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## Toward Safer Skies: An Analysis of Global Governance Gaps and Civil Aviation Accidents

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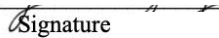
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### FACULTY APPROVAL

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Toward Safer Skies  
An Analysis of Global Governance Gaps  
and Civil Aviation Accidents

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A Thesis  
Presented to  
The Faculty and the Honors Program  
Of the University of San Diego

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By  
Richard Austin Gunderson  
International Relations

2020

**Toward Safer Skies**  
**An Analysis of Global Governance Gaps**  
**and Civil Aviation Accidents**

**By: Richard Austin Gunderson**

**2020**

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*Dedicated to the victims of Korean Air Lines Flight 007, Iran Air Flight 655, Malaysia Airlines Flight 17, and all civil aviation accidents.*

## **Introduction: A Tribute to Flight**

Ever since the dawn of our kind, humans have gazed up at the heavens with a profound sense of wonder and a desire to discover the secrets held within the depths of what is truly the final frontier. The human story is one which is largely ground-based; for millennia we have traversed the land and the sea in the conduct of our affairs and livelihoods. The skies above were largely out of reach, save for the occasional mountaineering excursion to touch the clouds. The civilizations of eras past developed stories to explain the weather and cosmic phenomena they witnessed above. Great thinkers such as Copernicus and Galileo began to discern important scientific relationships between elements of those cosmic phenomena. With the flourishing of the Renaissance, Leonardo Da Vinci drew up the first plans for a man-made craft that might be capable of flight. Just over one hundred years ago, the dream of powered flight became reality when Orville and Wilbur Wright's aircraft took to the skies for a few brief moments off the dunes of Kitty Hawk. In a short interval of time we have broken free from the metaphorical chains that have bound us to the ground and spread our wings. We have transformed our society into one where aviation plays a crucial role in the conduct of our affairs, from the personal to the international.

## **Abstract**

Billions of people around the world use the global airspace system for their travel needs every year. Given the rising number of passengers traveling by air annually, it is crucial that pilots, airlines, regulatory agencies, governments, and international organizations work together to ensure the integrity of a safe and efficient global airspace system. While air travel is statistically one of the safest forms of transportation, accidents in which civilian aircraft operating on standard routes and schedules are shot down are not unprecedented. Not all airspace around the globe designated for civilian use is free from geopolitical conflict. In this project, I consider the role that global governance gaps, which stem from the idea that there is no single global government, play in producing unsafe airspace and situations in which civilian airliners are downed. Two incidents from the late Cold War, Korean Air Lines Flight 007 and Iran Air Flight 655, and one recent incident, Malaysia Airlines Flight 17, are reviewed. Using archival material and official responses of pertinent parties to each of the three selected incidents, this study investigates the constellations of global governance gaps within contexts of geopolitical conflict that are responsible for producing instances of civilian airliner downings that the international community should endeavor to avoid in the future. The project seeks to contribute to ongoing discussions about aviation policy decisions and safety practices that aircraft operators, governments, and international organizations might employ to mitigate the occurrence of similar accidents in the future. Global governance gaps, with regard to airspace in the context of geopolitical conflict, need to be bridged.

## The Five Global Governance Gaps

Political science and its sub-discipline of international relations endeavor to frame political processes around the world in terms of independent and dependent variables. In this essay, I posit that global governance gaps are the primary independent variables that help explain civil aviation accidents (the dependent variables). The reader may ask: what exactly are global governance gaps?

Global governance may be defined as “the sum of laws, norms, policies, and institutions that define, constitute, and mediate relations between citizens, societies, markets, and states in the international system.”<sup>A1</sup> Governance gaps may even exist on a regional level. Such gaps emerge because there is no global government which can effectively enforce a uniform set of rules over sovereign political entities (states) around the world. While a global government seems like a far-fetched and impractical idea, globalization has permitted the formation of institutions and forums such as the United Nations that permit nations to discuss their affairs and issues in a peaceful, orderly manner. The United Nations is presently the foremost entity that aims to provide coordination in global politics, although it lacks the necessary power to enforce the rules it makes to the degree that a national government like that of the United States can enforce laws over American territories. The Federal Aviation Administration (FAA) regulates the use of airspace within and above sovereign territory of the United States. The International Civil Aviation Organization (ICAO) is the arm of the United Nations that aims to provide a standard set of rules and procedures pertaining to the use of the global airspace system.

Five kinds of gaps in global governance can be said to exist:<sup>A1</sup>

1. **Knowledge gaps** are present when there is an incongruity of information available between parties regarding a particular issue or set of issues. In some cases, one state may



know more than other states on a given issue and may be withholding crucial information whether for reasons of national security or other internal rationales. For example, one state might withhold crucial evidence that might help to identify the causes of an aircraft accident within or close to its sovereign territory. Alternatively, no parties may not have enough information to truly recognize the severity of an issue. If the severity of an issue is unknown or insufficient resources are available to deal with the problem, it may be difficult for states to devise an appropriate and sufficient solution for that issue. Bridging the knowledge gap requires states to recognize that an issue does exist, foster an atmosphere of trust between states involved, obtain sound information and data on that issue, and identify the causes of that problem so that the problem may be understood and an effective solution may be pursued.

2. **Normative gaps** exist when an issue has been identified and norms need to be developed around how that issue ought to be addressed. Norms often form within societies, and intergovernmental organizations such as the United Nations play an important role in drafting laws that pertain to said issues. Norms matter to people because individuals, whether politicians or citizens, care about how others perceive them. Bearing this in mind, people and organizations can work together to develop systems of norms around a plethora of issues including but not at all limited to commerce, human rights, the environment, maritime law, and airspace management. Once knowledge on an issue can be compiled, the global community can develop viable norms about how an issue can be addressed.
3. **Policy gaps** correspond to the specific implementable policy options available to address a specific issue. Policy refers to the interconnected set of goals and principles in

governance and coordinated programs of action that allow for those goals to be achieved and those principles to be upheld. What makes policy gaps particularly difficult is that there are many actors involved. Any entity ranging from individuals and organizations to states can call for certain policies to be implemented to deal with issues. It is important to recognize that different entities like states will have a variety of interests with regard to one common issue, which adds an extra layer of complexity and difficulty in the establishment of multilateral policy. Parasitic integration (or detriment to a third party) of policy may also occur when states come together to make policy decisions without permitting civil society to have a voice in the decision-making process. There is debate among scholars whether United Nations resolutions, treaties, or ICAO guidelines constitute a solid form of policy.

4. **Institutional gaps** concern the ability of entities like states to implement policies that are agreed upon by the international community. For example, if human rights are being violated in one country or region, institutional gaps would refer to the inability or lack of mechanisms in place to enforce the observance of human rights policy. Institutions like the International Criminal Court and International Court of Justice are in place to deal with individuals accused of war crimes and legal disputes between sovereign states respectively. The ICAO produces a set of common guidelines that helps civil aviation authorities around the world adhere to common airspace norms and procedures. Where policies are put in place, mechanisms must be present to enforce these policies. Institutional gaps are present wherever mechanisms cannot sufficiently enforce policies that are in place and dole out consequences for violations of those policies.

5. **Compliance gaps** are associated with a lack of ability to effectively implement and enforce policy. Sovereign states may lack the will or even the ability to abide by an international policy or elements of that policy that have been agreed upon in an international forum like the United Nations. For example, North Korea may be unwilling to abide by a policy that calls for a reduction in nuclear arms, or Chinese military aircraft may illegally penetrate Taiwanese airspace even though international prohibitions may be in place. The prime difficulty lies in enforcing consequences on violators of policy due to factors like balance-of-power considerations and the possibility of retaliation or collateral damage. The United Nations Security Council (UNSC) is the organization within the United Nations that most closely adopts an inter-state policing role. While it does not itself maintain a standing military, the UNSC is capable of imposing military and (perhaps more painfully) economic sanctions on states that do not comply with international policy. Other intergovernmental organizations like Interpol also aim to adopt a global policing role, albeit against transnational crime. In spite of the efforts of entities like UNSC and Interpol, many obstacles and complications remain in regard to assuring the compliance of states to international norms and policy.

## Case I: Korean Air Lines Flight 007

*“Let me state as plainly as I can: There was absolutely no justification, either legal or moral, for what the Soviets did.” -Ronald Reagan, 5 September 1983*

The downing of passenger aircraft over the Soviet Union was not unique to Korean Air Lines Flight 007 (KAL 007) in 1983. Just five years prior to the downing of KAL 007 near the far eastern shores of Siberia, Korean Air Lines Flight 902 (KAL 902) bound for Seoul from Paris experienced a major course deviation near the magnetic north pole that brought the flight into Soviet airspace.<sup>B1,B2</sup> KAL 902 was eventually shot down but was able to land on the surface of a frozen lake with minimal fatalities.<sup>B1,B2</sup> KAL 007 would experience a rather different fate with far-reaching consequences. The KAL 007 incident took place in a context of renewed tensions between the United States and the Soviet Union as part of the greater saga of the Cold War.

### **The Flight: KAL 007<sup>B1,B2,B3</sup>**

On 31 August 1983, a Boeing 747-200B with registration number HL7442 operating as Korean Air Lines Flight 007 (KAL007/KE007) departed New York City on a routine flight to the South Korean capital of Seoul.<sup>B1,B2</sup> The aircraft had on board a total of 269 people, of whom 246 were passengers and 23 were crew members. Among the passengers was U.S. Congressman Larry McDonald from the state of Georgia. Due to ongoing hostilities between Western nations and the Soviet Union in the 1980s, many flights originating from non-Soviet countries were not permitted to transit through Soviet airspace. In order to circumvent flying over the Soviet Union, many flights between Europe, North America, and Asia would commonly stop in Anchorage, Alaska for refueling since the distance of travel around Soviet airspace was longer than a direct course over the earth. KAL 007's sister flight KAL 015, originating from Los Angeles, was also

present in Anchorage for refueling. KAL 007 departed from Anchorage at approximately 04:00 local time for its final leg to Seoul.<sup>B1</sup> The aircraft followed its planned course onward to South Korea, but shortly after departure began drifting north of its intended path, which should have brought it over the North Pacific Ocean. Twentieth-century practices for air navigation utilized a series of ground-based radio navigation beacons called VORs (Very High Frequency Omnidirectional Range) in combination with waypoints assigned to geographic coordinates. GPS (Global Positioning System) technology was not yet publicly available. Four different autopilot functions were standard on the Boeing 747 in the early 1980s, two of which were to be utilized on this flight: Heading and INS (Inertial Navigation System). The INS would permit the aircraft to follow a series of waypoints with a deviation no greater than approximately 1.5 nautical miles. KAL 007 was programmed to follow a track on its flight computer under the INS function that would have it proceed along Airway R-20, the northernmost of five North Pacific trans-oceanic airways, but as an important VOR radio beacon was out of service in Bethel, Alaska, the pilots were instructed followed a magnetic heading assigned by air traffic control instead.<sup>B1,B2</sup> The pilots were to switch the autopilot to INS mode and follow the pre-assigned track along Airway R-20 after passing the Bethel VOR, but this did not occur. This inaction resulted in the ever-increasing deviation of KAL 007's flight path to the north of its intended route. The aircraft eventually entered prohibited Soviet airspace over the Kamchatka Peninsula. On that early morning of September 1, the Soviets were on high alert since a Boeing RC-135 operated by the US government was conducting a spy mission along the coast of Kamchatka.<sup>B1,B2</sup> The RC-135 and KAL 007 converged at one point, with the RC-135 passing a few thousand feet below KAL 007. Four MiG-23 jets were scrambled from Kamchatka to intercept the airliner under the pretense that it was the US spy plane, but no action was taken. The pilots of KAL 007

presumably remained unaware of their situation and maintained radio contact with KAL 015, the latter of which was following a correct course. Confusion ensued between the two flight crews when they reported differing winds - KAL 015 was supposed to be trailing KAL 007 by only 15 minutes. Whether the pilots of KAL 007 were on the verge of discovering their navigational error remains unclear. KAL 007 re-entered Soviet airspace over Sakhalin Island, at which point three Soviet Su-15 jets were scrambled to pursue KAL 007.<sup>B1,B2</sup> KAL 007's pilots increased the plane's cruising altitude to save fuel, slowing the aircraft as it did so. As KAL 007 had most of its exterior lights off, the Soviet pilots were presumably unable to identify KAL 007's markings under the dark skies. The slowing of KAL 007 was viewed by the Soviets as a provocative maneuver. At 06:25 local time, one of the Su-15 jets fired a K-8 missile at KAL 007 and it exploded just aft of the larger aircraft.<sup>B1,B2</sup> Shrapnel from the explosion punctured the fuselage of the 747 and severely damaged critical control infrastructure. Hydraulic fluid, which allows for movement of the control surfaces of the aircraft, began to leak out gradually. The aircraft arced smoothly upward for about two minutes before resuming its pre-attack altitude. The holes in the fuselage caused rapid decompression of the passenger cabin; detecting this, the pilots of KAL 007 indicated to air traffic control in Japan that they'd be descending to 10,000 feet. The aircraft leveled out above 16,000 feet and KAL 007's flight crew indicated over the radio that they retained limited control of the aircraft and that engine functions were normal. KAL 007 continued level flight at this altitude for approximately four more minutes before the aircraft began to enter a sharp descent. KAL 007 disappeared off Japanese radar at an altitude of 1,000 feet, almost 300 miles north of its intended course along Airway R-20.<sup>B1,B2</sup> KAL 007 impacted the Pacific Ocean just off of Moneron Island near Sakhalin. Japanese fishermen off the coast of Hokkaido in the Sea of Japan recalled seeing a couple flashes of light on the horizon, hearing a

loud explosion, and smelling aviation fuel shortly thereafter on the wind.<sup>B2</sup> It is believed that the downing of KAL 007 occurred over international waters just after it passed over Sakhalin Island.<sup>B3</sup>

### **Analysis: Global Governance Gaps and KAL 007**

The threads of KAL 007 began to unravel with the knowledge gap that existed between the Soviet Union and the United States - the two entities viewed each other as adversaries, and as such, the sharing of knowledge in good faith between the two parties was scant. The Soviets were able to successfully collect the black boxes from the debris of KAL 007 that settled on the shallow seafloor.<sup>B6</sup> Black boxes contain a flight data recorder and a cockpit voice recorder. The information in these boxes was withheld from the western world until the end of the Cold War, sustaining the already vast knowledge gap between the Soviet Union and the United States that preceded the KAL 007 incident.<sup>B6</sup> The U.S.-Soviet knowledge gap was relevant because although KAL 007 was operated by a Korean-registered aircraft, the United States and South Korea were allies under the 1953 Mutual Defense Treaty and the flight originated in American territory.<sup>B10</sup> The knowledge gap was compounded by an atmosphere of mistrust that existed between the two countries since breaking their alliance at the conclusion of World War II. A policy gap exacerbating US-Soviet relations came with the end of détente when Reagan was elected to the American presidency in 1980. Around the time of KAL 007's downing in 1983, tensions were already running high between the United States and the Soviet Union. Under the Reagan administration, the United States amplified its policy of deterrence toward the Soviet Union.<sup>B4</sup>

The Reagan administration was also well known for its hallmark national defense program entitled the Strategic Defense Initiative (SDI), which Reagan posited would allow the United States to better deter the Soviet nuclear threat in the bipolar world of the Cold War.<sup>B5</sup> Reagan's foreign policy stance, highlighted by SDI, marked an end to the détente period of the 1970s that previous administrations had tried in earnest to sustain. While the implementation and effects of SDI were largely felt after the KAL 007 incident, it exemplifies the position the Reagan administration took with respect to the American-Soviet relationship during the 1980s. The détente period of the 1970s was crucial because it represented the first substantial warming of relations between the United States and Soviet Union since the conclusion of the Second World War - it was an opportunity to move toward bridging the U.S.-Soviet governance gaps. However, Reagan believed that the Soviets had been dishonest about their adherence to various bilateral détente agreements laid out in the 1970s, and pursued a rather course different from that of his direct predecessors - actively countering the power of the Soviet Union by demonstrating the might of the American military apparatus.<sup>B4</sup>

Knowledge and policy gaps were also compounded by normative gaps. The Soviet Union viewed Reagan's policy initiatives as a threat to their security. Rather than ceasing production of weapons, the Soviets focused on the development of advanced missile systems that would be capable of countering American missile defense systems the United States. If the objective of SDI was to dissuade the Soviets from further arming themselves, then the program had the opposite effect, complicating the US-Soviet arms control process. Although Soviet opinion regarding SDI was not completely uniform, some believed that SDI was an attempt to change the balance of power between the USSR and the United States.<sup>B5</sup> According to the Soviets, SDI would purportedly reduce their ability to effectively counter possible missile attacks from the



United States; SDI seemed to the Soviets a unilateral move to change the strategic balance that existed between the two superpowers.<sup>B5</sup>

The knowledge and normative gaps were perhaps mirrored in physical form by the cold stretch of Arctic water that separated the two superpowers. The United States and the Soviet Union were next door neighbors, with Alaska and eastern Siberia separated by the roughly 50 nautical miles of water that constituted the Bering Strait. Alaska and far east Siberia were the undeveloped final frontiers of the world's two great powers in the 1980s. It was these frontiers which were perhaps the most exposed and vulnerable to an attack from the opposing states; thus, it was in this part of the world where the two diametrically opposed powers of the time could regard one another with the utmost suspicion over a small stretch of frigid Arctic water.

A final factor contributing to the demise of KAL 007 was continued American reconnaissance missions along the Soviet Far East coast. The knowledge, normative, and policy gaps in conjunction with a win-lose outlook gave life to increased show-of-force and reconnaissance operations. There was a substantial American military buildup just off the coast of Kamchatka Island in the months leading up to the KAL 007 disaster.<sup>B1</sup> Consonant with a policy of detainment, Reagan was determined to show the Soviet Union that the United States would not tolerate any Soviet aggression. Navy ships were deployed in the waters off the Siberian Far East in March of that year, the same month Reagan made those two announcements that would come to define his foreign policy stance toward the Soviet Union during his two terms as president. Reagan's Secretary of the Navy, John Lehman, called for a "forward defense" strategy that would see US warships and planes moved into high-threat regions of the North Pacific and Bering Sea just off the coast of the USSR.<sup>B1</sup> In the spring of 1983, three aircraft carriers transporting a variety of aircraft including Air Force B-52 bombers and F-15 fighter jets

sailed approximately 450 miles off the coast of Kamchatka in waters that were regularly patrolled by Soviet submarine craft. Approximately 23,000 troops participated in these exercises off Kamchatka.<sup>B1,B2</sup>

The appearance of such large American military detachments in these waters was unprecedented, and no doubt was intended by Reagan as a display of force to illustrate the prowess of American military power to the watchful, suspicious eyes of the Soviet military stationed among the remote taiga, majestic volcanoes, and icy boreal seas of the Siberian Far East. The frenzy of American military activity off Kamchatka in early 1983 did not contain itself to international waters. In April of 1983, six U.S. Navy airplanes overflew Zeleny Island in the Kuril archipelago, which was within Soviet state borders.<sup>B1,B2</sup> The Kremlin considered the violation of its state borders by the American military as a provocative maneuver and within a day responded by having a detachment of Soviet fighter jets overfly the Aleutian islands. The wariness toward airborne threats from the enemy felt by both superpowers in the Bering region became especially acute in the months leading up to KAL 007's downing.

A widening bilateral policy gap, manifested through a more antagonistic series of policy decisions between the two states and different protocols pertaining to engagement of foreign aircraft, was evident from the KAL 007 incident. KAL 007 perhaps provided a fortuitous justification for the Reagan administration to confirm its view that the Soviet Union was an "evil empire" that acted in a manner contrary to rationality, an empire that constituted "the focus of all evil in the modern world."<sup>B7</sup> With regard to the behavior of each country in response to unfamiliar aircraft entering their territory, Reagan suggested that the Soviets were more likely to take a belligerent stance as demonstrated through the precedent set by the downing of KAL 902.<sup>B7</sup> Within a year after announcing the administration's designs for SDI and the downing of

KAL 007, Ronald Reagan established the Strategic Defense Initiative Organization (SDIO) to begin the process of implementing infrastructure capable of deterring possible nuclear weapons attacks from the Soviet Union. Conversely, a step was taken toward reducing a knowledge gap brought to light by the KAL 007 accident: the lack of a definitive technology accessible to the public that would permit very accurate locational awareness. As a result of KAL 007's demise, the Reagan administration decided to release GPS technology to the public.<sup>B8</sup> GPS would ultimately serve to facilitate and enhance situational awareness among pilots.

A close examination of the KAL 007 episode suggests that substantial knowledge and normative gaps were responsible for producing the circumstances under which KAL 007 was downed. An abandoning of détente and revival of containment enlarged the existing knowledge and policy gaps between the United States and the Soviet Union. To remedy these gaps would have required both countries to establish a relationship of trust and exchange sound, honest information to diminish the possibility of a civilian aircraft downing. This approach was not practical under the competitive dynamic between the two superpowers during the Cold War, and was even less so with the American return to a policy of containment. Thus, the U.S.-Soviet governance gaps became more of a governance chasm in the 1980s. It was into the forbidding void of this chasm that KAL 007 would disappear on that fateful September night in 1983.

## Case II: Iran Air Flight 655

*“Regrettably, in the course of the U.S. response to the Iranian attack, an Iranian civilian airliner was shot down by the VINCENNES, which was firing in self-defense at what it believed to be a hostile Iranian military aircraft. We deeply regret the tragic loss of life that occurred.”*

*-Ronald Reagan, 4 July 1988*

If the United States was able to take the moral high ground on rules of engagement toward unidentified aircraft after the tragedy of Korean Air Lines Flight 007 in 1983, the country would be severely challenged after the accidental downing of Iran Air Flight 655 just five years later in 1988. The USS *Vincennes*, a guided missile cruiser operated by the United States Navy, was patrolling the Strait of Hormuz between Iran and the Arabian Peninsula at the time of the incident.<sup>C1</sup> The episode of IR655 took place within the context of the Iran-Iraq War and subsequent tensions that brewed within the Persian Gulf region.

### **The Flight: IR655<sup>C1,C2,C3</sup>**

On 3 July 1988, an Airbus A300B2-203 with registration EP-IBU operating as Iran Air Flight 655 (IR655/IRA655) departed from Tehran to Dubai with one stopover in the southern Iranian port city of Bandar Abbas, positioned at the north end of the Strait of Hormuz.<sup>C1</sup> There were 290 people on board the second leg of the flight, 274 of whom were passengers and 16 of whom were crew members. Sixty-six of the passengers were children under the age of 18. Passengers were mostly of Iranian nationality, with some Emiratis, Pakistanis, Indians, Yugoslavs, and one Italian. IR655 departed Bandar Abbas at approximately 10:47 local time in the morning, about 30 minutes after its scheduled time of departure. The anticipated duration of the flight was a little less than thirty minutes, given that a direct route from Bandar Abbas to

Dubai is just a short 150-mile hop over the Strait of Hormuz. The flight corridor assigned to IR655, Amber 59, formed a direct line approximately 140 miles long from Bandar Abbas to Dubai.<sup>C2</sup> IR655 was to cruise at an altitude of 14,000 feet according to its flight plan. All civilian aircraft are equipped with transponders that report identity and altitude on Mode III, as opposed to Mode II which is reserved for use by military aircraft. At the same time that IR655 began its climb out over the Strait of Hormuz, the USS *Vincennes* as well as a couple other American military vessels including the USS *Sides* and USS *Elmer Montgomery* were nearby on the waters of the Hormuz.<sup>C3</sup> The USS *Vincennes* was on high alert after one of its helicopters had drawn fire from Iranian gunboats. The crew of the *Vincennes* believed that its helicopter had been fired upon in international waters. The *Vincennes* responded by pursuing the Iranian gunboats into Omani territorial waters before returning to waters near Iran's coast. After its takeoff, IR655 was identified and monitored by the Aegis Combat System on board the *Vincennes*. The Aegis Combat System recorded IR655 as gaining altitude in the few minutes leading up to the incident. Whilst occupied by the frenzy of activity on the water, the crew of the *Vincennes* mistook IR655 for an Iranian F-14A Tomcat that was preparing to enter a dive profile, likely in response to the *Vincennes*' pursuit of the gunboats. The F-14A Tomcats operated by Iran were known at the time to carry unguided missiles. Controllers of the Aegis system on board the USS *Vincennes* tried to contact IR655 with requests to state its intentions about ten times on the international distress frequency (IAD) of 121.5 MHz and the military distress frequency (MAD) of 243.0 MHz.<sup>C3</sup> The pilots of IR655 were busy monitoring two control tower frequencies and likely did not hear the calls from the *Vincennes*. When IR655 did not respond to the *Vincennes*' repeated requests, the controllers of the Aegis system launched two SM-2MR surface-to-air missiles at IR655. The missiles reached the aircraft and detonated at about 10:54. The aircraft disintegrated immediately

after the explosion, with debris falling into the waters of the Hormuz just off the Iranian island of Qeshm.<sup>C2</sup> It is believed the downing occurred within the territorial waters of Iran. The incident would represent the first time in history that the United States military had accidentally downed a civilian aircraft. Investigators were unable to locate the cockpit voice recorder and flight data recorder in the aftermath of the incident.

### **Analysis: Global Governance Gaps and IR655**

Governance gaps are often rooted in a deficit of knowledge, and such was the case for IR655. IR655 would have been of particular interest to controllers on board the USS *Vincennes* since both civilian and military aircraft originated from the airport in Bandar Abbas - there was cause for suspicion of a possible response from the Iranian military given the skirmish in which the *Vincennes* was engaged at the time of the incident. Controllers on the *Vincennes* made seven calls to IR655 on the international military and civilian distress frequencies. At no point did controllers on the USS *Vincennes* attempt to contact IR655 on either of the air traffic control frequencies that were being monitored by the flight.<sup>C3</sup> Controllers on the *Vincennes* were either not aware of the civilian ATC frequencies, or if they were aware, they did not take prudent steps to contact IR655 on these frequencies - thus, an important knowledge gap existed between the United States and local authorities with respect to the flow and procedures of civilian air traffic in the region. In addition, a peculiar feature of the Aegis Combat System likely led to the decision to fire missiles at IR655 as human error due to a lack of situational awareness played a large role in precipitating the drama of IR655. As mentioned, the Aegis Combat System recorded IR655 as gaining altitude throughout the entirety of its profile. The Aegis software assigned specific identifier codes to aircraft that it tracked within a defined radius of the ship. IR655 was

initially assigned the tracking number TN4474 after its departure out of Bandar Abbas.<sup>C4</sup> Shortly before the decision was made to fire the two SM-2MR surface-to-air missiles, the Aegis assigned a new tracking number to IR655, TN4131 and recycled its old tracking number to an Iranian fighter jet that was preparing to land about 110 miles away from the USS *Vincennes*. When Captain Rogers requested a status update, operators were likely unaware that the Aegis identifier for IR655 had changed. A status update given on TN4474 would have rendered a profile of a smaller aircraft in descent rather than a large aircraft performing a steady climb to cruising altitude.<sup>C4</sup>

Policy and compliance gaps are evident through examination of the official published American response to the IR655 accident. The Fogarty report, finalized by Rear Admiral William Fogarty in 1988, describes from an American point of view the context of the incident and actions taken by the crew of the USS *Vincennes*, which was under the command of Captain William C. Rogers III.<sup>C5</sup> Multiple aggressions by Iranian forces against unarmed ships and aircraft had occurred in the Persian Gulf in the years and months leading up to July of 1988. The US military presence in the region was tasked with escorting civilian ships passing through the Persian Gulf as well as ensuring that Kuwaiti oil could be exported safely outside the Gulf. The Fogarty report cited prior incidents such as an Iraqi attack upon the USS *Stark*, the USS *Samuel B. Roberts*' collision with an Iranian mine, hostile fire upon US aircraft by Iranian vessels, and other assaults against United States vessels and soldiers in the region as a prelude to the IR655 disaster.<sup>C5</sup>

The Fogarty report outlined new rules of engagement that US military units in the Persian Gulf ought to adopt in 1988. With respect to the handling of aircraft and airspace in the Persian Gulf, there was an evident policy gap. The U.S. military was prepared to take preemptive

measures against aircraft it deemed a threat in the Gulf in a wartime climate where local parties had interests that differed from that of the United States. Units stationed in the Persian Gulf were given the authority to take “positive protective measures” at the first indication of any hostile intent. A special emphasis was given that shots need not be fired by an unidentified craft to merit engagement, because units stationed in the Gulf had the foremost responsibility to protect their units and people at all costs.<sup>C5</sup>

In September 1987, an important NOTAM (Notice to Airmen) was issued by the United States government, stating that all nations operating aircraft in the Persian Gulf region should be prepared to have their aircraft identify themselves and state their intentions upon request to US Navy vessels as these vessels would be taking additional precautions in light of continued foreign aggressions. Failure to self-identify and state intentions would constitute grounds for defensive action to be taken by American military vessels.<sup>C3</sup> The report further suggested that all parties operating in the Persian Gulf region were fully aware of the heightened US defense protocols and that most civilian airlines had done little to alter their flight routes over hostile zones such as the Strait of Hormuz. At this juncture, a compliance gap was also evident, as the United States was not an internationally-recognized sovereign authority in the Persian Gulf region and could not compel civil aviation authorities in the region to heed the warning stated in its NOTAM.

The account offered by the Fogarty report paints the United States Navy as having acted within a stressful, tense context that called for the use of force toward unidentified aircraft. A few days after the accident, Ronald Reagan drafted a letter which framed the actions that were taken on part of the US Navy on that day as measures of self-defense, exclaiming that U.S. action was “taken in our accordance with our [the United States’] inherent right of self-defense,



as recognized in Article 51 of the United Nations charter, and pursuant to my constitutional authority with respect to the conduct of foreign relations and as Commander in Chief.”<sup>C6</sup>. Reagan briefly apologized for the incident, calling it “regrettable” and stating that “We (the United States) deeply regret the tragic loss of life that occurred.”<sup>C6</sup>

The Iranians, by stark contrast, were quick to condemn the shooting down of IR655. They deemed the act as an intentional and unlawful aggression on the part of the United States. Rather than an accident, Iran characterized the downing of IR655 as an international crime that was both negligent and reckless, violating the most fundamental principles of international law. Furthermore, the USS *Vincennes* had unlawfully intruded into Iranian territorial waters. The downing of IR655 had occurred in a context that was indicative of a violation of Iranian sovereignty. The Iranian investigation found American actions to be in violation of established treaties including the Treaty of Amity and the Hague Convention of 1907.<sup>C1</sup>

A significant global policy gap seems to have been at play in the diametrically opposed viewpoints of the United States and Iran with respect to international provisions each party claimed as relevant to the IR655 incident. While UN Article 51 upholds the right to self-defense, the Hague Convention outlines rules of warfare, with provisions for the exemption of vessels engaged in peaceful commerce from being engaged by navy vessels involved in battle. The challenge here lies in the reconciliation of these different articles of international law. The IR655 incident highlights the need for the international community to consider reconciling more recent documents like the UN Charter with older pieces of international policy.

The Islamic Republic of Iran also alleged that it was being treated unequally in the investigation of the demise of IR655 in light of the governance gaps mentioned above. The Iranian government invited the International Civil Aviation Organization (ICAO) to render an

investigation on the IR655 incident and deemed the result of the investigation to be unfair. While the ICAO had condemned countries in the past that had shot down commercial airliners, it had not done so for the United States in the case of IR655. In addition, Iran alleged that supposedly declassified documents handed over to the ICAO investigation by the United States contained copious redactions of information that might be of great relevance to the investigation.<sup>C1</sup> The Iranian government would eventually sue the American government at the International Court of Justice over the IR655 disaster.<sup>C1</sup>

Governance gaps aside, there was another simple action that personnel on the *Vincennes* could have taken to avert this accident. It would have been prudent for the crew of the USS *Vincennes* to establish visual contact with IR655 before making the decision to aim fire at the aircraft. The assigned cruising altitude of 14,000 feet for IR655 should have allowed the aircraft to be easily identified by visual means from the surface. Furthermore, sky conditions were largely clear at the time of the incident, eliminating any cloud or haze barrier that would have presented difficulty in identifying IR655 visually.<sup>C7</sup>

Knowledge gaps, policy gaps, and compliance gaps combined with an increased sense of vulnerability on part of the US military created an envelope for a potentially dangerous situation that would ensnare IR655 out of the blue in July 1988.

### **Case III: Malaysia Airlines Flight 17**

*“Yesterday, Malaysia Airlines Flight MH17 took off from Amsterdam and was shot down over Ukraine near the Russian border. Nearly 300 innocent lives were taken -- men, women, children, infants -- who had nothing to do with the crisis in Ukraine. Their deaths are an outrage of unspeakable proportions.” -Barack Obama, 18 July 2014*

2014 was a rather tumultuous year for Malaysia Airlines, which in the span of four months saw two major accidents resulting in the total loss of two aircraft. The downing of Malaysia Airlines Flight 17 (MH17) was just as unexpected and jarring as the disappearance of Malaysia Airlines Flight 370 (MH370). MH370 made global headlines after vanishing from Malaysia radar shortly after its departure from Kuala Lumpur on the early morning of 8 March 2014.<sup>D1</sup> The cause of the accident remains unknown, and the search for the missing Boeing 777-200ER (identical to the one involved in the crash of MH17) has become the most expensive international search effort for a missing aircraft in history.<sup>D1</sup> The downing of MH17, an equally unexpected and unfortunate accident, took place in the context of a regional conflict reflecting an increasing political rift between Russia and western nations, the latter with which Ukraine has sought closer relations at the expense of its relationship with Russia.

#### **The Flight: MH17<sup>D1,D2,D3</sup>**

On 17 July 2014, a Boeing 777-2H6ER with registration number 9M-MRD operating as Malaysia Airlines Flight 17 (MH17/MAS17) departed Amsterdam on a routine flight to the Malaysian capital of Kuala Lumpur.<sup>D1</sup> The aircraft had on board a total of 298 people, of whom 283 were passengers and 15 were crew members. One hundred and ninety-three individuals had Dutch citizenship and 43 had Malaysian citizenship (all 15 crew members were Malaysian).

Twenty-seven Australians were also on board, as were 12 Indonesians, 10 Britons, 4 Belgians, 4 Germans, 3 Filipinos, 1 New Zealander, and 1 Canadian. There were over 80 passengers who were minors. Eight passengers held dual citizenships, among them an American-Dutch citizen. Among the passengers were Dutch Senator Willem van Witteveen, Malaysian actress Shuba Jay, Australian author Liam Davison, and a number of delegates scheduled to attend the 20th International AIDS Conference in Melbourne, Australia.

MH17 departed from Amsterdam at 12:31 local time, just past noon. MH17's departure and climb to cruising altitude was routine and uneventful.<sup>D1</sup> The aircraft followed established airways over the Netherlands, Germany, Poland, and Ukraine. Most of the flight over the Ukraine was uneventful.<sup>D1</sup> Airspace over the far eastern portions of Ukraine was closed up to 32,000 feet due to an ongoing armed conflict between Russian separatists and the Ukrainian military that had escalated over the recent months. MH17 was to transit this airspace at a safe cruising altitude before passing over Russia. Another eastbound flight, Singapore Airlines Flight 351 (SQ 351) was converging paths with MH17 in the minutes leading up to the accident. MH17 was asked by Ukrainian air traffic control (ATC) at around 15:53 local time to climb to flight level 350 (35,000 feet) from its then current altitude of 33,000 feet so safe spacing could be maintained between MH17 and SQ 351. Many other long-haul commercial flights were transiting eastern Ukraine's airspace at the time of the MH17 incident. MH17's pilots requested to remain at 33,000 feet and the request was granted, with SQ 351 climbing to 35,000 feet instead.<sup>D1</sup> At 16:00 local time, the pilots of MH17 requested permission to revise their flight path a few nautical miles to the north of their planned track along Airway L980 to avoid inclement weather to the south. This request was also granted by Ukrainian ATC. The crew then asked to

climb to flight level 340 (34,000 feet) to save fuel, but this request was rejected as flight level 340 was not available for use by MH17.

As MH17 was nearing the Ukrainian-Russian border, Ukrainian ATC prepared to hand MH17 off to Russian ATC.<sup>D1</sup> Ukrainian ATC noted that MH17 had deviated about 3.6 nautical miles to the north of L980 and asked the pilots of MH17 to correct their course to the planned track. At 16:20 local time, a 9M314M-type warhead launched from a 9M38-series missile from a Buk surface-to-air missile system on a tank stationed in a Ukrainian field near the town of Snizhne to the east of MH17 arced smoothly upward toward the aircraft. As the missile passed just above the left side of the Boeing 777's flight deck, it detonated and sent hundreds of pieces of shrapnel consisting of iron fragments shooting out in all directions.<sup>D2</sup> Many of these pieces perforated the nose of the aircraft in about 800 different locations, causing an explosive decompression to occur. The cockpit voice recorder and flight data recorder stopped recording upon detonation and the emergency locator transmitter was activated a couple seconds after the blast. The immense force of escaping pressurized air from the passenger cabin caused the entire nose, flight deck, and business class section to separate from the rest of the aircraft. What was left of the aircraft became subject to a series of extreme forces caused by the fracturing of the fuselage.<sup>D1</sup> The progression of the explosive decompression caused the tail section of the aircraft to separate from the wing box and wings, and the debris fell toward the surface near the villages of Hrabove and Petropavlivka, landing in six distinct areas over an area covering approximately 50 square kilometers.<sup>D3</sup> Locals on the ground were able to record footage of a fireball rising from one of the crop fields near Hrabove. Ukrainian ATC attempted to contact MH17 for transfer to Russian ATC but was unable to receive a response from the moribund flight. Russian ATC confirmed that MH17 had disappeared off their radar.

### **Analysis: Global Governance Gaps and MH17**

2014 was a tumultuous year for the Russian-Ukrainian relationship, with the two countries experiencing a substantial strain in their bilateral relations. In February 2014, Russian forces invaded Crimea, and the Crimean Peninsula was annexed by Russia after Ukrainian President Viktor Yanukovich was ousted from power.<sup>D4</sup> Despite the large Russian ethnic population that resides in Crimea, the move to annex the peninsula was considered unilateral and most members of the international community condemned Russia's move as illegal. Most nations continue to recognize Ukrainian sovereignty over the Crimean Peninsula.<sup>D5</sup> While Crimea is considered to be an integral part of Ukrainian territory under international law, multilateral UN or NATO action to reverse the Russian annexation is unlikely due to Russia's military dominance in the post-Soviet space.<sup>D6</sup>

These governance gaps in policy and compliance allowed the Russians to sustain their annexation of Crimea in early 2014. It is quite likely that this in turn emboldened rebels of Russian ethnicity to take up arms in the Donbass region of eastern Ukraine, consisting of the oblasts (provinces) of Donetsk and Luhansk, the former being the region over which MH17 foundered. Tensions felt by the Russophone majority in these eastern regions were compounded in the aftermath of the Euromaidan Revolution that had gripped the country in the closing months of 2013 and saw the removal of pro-Russian Ukrainian President Yanukovich.<sup>D7</sup> Yanukovich had received strong support from voters in the southern and eastern regions of Ukraine during the 2010 presidential election. Many people in these regions were dismayed by the events of Euromaidan and the 2014 Revolution.<sup>D7</sup> A referendum was held in May of 2014, and separatist leaders attempted to proclaim autonomous control over the Donetsk People's

Republic and the Luhansk People's Republic, both of which went unrecognized by Ukraine and much of the international community. Fighting between Ukrainian government forces and Russian-backed separatists escalated in the Donbass and continued unabated into July of 2014. By the summer of 2014, Russia began to deploy tanks with anti-aircraft missiles into the Donbass without authorization from the Ukrainian government.<sup>D8</sup>

Even though Ukraine issued warnings about its eastern airspace via NOTAMs in 2014, knowledge, policy, institutional and compliance gaps created an envelope for an accident to occur. Russian rebels heeded particular vigilance to aircraft passing through the skies above by April. Multiple military aircraft and helicopters were shot down between April and July, including a Ukrainian Ilyushin Il-76MD, a Ukrainian Antonov An-26, and a Ukrainian Sukhoi Su-25, the last of which was shot down on 16 July, a day prior to the flight of MH17.<sup>D16</sup> An important knowledge gap existed because, like the cases of KAL 007 and IR655, MH17 was a victim of misidentification by an anti-aircraft unit: the Russian rebels who shot down MH17 originally believed that what they had downed was a Ukrainian Antonov An-26 military transport aircraft, presumably just another successful prosecution of a military aircraft like the series of incidents preceding it.<sup>D16,D17</sup> As the rebels would learn shortly after the incident, they had made a grave mistake. As a result of the intensified conflict in the Donbass, airspace up to 32,000 feet was closed to all civilian traffic by July. Despite NOTAM warnings regarding the ongoing conflict in eastern Ukraine, many airlines continued to transit the airspace above 32,000 feet in the days and weeks leading up to MH17's demise with little regard to the conflict brewing below.<sup>D9</sup> There was a policy and institutional failure in the partial closure of airspace over eastern Ukraine in preventing the downing of MH17. If the decision to close the airspace up to 32,000 feet was meant to protect civilian air traffic from the conflict on the ground, this initiative

ultimately failed to prevent a civil aviation accident. All foreign airlines avoided this airspace after news of the MH17 disaster made international headlines.<sup>D10</sup>

Local governance gaps in eastern Ukraine due to an ongoing atmosphere of warfare made investigation of the MH17 crash site difficult. Ukraine delegated the official responsibility of investigating the incident to the Netherlands through a memorandum agreement. Immediate response to the accident and cordoning off of debris areas by investigators was particularly difficult to execute given the environment of continued warfare.<sup>D1</sup> Another issue that compromised efforts of a proper and thorough investigation was the immediate looting of victims' valuables found among the debris by both locals and soldiers. Despite early tampering of the evidence by locals on the ground, authorities were largely able to reconstruct the final moments of MH17 based upon pieces of the aircraft recovered at the various sites around Hrabove.<sup>D3</sup> Further investigations revealed that the Buk missile launcher system which shot down MH17 was traced back to the 53rd Russia anti-aircraft brigade stationed in the western Russian city of Kursk.<sup>D11,D13</sup> The Buk missile system was moved into eastern Ukraine the morning of 17 July. Radar equipment located on the missile system was rudimentary, and Russian rebels initially believed that they had downed a Ukrainian Antonov An-26.<sup>D16,D17</sup> In June of 2019, three Russians and one Ukrainian were charged pertaining to the unauthorized movement of Russian anti-aircraft artillery into Ukraine on 17 July 2014.<sup>D15</sup>

A global policy gap was present for the MH17 incident because in 2014 no global standard was in place or recommended by the ICAO regarding the extent to which airspace should be closed above and around a zone of armed conflict. The Dutch Safety Board claims that each individual country has sovereign control over the airspace above that country and as such is responsible for allowing civilian aircraft to operate safely within airspace where they are



permitted to fly. The Dutch investigation does not appear to blame any of the particular military groups on the ground for the Buk missile launch but rather suggests that the final responsibility for ensuring the safety of airspace resides with the sovereign state to which a specific region of airspace applies, in this case Ukraine. Unrestricted airspace where civilian flight is allowed does not automatically constitute safe airspace, especially if regions on the surface are politically volatile.<sup>D1</sup> Investigators reviewed various prior downings of military aircraft that had occurred over eastern Ukraine throughout the course of early-to-mid 2014 and deemed that missile systems deployed on the ground were perfectly capable of launching warheads that could surpass 32,000 feet of altitude. The 9M38-series missile that detonated just outside MH17 was capable of reaching speeds near Mach 3 and altitudes as high as 80,000 feet above sea level, well above the 45,000 feet cruising ceiling for commercial airliners.<sup>D1</sup> The Ukrainian government opted to close the airspace up to 26,000 feet for civilian aircraft over the Donbass on 6 June. On 14 July, another “shelf” encompassing most of the same airspace was closed up to 32,000 feet.<sup>D1</sup> The MH17 incident highlights the need for the entire closure of airspace above and around any sites of active conflict on the ground.

A day after MH17 foundered over eastern Ukraine, United States President Barack Obama issued a statement to the press regarding the accident, which involved the loss of one American life, and directed important attention to the security situation in eastern Europe. Obama called the downing of MH17 “a disaster of unspeakable proportions” and offered his condolences on behalf of the United States to the Netherlands, Malaysia, Ukraine, and Australia. He announced that the United States was well aware that the separatists who had shot down MH17 received a steady flow of support from Russia.<sup>D12</sup> He called upon Russia and Ukraine to issue a cease-fire and prevent evidence on the ground from being tampered with so that a proper

investigation could be conducted. Obama indicated that the United States would take on a leadership role in promoting regional security and peace in destabilized parts of Ukraine and indicated that Russia was largely to blame for the accident. If major powers like the United States can play a guiding role in resolving regional conflicts in areas like post-Soviet Europe while considering the interests of parties at stake, a window for compromise might be feasible. Compromise in tandem with reconciliation are vital first steps that can help in bridging global governance gaps.

The Netherlands, the United States, and Ukraine have all accused Russia of being uncooperative in the investigation process that began immediately after the crash of MH17. International bodies like the NATO Parliamentary Assembly have called upon Russia to take responsibility for the accident, asking them to do so in compliance with UNSC Resolution 2166 which seeks a full, comprehensive, independent international investigation of MH17 in accordance with international civil aviation guidelines with cooperation from all United Nations member states.<sup>D13</sup> Eliciting compliance from Russia has been increasingly difficult in recent years due to the consolidation of power by Vladimir Putin's regime and aggressive maneuvers such as the annexation of Crimea in 2014 in a manner contrary to guidelines set forth by the international community. While Russia did support UNSC Resolution 2166, it vetoed a later resolution that would have permitted a tribunal against individuals implicated in the downing of MH17.<sup>D14</sup> If the Russian administration is ultimately unwilling to comply with issues like the annexation of Crimea and the investigation of MH17, perhaps a regime change may be needed in order to embark on a path of easing tensions and bridging the global and regional governance gaps that led to the demise of MH17.

## **Conclusion: Summary, Recommendations, and Future Study**

A summary of the analyses of each case study and possible avenues forward in international civil aviation policy and safety are discussed here in detail.

### **Summary**

Through a thorough review of Korean Air Lines Flight 007, Iran Air Flight 655, and Malaysia Airlines Flight 17, this essay has attempted to demonstrate some of the ways that global governance gaps within the context of both potential and active conflict zones have contributed to the downing of civilian airliners in different regions around the world. The Soviet Union was among the most, if not the most, formidable of US adversaries during the second half of the 20th century. As the bilateral relationship between these two states lacked trust, a knowledge gap existed between the two countries with respect to the honest sharing of information that could have prevented the KAL 007 accident. In addition, a policy gap also existed between the U.S. and the Soviets with the Soviets adopting a more belligerent protocol toward interception of foreign aircraft and a mentality of preventing perceived enemies from escaping their territory. KAL 007 sparked a high in American-Soviet tensions. The US took the moral high ground after the KAL 007 incident, but this was severely tested five years later when Iran Air Flight 655 was shot down over the Strait of Hormuz by the *USS Vincennes* in 1988. A knowledge gap existed where controllers were either unaware of the civilian air corridor above them or did not take prudent steps to identify IR655 properly. Their situational awareness was also compromised by a flaw in the onboard software that was responsible for tracking aircraft in the vicinity of the ship. A policy gap existed when the United States issued a self-defense NOTAM without substantial policy change on part of the civil aviation departments of states

around the Persian Gulf, and a compliance gap existed in that the United States did not control any sovereign territory in the region and could not compel local civil aviation authorities or airlines to avoid the airspace above the conflict in the Gulf. Malaysia Airlines Flight 17, a much more recent affair, highlights regional tensions that have brewed in Eastern Europe in the decades following the dissolution of the Soviet Union. Policy gaps existed between the international community's interpretation of Ukrainian sovereignty over Crimea and the actual Russian occupation and annexation of Crimea. Compliance gaps existed in that no foreign states sent military assistance to enforce any Russian removal from Crimea. This in turn exacerbated negative sentiments among the Russian ethnic majority in eastern Ukraine that led to active conflict on the ground that Ukraine had difficulty controlling due to a local governance gap. An institutional gap existed in the failure of partial closure of airspace over eastern Ukraine in preventing the downing of MH17 by Russian rebels. The MH17 case exposes a greater global policy gap where the ICAO has not yet set standards for the appropriate degree to which airspace should be closed to civilian air traffic over zones of active conflict. In all three cases, knowledge gaps seem to be the most relevant contributor of the five types of global governance gaps in precipitating the downing of civilian aircraft. In each incident, the identity of a civilian aircraft was mistaken by the individuals at the controls of anti-aircraft weapons systems. KAL 007 was mistaken for an American spy plane, IR655 was mistaken for an attacking Iranian fighter jet, and MH17 was presumably mistaken for a Ukrainian military transport aircraft. All three aircraft incidents serve to highlight a need for greater precautionary measures to be proactively taken in and around zones of actual and potential conflict such that future incidents may be mitigated to the greatest extent possible.

### **Policy Recommendations**

All three of the cases examined in this paper underscore the need for policy action aimed at bridging global governance gaps with respect to civil aviation and airspace in contexts of geopolitical conflict. Globalization has allowed our world to become more economically, politically, and culturally connected than ever before. Incidents that occur in one part of the world are seldom isolated to one distinct region as in times past. Rather, they can and do produce ripple effects that spread throughout the fabric of global society. While the ICAO, IATA (International Air Transport Association), and other organizations have published manuals on overflying conflict zones, additional steps can be taken to promote civil aviation safety with regard to these conflict zones.

Countries on the UNSC like the United States should encourage the United Nations and ICAO to adopt resolutions or protocol that allows for a universal international system of systematically identifying civilian aircraft as separate from military aircraft that might pose a legitimate threat to military units on the surface. Visual identification of civilian aircraft might not always be an ideal option in an atmosphere of conflict. While visual identification could have averted the IR655 disaster, as the profile of an Airbus A300 is quite different from that of an F-14A Tomcat, there remains a possibility that erroneous visual identification could have been a reason for the downing of MH17. The bottom of the fuselage of Malaysia Airlines aircraft, as of 2014, was painted in a light grey color similar to that used on many military transport aircraft. Many other airlines generally paint the bottom of their fuselage white. Visual identification is also difficult in poor meteorological conditions and at night. The pilot of the Su-15 fighter jet that shot down KAL 007 might have had trouble identifying the markings on the bigger aircraft under the cover of darkness over the far eastern Soviet Union.<sup>B3</sup> Therefore, it may be prudent to

instead develop a universal protocol for establishing identification of civilian aircraft by the radio transponders that already transmit a unique identification code for ATC purposes. Military units of UN members ought to be equipped with receivers capable of obtaining these transponder codes. To prevent false duplication of civilian codes, a high grade of encryption could be developed for transponder signals and distribution limited to legitimate manufacturers and operators of aircraft for civilian and especially commercial use. While implementing such a comprehensive enhanced transponder system might be more difficult in practice than in theory, it is important to keep in mind that international civil aviation is a policy area that already benefits from a high level of adoption of standardized procedures by most if not all UN member states.

Another preventive measure that can be taken toward reducing instances of accidental aircraft downings could be promoting awareness of civilian air routes among the militaries of UN member states, especially units with anti-aircraft capabilities. The *Vincennes* and other American units monitoring air traffic over the Gulf should have taken steps to have an awareness of scheduled commercial flights over the region as well as commonly used airways transited by these aircraft. The actions of Russian rebels suggested that they were oblivious to the civilian air routes that were in use at high altitudes above eastern Ukraine. A first step toward promoting military awareness of established civilian routes over zones of conflict could involve discussion within international forums like the UN and NATO of passing an addendum to established rules of warfare urging familiarity with airspace and proactive efforts on part of military units in avoiding undue interference with civilian air traffic to the greatest extent possible. The imperative to avoid collateral damage to civilians by distinguishing between combatants and civilians in warfare is expressed in the principle of distinction, which is outlined in the Protocol I amendment to the 1949 Geneva Conventions.<sup>E1</sup> Compliance may be encouraged through the use

of economic and military sanctions by UN and/or NATO member states on states whose militaries or related armed groups are in violation of the imperative to avoid injury to civilians within airspace above or near zones of conflict.

Perhaps the simplest, safest, and most cost-effective solution for preventing future downings of civilian aircraft is the decision to entirely close airspace (from the surface to an unlimited flight level) located above and around locations of actual or even potential conflict. The UN and ICAO, with possible assistance from the FAA and IATA, should endeavor to draft and pass appropriate guidelines for complete closure of airspace above and around zones of conflict, based on the intensity/scope of the conflict and the range of anti-aircraft armaments by military units engaged in conflict. A geopolitical analysis branch of the ICAO could be established to examine the state of armed conflicts around the world so that recommendations to UN member states and their civil aviation authorities regarding the closure of dangerous airspace may be systematically coordinated on a global scale. A buffer radius of approximately 100 statute miles or 160 kilometers around the edges of a defined zone of conflict may be a sufficient procedural standard for drawing the geographical boundaries of airspace closure; if the size of such a buffer radius were to be deemed insufficient or inappropriate, the UN and ICAO should select a buffer radius which may be deemed necessary and prudent to effectively protect civilian aircraft from engagement by anti-aircraft units and armaments. Where it may be difficult to close airspace due to border configurations, legal/political/economic considerations, safety considerations, weather/geography-related considerations, and proximity of major aerodromes to zones of conflict, civil aviation authorities should carefully limit civilian flight to routes that will permit the safest degree of civilian aircraft operations whilst considering those factors that might limit the extent to which airspace may be closed. Civil aviation authorities should take prudent

steps toward closely monitoring the extent of armed conflicts that occur within or near the boundaries of their jurisdiction.

Of the three policy proposals I have listed in this section, closure of airspace is perhaps the most effective, immediate, and practical solution to proactively protect civilian aircraft and mitigate incidences of the downing of civilian aircraft by military anti-aircraft platforms in zones of conflict.

### **Safety Recommendations**

One of the paramount goals of any pilots conducting a flight is their own safety, that of the aircraft, and above all that of their passengers. To support this statement, the importance of situational awareness is discussed in this section. KAL 007 underscores the importance of a heightened sense of situational awareness on the part of any trained aviator. Of the three case studies reviewed, KAL 007 is the only incident where pilot error likely played a substantial role in the downing of the aircraft. The Federal Aviation Administration defines situational awareness as “the accurate perception and understanding of all the factors and conditions within the four fundamental risk elements (pilot, aircraft, environment, external pressures).”<sup>E2</sup> The pilot is perhaps the most important of the four risk elements: the Boeing Company and the Federal Aviation Administration estimate that approximately 80% of all aviation accidents are due to pilot error.<sup>E3</sup> In the case of KAL 007, the pilots did not make the appropriate switch from Heading mode to INS mode at a critical juncture in the navigation of their aircraft. If indeed the INS mode was armed to engage, and the aircraft exhibited a deviation of more than seven miles from its planned point of engagement on the route, it is possible that the flight computer did not switch to INS mode. In either case, the pilots should have been monitoring their instruments and



ground track relative to the original planned route, especially with the knowledge that an important radio navigational beacon, the Bethel VOR, was out of service in Alaska. ICAO reports indicate that the aircraft and its systems were functioning normally up until the point that the Soviet-fired missile detonated aft of the fuselage. If the pilots of KAL 007 were aware at any point in time that they had made a mistake in their navigation, they should have taken a corrective course of action that would have been conducive to the safety of the flight before considering legal, professional, or personal consequences for their mistake. Safety should always be given priority over any other considerations. Investigations of IR655 and MH17 found that each aircraft and their crews were observing normal operating procedures and thus were not at fault.

It is highly recommended that flight operations departments responsible for the planning of commercial flights practice enhanced risk awareness by considering the impact of geopolitical competition developing along flight routes used by their aircraft. Special attention should be paid to zones of actual and potential armed conflict. All three incidents involved commercial aircraft engaged by military units in zones of conflict and/or substantial geopolitical tension. Skilled personnel should be hired to man flight operations departments and trained to analyze geopolitical situations around areas where their organization's aircraft operate, much as a geopolitical analysis branch of the ICAO would as I have proposed above. Weather considerations are paramount in the planning of flight routes. A comprehensive understanding of weather is necessary for effective flight planning by flight operations departments and by pilots responsible for safely and efficiently conducting flights. All three cases highlight the need for geopolitical situations to be given at least an equal priority in flight planning as weather-related calculations. Iran Air and Malaysia Airlines, as well as many other airlines, seemed relatively

unconcerned about transiting airspace near zones of conflict before their respective accidents unfolded. In the same manner that aircraft operators plan to avoid regions of inclement weather with a generally wide berth, they should also plan to avoid zones of conflict with enough of a buffer distance to spare. Flight operations departments should actively monitor the political stability of countries and regions over which they conduct flights. Just because airspace is made available for public use doesn't automatically make it safe. Flight operations departments that proactively plan to avoid zones of conflict will add an extra layer of safety in addition to the policy recommendations I have made above regarding international standardization of airspace closure procedures.

A holistic pilot training process on part of aircraft operators should stress the paramount importance of situational awareness, the efficient utilization of resources and technologies available for flight planning and operations, and the ability to adapt to changing circumstances so that potential incidents may be avoided. Flight operations departments should actively monitor the political stability of countries and regions over which they conduct flights.

### **Recommendations for Future Study**

I would like to state here that my interpretations of the global governance gaps within contexts of geopolitical conflict pertaining to the three cases selected for study do not necessarily constitute a final nor complete explanation of the circumstances surrounding each accident. Nonetheless, this essay attempts to approach these cases in earnest. Further study into published materials relevant to each case may produce additional insight into how global governance gaps contributed to each accident. This topic is one that constantly evolves.

The dependent variable investigated in this paper, the downing of civilian aircraft, is an issue that persists into the present day. After I began conducting my research on the three cases selected for this study, Ukraine International Airlines Flight 752 was shot down by Iran's Islamic Guard Revolutionary Corps shortly after its departure from Tehran.<sup>E4</sup> In light of a recent increasing global trend toward populist regimes that exhibit preferences of a more averse tone toward international cooperation, the topic of civilian aircraft downings and global airspace safety ought to be given even greater importance and consideration on the floors of flight planning departments, the offices of regulatory agencies like the FAA, and the forums of international organizations like the UN and ICAO.

This essay discusses issues of airspace safety, which implies aircraft security incidents that originate from the exterior of an aircraft. Investigations of security incidents originating from the interior of an aircraft with the review of security policies aimed at mitigating the boarding of suspicious persons or dangerous cargo would provide another interesting launch point for future study that would parallel and supplement this discussion. Possible case studies for such a future discussion might include the September 11th attacks, Pan Am Flight 103, and Philippine Airlines Flight 434 among others.

In concluding this essay, I wish to impress upon the reader and the global community that safer skies are better skies for all.

## References

References are listed in the American Psychological Association Style format in the section and order that they are cited in this essay.

### A. The Five Global Governance Gaps

1. Thakur, R. & Weiss, T.G. (2015). Chapter 2, Framing Global Governance, Five Gaps, pages 27-40, in Steger, M., *The Global Studies Reader*, New York, New York: Oxford University Press.

### B. Case I: Korean Air Lines Flight 007

1. Hersh, S.M. (1986). *The Target Is Destroyed: What Really Happened To Flight 007 And What America Really Knew About It*. Random House.
2. Dallin, A. (1985). *Black Box: KAL 007 and the Superpowers*. University of California Press.
3. Dobbs, M. (1991, May 26). "Soviet Journalists Attack KAL Story." In *WashingtonPost.com*. Retrieved from [www.washingtonpost.com/archive/politics/1991/05/26/soviet-journalists-attack-kal-story/a0fab253-91f4-47e9-ada0-85d5b263d1df/](http://www.washingtonpost.com/archive/politics/1991/05/26/soviet-journalists-attack-kal-story/a0fab253-91f4-47e9-ada0-85d5b263d1df/).
4. U.S. Department of State. (2009). "Reagan Doctrine, 1985." In *State.gov*. Retrieved from [2001-2009.state.gov/r/pa/ho/time/rd/17741.htm](http://2001-2009.state.gov/r/pa/ho/time/rd/17741.htm).
5. Podvig, P. (2017). Did Star Wars Help End the Cold War? Soviet Response to the SDI Program. *Science & Global Security*, 25(1). Retrieved from <http://scienceandglobalsecurity.org/archive/sgs25podvig.pdf>
6. International Civil Aviation Organization. (1993, January). "KAL Tapes To Be Handed Over To ICAO.", In *web.archive.org*. Retrieved from [web.archive.org/web/20121209114516/legacy.icao.int/icao/en/nr/1993/pio199301\\_e.pdf](http://web.archive.org/web/20121209114516/legacy.icao.int/icao/en/nr/1993/pio199301_e.pdf).
7. Reagan, R. (1983, 5 September). "Address to the Nation on the Soviet Attack on a Korean Civilian Airliner." In *ReaganLibrary.gov*. Retrieved from [www.reaganlibrary.gov/research/speeches/90583a](http://www.reaganlibrary.gov/research/speeches/90583a).
8. Speakes, L.M. (1983, 16 September). "Statement by Deputy Press Secretary Speakes on the Soviet Attack on a Korean Civilian Airliner." In *ReaganLibrary.gov*. Retrieved from [www.reaganlibrary.gov/research/speeches/91683c](http://www.reaganlibrary.gov/research/speeches/91683c).
9. Morgan, C.A. (1988). Chapter 9, THE SHOOTING OF KOREAN AIR LINES FLIGHT 007: Responses to Unauthorized Aerial Incursions, pages 202-237, in Reisman, W.M. and Willard, A.R., *International Incidents: The Law That Counts in World Politics*, Princeton University Press. Retrieved from [https://www.jstor.org/stable/j.ctt7zvwdr?turn\\_away=true](https://www.jstor.org/stable/j.ctt7zvwdr?turn_away=true)
10. The United States of America and the Republic of Korea. (1953, October 1). Mutual Defense Treaty Between the United States and the Republic of Korea; October 1, 1953.

In *Avalon.law.yale.edu*. Retrieved from  
[https://avalon.law.yale.edu/20th\\_century/kor001.asp](https://avalon.law.yale.edu/20th_century/kor001.asp)

#### C. Case II: Iran Air Flight 655

1. International Court of Justice. (1989, May 17). Aerial Incident of 3 July 1988 (Islamic Republic of Iran v. United States of America). In *ICJ-CIJ.org*. Retrieved from <https://www.icj-cij.org/en/case/79>
2. Wilson, G. C. (1988, July 4). Navy Missile Downs Iranian Jetliner. In *WashingtonPost.com*. Retrieved from <https://www.washingtonpost.com/wp-srv/inatl/longterm/flight801/stories/july88crash.htm>
3. Linnan, D. K. (1991). Iran Air Flight 655 and Beyond: Free Passage, Mistaken Self-Defense, and State Responsibility. *The Yale Journal of International Law*, 16(2), 245-389. Retrieved from <https://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?article=1577&context=yjil>
4. Fisher, C. W., & Kingma, B. R. (2001). Criticality of data quality as exemplified in two disasters. *Information & Management*, 39, 109-116. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.15.1047&rep=rep1&type=pdf>
5. The Joint Chiefs of Staff. (1988, August 19). Investigation into the Circumstances Surrounding the Downing of Iran Air Flight 655 on July 3, 1988. In *Jag.navy.mil*. Retrieved from <https://www.jag.navy.mil/library/investigations/VINCENNES%20INV.pdf>
6. Reagan, R. (1988, July 4). Letter to the Speaker of the House of Representatives and the President Pro Tempore of the Senate on the Destruction of an Iranian Jetliner by the United States Navy Over the Persian Gulf. In *Presidency.UCSB.edu*. Retrieved from <https://www.presidency.ucsb.edu/documents/letter-the-speaker-the-house-representatives-and-the-president-pro-tempore-the-senate-6>
7. Fisher, M. (2013, October 17). What Iran Air Flight 655 says about America's Role in the Middle East. In *WashingtonPost.com*. Retrieved from <https://www.washingtonpost.com/news/worldviews/wp/2013/10/17/what-iran-air-flight-655-says-about-americas-role-in-the-middle-east/>
8. Hill, M. (1989, January). "The Vincennes: Seven Minutes in July by Martin Hill", pages 84-87, 154-164, 196. In *San Diego Magazine*.
9. Hill, M. (1989, February). "The Vincennes: Seven Minutes in July by Martin Hill", pages 108-113, 200-204. In *San Diego Magazine*.
10. Evans, D. (1993, August). "Vincennes A Case Study", pages 49-56. In *Proceedings*.
11. Rogers, W. (1993, August). "Counterbattery", pages 57-58. In *Proceedings*.
12. Friedman, N. (1989). "The Vincennes Incident", pages 72-79. In *Proceedings, Naval Review*.

#### D. Case III: Malaysia Airlines Flight 17

1. Dutch Safety Board. (2015, October 13). Crash MH17, 17 July 2014. In *Onderzoeksraad.nl*. Retrieved from <https://www.onderzoeksraad.nl/en/page/3546/crash-mh17-17-july-2014>

2. Mullen, J. (2014, September 9). Report: MH17 hit by burst of 'high-energy objects' from outside. In *CNN.com*. Retrieved from <https://edition.cnn.com/2014/09/09/world/europe/netherlands-ukraine-mh17-report/index.html>
3. Ostrower, J., Kolyander, A., Coker, M., Sonne, P., & Thompson, S. A. (2014, July 25). Map of a Tragedy: How MH17 Came Apart Over Ukraine. In *Graphics.WSJ.com*. Retrieved from <http://graphics.wsj.com/mh17-crash-map/>
4. Sullivan, T., & Isachenkov, V. (2014, March 1). Russian troops take over Ukraine's Crimea region. In *AP.org*. Retrieved from <https://news.yahoo.com/russian-troops-over-ukraines-crimea-region-200052097.html>
5. UN General Assembly. (2014, March 27). U.N. General Assembly Affirms Ukraine's Territorial Integrity, Calls The World Community Not To Recognise Change Of Crimea's Status. In *web.archive.org*. Retrieved from <https://web.archive.org/web/20140504093220/http://un.ua/eng/article/500959.html>
6. Pifer, S. (2020, March 17). Crimea: Six years after illegal annexation. In *Brookings.edu*. Retrieved from <https://www.brookings.edu/blog/order-from-chaos/2020/03/17/crimea-six-years-after-illegal-annexation/>
7. D'Agata, C. (2014, March 6). Ukrainian city of Donetsk epitomizes country's crisis. In *CBSNews.com*. Retrieved from <https://www.cbsnews.com/news/ukrainian-city-of-donetsk-epitomizes-countrys-crisis/>
8. Kramer, A. E., & Gordon, M. R. (2014, June 13). Russian parliament approves troop deployment to Ukraine. In *NYTimes.com*. Retrieved from <https://www.bbc.com/news/world-europe-26400035>
9. Walker, H., Engel, P., & Holodny, E. (2014, July 17). There Were Multiple Warnings About The Dangers Of Flying In Ukrainian Airspace Prior To Malaysian Plane Crash. In *BusinessInsider.com*. Retrieved from <https://www.businessinsider.com/warnings-about-ukrainian-airspace-prior-to-mh17-crash-2014-7>
10. Mai-Duc, C. (2014, July 17). Airlines avoiding Ukrainian airspace after Malaysia Airlines crash. In *LATimes.com*. Retrieved from <https://www.latimes.com/world/la-fg-airlines-avoiding-ukraine-airspace-plane-crash-20140717-story.html>
11. Harding, L. (2018, May 24). Q&A: What we know and don't know about the downing of MH17. In *TheGuardian.com*. Retrieved from <https://www.theguardian.com/world/2018/may/24/qa-mh17-investigation-russian-missile-aircraft-ukraine>
12. Hudson, D. (2014, July 18). President Obama Speaks on Malaysia Airlines Flight MH17, Russia and Ukraine, and the Situation in Gaza. In *Obamawhitehouse.archives.gov*. Retrieved from <https://obamawhitehouse.archives.gov/blog/2014/07/18/president-obama-speaks-malaysia-airlines-flight-mh17-russia-and-ukraine-and-situatio>

13. North Atlantic Treaty Organization. (2018, May 25). Statement by the NATO Secretary General on MH17 investigation. In *NATO.int*. Retrieved from [https://www.nato.int/cps/en/natohq/news\\_154585.htm](https://www.nato.int/cps/en/natohq/news_154585.htm)
  14. UN Press. (2015, July 29). Security Council Fails to Adopt Resolution on Tribunal for Malaysia Airlines Crash in Ukraine, Amid Calls for Accountability, Justice for Victims. In *UN.org*. Retrieved from <https://www.un.org/press/en/2015/sc11990.doc.htm>
  15. Britton, B. (2019, June 19). MH17 crash investigators say four suspects face murder charges. In *CNN.com*. Retrieved from <https://www.cnn.com/2019/06/19/europe/malaysia-airlines-flight-17-suspects-intl/index.html>
  16. Jones, S., & Buckley, N. (2014, July 18). Malaysia Airlines Flight MH17: The evidence so far. In *FT.com (Financial Times)*. Retrieved from <https://www.ft.com/content/7efea166-0e68-11e4-b1c4-00144feabdc0>
  17. Eyewitnesses claim Donbass militia downed Ukrainian An-26 plane. (2014, July 17). In *TASS.com*. Retrieved from <https://tass.com/world/741164>
- E. Summary, Recommendations, and Future Study
1. (1977, June 8). "Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977." In *ICRC.org*. Retrieved from [ihl-databases.icrc.org/ihl/INTRO/470](http://ihl-databases.icrc.org/ihl/INTRO/470).
  2. Federal Aviation Administration. (n.d.). Situational Awareness. In *FAASafety.gov*. Retrieved from [https://www.faasafety.gov/gslac/ALC/course\\_content.aspx?cID=408&sID=649&preview=true](https://www.faasafety.gov/gslac/ALC/course_content.aspx?cID=408&sID=649&preview=true)
  3. Federal Aviation Administration. (2006, July). Human Error and Commercial Aviation Accidents: A Comprehensive, Fine-Grained Analysis Using HFACS. In *FAA.gov*. Retrieved from [https://www.faa.gov/data\\_research/research/med\\_humanfacs/oamtechreports/2000s/media/200618.pdf](https://www.faa.gov/data_research/research/med_humanfacs/oamtechreports/2000s/media/200618.pdf)
  4. Triebert, C., Jordan, D., Tiefenthäler, A., Browne, M., & Hurst, W. (2020, January 12). Ukrainian Flight 752: How a Plane Came Down in 7 Minutes. In *NYTimes.com*. Retrieved from <https://www.nytimes.com/video/world/middleeast/100000006911696/iran-crash.html>