries very difficult. In past wars, Indian pilots have reported mistaking Indian Hunters for Pakistani fighters.

Environmental Factors

The human factors mentioned above are compounded by environmental factors such as darkness, fog and poor visibility. These environmental factors, combined with smoke, sandstorms and rain, contributed to 11 out of 13 known incidents of fratricide in the Gulf War. An interesting term mentioned in this context is the “glass cockpit syndrome” in which a person staring into a computer screen under stress, overloaded with confusing information, can contribute to a chain of events leading to needless loss of life. Combat helicopter pilots and tank gunners visualising targets at long distances, well beyond the range of the human eye, can mistake friendly forces for enemy targets.

Adding to the confusion are battles in which both sides use similar or even identical equipment, which can make the identification of friendly forces and differentiating them from adversaries very difficult. In past wars, Indian pilots have reported mistaking Indian Hunters for Pakistani fighters. In the Chinese context, the visual differentiation between a Chinese J-11 or J-16 and an Indian Su-30 MKI would be difficult, if not impossible, in a within-visual-range combat scenario. Similarly, visual differentiation of a Chinese JH-7 from an Indian Jaguar is difficult from some angles.

Indian Air Force (IAF) pilots flying the initial sorties launched against a massive Pakistani tank thrust across the border at Longewala in Rajasthan in December 1971, reported being stricken with doubt that they had fired upon Indian tanks. They were later reassured by the Air Observation Patrol (AOP) pilot who confirmed that the targets were indeed Pakistani tanks. The incident goes to show how difficult it is to identify friendly forces from adversaries from an aircraft flying at hundreds of kilometres an hour at a low altitude. In a more tragic incident in the Chhamb region, in the 1965 War with Pakistan, an Indian Vampire fighter aircraft misidentified Indian trucks carrying ammunition and destroyed them.

Technology Contributing to Fratricide

The speed, lethality and range of modern weapons contribute to the possibility of fratricide. Targets can be identified at great ranges and weapons launched in split seconds. Once an error is made, there is no turning back because of the low reaction time and the destructive potential of contemporary weapons. A study of fratricide in Vietnam showed that although the majority of incidents were of infantrymen shooting others, it was tanks, artillery and aircraft that had the firepower to cause the maximum number of casualties in a single event.⁷ These events show that long range weapons combined with misidentification cause the most casualties from fratricide in terms of numbers of personnel killed or injured. With missiles and suicide drones increasingly entering the battlefield, the problem of fratricide could well increase as these machines, using inbuilt algorithms to engage targets, cannot be controlled or recalled once launched.

AVOIDING FRATRICIDE

In theory, fratricide would never occur if a shooter knew with one hundred percent certainty that the target he was aiming at was hostile, and not a friendly or neutral entity. In practice, this boils down to two things: the

7. Lieutenant Colonel Robert C Stevenson, "Not So Friendly Fire: An Australian Taxonomy for Fratricide", Land Warfare Studies Centre Working Papers, 2006, https://researchcentre.army.gov.au/sites/default/files/wp128-not-so_friendly_fire_robert_stevenson.pdf

shooter must have accurate target identification information, and exercise fire discipline by shooting only after reasonable confirmation that the target is hostile. Information about the target can reach the shooter from human or non-human sources, the latter often dependent on technology. But fire discipline is entirely within the domain of human psychology and behaviour.

Efforts to reduce fratricide must address the following factors:

- Training: The soldier must be sensitised to the risk of fratricide and trained in fire discipline.
- Fire discipline: The soldier must have a clear idea of what he is shooting at and must follow a chain of command, so he knows exactly where the order to fire comes from. Firing must follow that order.
- Situational awareness: Information about the location of friendly forces and enemy forces must be available to the person who orders fire by means of robust, secure communication lines.
- Technology such as IFF can be used where available, but there must be a human in the loop to take the final call on firing the weapon. Complete dependence on automatic systems for identification of friend or foe is not adequate to prevent fratricide.
- Clear Rules of Engagement (RoEs)

TARGET INFORMATION

A shooter in combat can get information about the target in several ways. The first is situational awareness. This is a sense of where one's own forces are and where enemy forces are located. It seems intuitive in that at the battlefield, friendly forces are behind and the enemy in front. However, this seemingly simple rule can go wrong in many instances. In the confusion of battle, front and behind may not be clear. One's own forces may have moved up ahead and be inside what seems to be enemy territory. In the latter instance, the rule that the enemy is "in front" fails and one might end up shooting at friendly forces.

Situational awareness requires excellent communication between forces of the same side and leadership that is constantly aware of where their own

forces are placed in a dynamic, moving battlefield. This is easier said than done. In the noise, smoke and confusion of battle, it is easy to lose track of where friendly forces are. For this reason, some method of identification and differentiation of friendlies from adversaries is desirable. Such methods fall under the heading Combat Identification or CID.⁸

COMBAT IDENTIFICATION

As the name indicates, CID is to identify a potential target as friendly or hostile. In its most basic form, a target such as a tank is visually identified by the shooter as belonging to the enemy. This is easiest when the enemy has equipment that is completely different from own side equipment and the visibility is good, and not obscured by dust, smoke, fog or darkness. But when the opposing force operates equipment that is visually very similar to equipment used by one's own side, visual combat identification becomes difficult. Shooting without identification may cause fratricide, while not shooting may be disastrous by allowing an enemy asset to survive, putting oneself and one's own forces in danger. While visual identification is desirable, ancillary methods may need to be used for positive identification.

For any identification, some information has to pass from the target to the observer. Visual identification is passive where the target is not actively transmitting information about itself, but is simply seen visually or via an infra-red vision device. This is called a passive-passive system where both the target and the observer are not actively announcing themselves by sending out a deliberate signal of some sort. In other words, the target is passive and uncooperative as it is not actively assisting in its own identification. In such a situation, a friendly but passive and uncooperative target can be misidentified as hostile and shot at. To avoid this, the passive target can be made "cooperative" by the use of a painted symbol or flag to aid identification. This might prevent fratricide, but may make the target easy to identify by enemy forces and put it in danger.

8. Jorma Jormakka, "Fratricide: A Sceptic's View", Finnish National Defence University, Department of Military Technology, https://www.researchgate.net/publication/236130685_Fratricide_Prevention_A_Sceptic%27s_View

Because of the large number of fratricide incidents in the Gulf War, the US hurriedly introduced several innovative measures to mitigate the risk.⁹ The simplest was a sticker tape that would show up on illumination with an infra-red light, invisible to the naked eye, but visible on infrared vision devices. Another method, called the Budd light, named after its inventor Budd Croley, was a battery powered device that emitted pulses of infrared light visible to personnel wearing night vision goggles. A Budd light would be mounted on a prominent part of friendly vehicles to aid identification. A similar device was known as the Defence Advanced Research Projects Agency (DARPA) light. The latter required more power but was visible up to 5 km away. These simple systems can be spoofed or exploited by an adversary. Smoke, fog or dust could obscure visual identification and render the system ineffective. Other systems have depended on the Global Positioning System (GPS) for identification but cost becomes a serious consideration as technological complexity increases.

Another method of combat identification is an “active-passive” one, where the observer is active and the target is passive, or uncooperative. Typically, this is a radar being used to illuminate a target. Although this is a common and well known technique, it has the disadvantage of revealing the presence and location of the observer. Also, it might not be one hundred percent effective in differentiating between friend and foe. It is, nevertheless, a useful technique that can be used even where the shooter and observer for target identification are on different platforms. For example, an AWACS aircraft or Unmanned Aerial Vehicle (UAV) can share information about potential targets with the shooter and other relevant users via secure communication channels without revealing the presence or location of the actual shooter. Electronic surveillance systems in peace-time can build up a database of signatures from hostile and friendly targets which can be used to identify and differentiate them. One confounding factor, mostly applicable to the US

9. Malcolm W. Browne, “Steps to Avoid Own Side’s Fire Studied by U.S.”, *New York Times*, May 18, 1993, <https://www.nytimes.com/1993/05/18/science/steps-to-avoid-own-side-s-fire-studied-by-us.html>

The most common technological method used for CID by aircraft and anti-aircraft defences is a system known as IFF or Identification Friend or Foe. This is an active-active system where the observer sends out a coded interrogation signal to a target and a friendly target reads and recognises the signal and automatically responds with a coded return signal indicating that it is friendly.

and non-American users of US equipment, is the extent to which such a database of identifying signatures can be shared with allies in a situation in which today's ally may be tomorrow's adversary. Another confounding factor is when adversaries and friendly forces use the same model of aircraft or tank. In such cases, a positive identification can never ensure that a target is hostile.

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and recognises the signal and automatically responds with a coded return signal indicating that it is friendly. This requires the target aircraft to carry a transponder that responds to an interrogating radio-frequency signal from the observer. IFF is implemented in several modes, named 1, 2, 3, 4 and 5. For example, mode 4 IFF is the 1030/1090 MHz mode where the interrogation signal is 1030 MHz and the response is 1090 MHz. Modes 4 and 5 can be encrypted and are for the North Atlantic Treaty Organisation (NATO) use. They require specialised hardware for encryption and decryption. There are other civilian modes designated A, C and S.¹⁰

A valid IFF response indicates that the target is friendly. However the lack of a response does not prove that the target is hostile. In the Gulf War, 20 per cent of IFF identifications were reported to have been incorrect. The presence of an overwhelming number of friendly forces in an area, grossly

10. "Military IFF—Identification Friend or Foe", <https://www.defenseadvancement.com/suppliers/identification-friend-or-foe-iff/>

outnumbering hostile forces, is a situation fraught with the risk of fratricide. In the Gulf War, the US faced a situation in which the maximum number of own side casualties was caused by fratricide. Reacting to this, some experts in the US suggested that the range of long range weapons must be restricted to that in which clear target identification is possible using IFF systems. However, this method will

fail at very close ranges because the occurrence of fratricide is highest at the longest ranges as well as the shortest ranges. At short range, shooters are faced with the dilemma of *"either I shoot him first or he will shoot me"*. For this reason, limitation of the range of weapons to within the IFF radius does not make sense.

IFF systems come with their own problems. A positive identification can only identify friends. The absence of identification does not prove that the target is unfriendly. Sadly, this may have been the exact situation contributing to the shooting down of an Indian Air Force (IAF) Mi-17 helicopter in February 2019. The shoot down was the result of errors made when the IFF transponder of the helicopter was switched off.

Among other reasons why IFF might fail is the fact that IFF signals can be recorded by an adversary and its response spoofed or decoded. In addition, an enemy could simply record the IFF query signal itself and broadcast it, causing the targets to give themselves away by responding. The only way of avoiding such spoofing and deception leads to more technological complexity and cost. The interrogating signal must be encoded and the code changed frequently. Each time the code is changed, every single aircraft or other entity at risk needs to be updated and reprogrammed to respond to the changed code. This is not an easy or reliable solution in the confusion of war.

Technological solutions, complete automation and Artificial Intelligence (AI) have not been found to be 100 per cent effective in preventing fratricide. The US discovered that automated Patriot air defence systems were causing

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undue fratricide incidents. In an amusing development, the fratricidal destruction of an American Patriot system by an American aircraft was referred to with some relief by US pilots, as one system less on their own side that could target them. For these reasons, it is considered essential to have a man in the loop in decision-making for added safety.

TRAINING AND FIRE DISCIPLINE

The human factor is critical in both causing and preventing fratricide. Combat stress, poor training and lack of situational awareness increase the risk of fratricide. Errors in weapon aiming and use are additional factors. Referring to air defence artillery in World War II, Colonel Mandeep Singh, a veteran air defence gunner, states that the strategy of *gun night* or *fighter night* demarcating zones and periods indicating who was responsible for defence, worked well. The chain of command and instructions to hold or open fire were clear. He further opines that the risk of fratricide is increased by creating confusion in the chain of command, pointing out that in the Indian context, fratricide could be prevented by seamless integration of the Indian Air Force command and control system with the Army Air Defence command. This is currently not the case. He points out that a change of command structure by the creation of a new Air Defence (AD) command would be counter-productive. It is reported that the idea of a separate AD command for India has now been dropped.¹¹

RULES OF ENGAGEMENT

Apart from the above factors, the Rules of Engagement (RoEs) are critical in preventing fratricide. RoEs can vary, depending on the particular scenario. On the one hand, anti-aircraft systems on a capital asset such as an aircraft carrier cannot afford to wait and see if an approaching target is friendly or not. The sinking or incapacitation of an aircraft carrier not only eliminates

11. Suchet Vir Singh, "Indian Militaries Theatre Command Plans: Where Does the Proposed Overhaul Stand?", Observer Research Foundation, July 10, 2023, <https://www.orfonline.org/expert-speak/indian-militaries-theatre-command-plans-where-does-the-proposed-overhaul-stand/>

the asset but also leads to the loss of any aircraft that might be in the air at the time. The risk is too high and an unidentified target will be attacked at the earliest opportunity at the greatest distance from a carrier. The RoE in this case demands early interception of an unidentified target.

In contrast to that, the defence of an air base may have several layers of defence such as anti-aircraft defences at the border, a combat air patrol, and local defences at the airfield. The outermost layer of defences can exercise caution about an unidentified target which may be a friendly aircraft returning from a mission, in the knowledge that there are other defensive circles as back-up in case the actions of the unidentified object are hostile. Another contrasting situation is that of a tank commander sighting an unidentified tank within range on an infra-red sight. If he pauses to identify it as a possible friendly one, he risks being hit himself, so he has to take a call on shooting at the target early, despite the risk of fratricide. In this situation, clear communication and situational awareness, seamless communication networks between different platforms, including an AWACS or UAV would be ideal. But in the heat of battle, such ideal situations may not be possible to maintain.

MANAGEMENT OF CONGESTED AIR SPACE

The relentless march of technology has added to the risk of fratricide with the advent of dense air space congestion. Over a battle zone, airborne objects such as small and slow UAVs may occupy the available air space along with supersonic aircraft and missiles, creating a control nightmare. The dense congestion could be mixed, with both friendly and hostile entities, greatly increasing the risk of fratricide. This has led to the need for the development of new tactics and the application of new technology, trained manpower, secure and reliable communication, IFF and other procedures. In a detailed review of the subject,¹² Air Marshal Anil Chopra describes the complexities of control in dense air space congestion over the battle area.

12. Anil Chopra, "Managing a Congested Airspace over the Future Battle Area", *Indian Defence Review*, vol. 36:4, October-December 2021, <https://www.indiandefencereview.com/news/>

Procedural control is less susceptible to enemy interference and will remain as back-up in case of failure of positive air space control plans.

Unity of control is critical, with the Air Force, as the largest user of air space, at the apex. The Air Force will clear all air movement in coordination with the Army and Navy. The Air Force has access to the overall air situation with its radars and other assets, and makes the picture available to the Tactical Air Command from which it can

be passed on the Army and Navy, as required. The responsibility for air defence of their integral assets will remain with the Army and Navy while the Air Force coordinates air space control. The unified control will exclude very low flying and slow air assets that the Army or Navy may need to use outside the control bubble, but their use must be communicated to the Tactical Air Command. Needless to say, this degree of coordination requires close integration of secure digital communications among all the players, ranging from satellites, Airborne Early Warning (AEW) aircraft, aircraft in the air, UAVs and ground controllers.

The methods of management of air space over the battle area could be either positive or procedural. Positive control is dependent on accurate real-time information and IFF available to all the actors, be they aircraft or missile operators. Positive air space control can break down due to enemy attack or sabotage. Procedural control is used as an alternative to positive control, or as a back-up in case positive air space control fails. Procedural control divides the air space into zones inside which certain weapon systems are tasked with air defence, based on previously defined rules of engagement. Procedural control also allows for daily orders that have safe zones for friendly air assets to transit through pre-defined flight paths. Procedural control is less susceptible to enemy interference and will remain as back-up in case of failure of positive air space control plans.

LEGAL ASPECTS OF FRATRICIDE

In his paper, “Friendly Fire and the Limits of the Military Justice System”, Lieutenant Colonel Davidson writes about military justice in the US:

In the wake of a friendly-fire incident, particularly when it draws the attention of the media, there is a call for accountability. Someone needs to be held responsible. Someone needs to go to jail. Indeed, in some cases, the facts seem so egregious that the need to subject to court-martial the individual or individuals responsible

is compelling. However, the military has rarely used its justice system as a response to friendly-fire incidents, and when it has, prosecutions have rarely been successful. Further, the use of the military justice system raises significant collateral issues, among them concerns about second-guessing the actions of members of the armed forces in combat, encouraging hesitancy and timidity, overreacting to complex systemic problems by punishing individual manifestations of those problems, and fairness in determining who should be held accountable.

In the United States, the military comes under the UCMJ (Uniform Code of Military Justice) and acts of fratricide may be tried under the headings *involuntary manslaughter*, *negligent homicide* or *dereliction of duty*.

While precise reports of the specific applicable laws in India are not readily available, one can reasonably surmise the legal provisions that allowed the court martial of the Indian Air Force officer involved in the fratricidal shooting down of the Mi-17 helicopter in February 2019.¹³

With the increasing proliferation of drones and unmanned aerial vehicles in conflict, a dense and confusing battle environment could result in needless fratricide and it behoves the forces, polity and general public to be aware of the possibility of fratricide, and what may be done to prevent it.

13. “Military Court Recommends Dismissal of IAF Officer over Shooting Down of Mi-17 Chopper”, *The New Indian Express*, April 11, 2023, <https://www.newindianexpress.com/nation/2023/>

The Indian Air Force Act 1950,¹⁴ under the title Offences, Chapter 6, section 62, states:

Offences in relation to aircraft and flying.

Any person subject to this Act who commits any of the following offences, that is to say,

- (a) wilfully or without reasonable excuse damages, destroys or loses any aircraft or aircraft material belonging to the government; or
- (b) is guilty of any act or neglect likely to cause such damage, destruction or loss; or
- (c) without lawful authority disposes of any aircraft or aircraft material belonging to the government; or
- (d) is guilty of any act or neglect in flying, or in the use of any aircraft, or in relation to any aircraft or aircraft material, which causes or is likely to cause loss of life or bodily injury to any person; or
- (e) during a state of war, wilfully and without proper occasion, or negligently, causes the sequestration, by, or under the authority of, a neutral state, or the destruction in a neutral state, of any aircraft belonging to the government, shall, on conviction by court-martial, be liable, if he has acted wilfully, to suffer imprisonment for a term which may extend to fourteen years or such less punishment as is in this Act mentioned, and, in any other case, to suffer imprisonment for a term which may extend to five years or such less punishment as is in this Act mentioned.

CONCLUSION

Fratricide or friendly fire casualties are very common but not often discussed because of the effect on morale in a war situation. Efforts to reduce fratricide are continuous and ongoing in all military forces. Technology for better communication and situational awareness is an important aspect

apr/11/military-court-recommends-dismissal-of-iaf-officer-over-shooting-down-of-mi-17-chopper-2564936.html

14. "The Air Force Act, 1950", https://www.indiacode.nic.in/bitstream/123456789/1819/1/AAA1950____45.pdf

of preventing fratricide but has not proven to be effective by itself. There has to be a human in the loop to take a final call in exerting fire discipline while following the rules of engagement. With the increasing proliferation of drones and unmanned aerial vehicles in conflict, a dense and confusing battle environment could result in needless fratricide and it behoves the forces, polity and general public to be aware of the possibility of fratricide, and what may be done to prevent it.