CONTROL OF TERRITORIAL AIRSPACE AND THE ELECTROMAGNETIC SPECTRUM

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Israel's Vulnerability to Air Attack

During the Camp David Summit in the summer of 2000, American military experts raised the question of whether the Israeli demand for control of a unified airspace over all the territory between the Mediterranean Sea and the Jordan River was essential. Among the justifications provided by Israeli representatives was the danger of aerial terrorism. The Israelis explained the need to be prepared in the event of a suicide attack – carried out by a civilian aircraft laden with explosives – over a major Israeli urban center. One of the Americans present responded to this with disdain, asserting that the Israelis had a vivid imagination when it came to implausible threats, which they employed to justify exaggerated security demands.

A year later, on September 11, 2001, Al-Qaeda sent airliners plunging into the World Trade Center in New York and the Pentagon in Washington, causing the death of thousands of people and illustrating the importance of creative thinking in assessing terrorist and national-security threat scenarios.

Such thinking is especially crucial for Israel, whose geography puts it at high military risk, in general, and at a great disadvantage in terms of its ability to prevent or respond to attacks from the air, in particular.

Israel has a very narrow "waist" – the distance between the Jordan River and the Mediterranean Sea is approximately 40 nautical miles (approximately 70 km). This means that a combat aircraft can fly across the country in less than four minutes. A plane could penetrate the country via the Jordan Valley and reach Jerusalem in less than two minutes.

This aerial threat creates a great defense challenge for Israel. It takes at least three minutes for a scramble takeoff of an interceptor aircraft that can identify such a potential enemy penetration – and this is without factoring in the flight time from the airbase until the interceptor engages the penetrating aircraft to identify it, or shoot it down if it is on a hostile mission.

In the event of an aerial attack aimed at Jerusalem, the hostile plane must be shot down at least 10 nautical miles east of the city – not directly over it. Otherwise, both the plane and its munitions would crash into population centers, with dire consequences.

A jet airliner hijacked by Al-Qaeda terrorists about to plunge into the south tower of the World Trade Center, September 11, 2001, in the worst terror attack in U.S. history. The 9/11 attacks underscore the importance of Israeli control of a unified airspace above Israel and a prospective Palestinian state.

All of the above explains why Israel suffers from insufficient time and space to respond to and prevent an aerial attack on Jerusalem from the east, particularly if Israeli interceptor planes are not free to act over the Jordan Valley.

The way the IDF tends to deal with this disadvantage today is to scramble interceptors at unidentified targets while they are still over Jordanian airspace, to ensure that any encounter with a hostile plane will take place immediately after it crosses the Jordan River line. This also takes precious time, since the aerial targets first have to be identified as hostile, friendly, or merely a civilian plane that strayed from its flight path.

Scramble takeoffs of this type occur daily because it is impossible to obtain a precise aerial picture on a regular basis, despite ties and coordination between the military and civilian air traffic control centers in Jordan and Israel.

Access to Israeli airspace from the Mediterranean Sea to the west is permitted only to planes that have identified themselves and have been identified before they come within 100 km of Israel.

The Role of Air Defenses

Surface-to-air missiles and anti-aircraft weapons are not the solution to Israel's air defense problem. Unlike interceptor planes – which are equipped with comprehensive identification capabilities including the possibility of visual identification – anti-aircraft batteries cannot determine with certainty which aerial targets are hostile and need to be shot down. Anti-aircraft batteries also involve shooting down hostile planes far from the target of their attack – over non-Israeli territory.

Non-hostile aerial activity – both civilian and military – must also be taken into account. Indeed, it is difficult to imagine a situation in which ground-to-air missiles would be launched at the airspace of a neighboring country without definite identification of targets as hostile aircraft on a mission to attack Israel.

This substantial defense limitation, therefore, does not allow for Israel's complete and continuous protection from hostile air attacks. Thus, the deployment of missile batteries and anti-aircraft weapons, while *complementing* aerial interception, cannot replace it.

In the past, prior to a planned Iraqi mission to attack Israel's nuclear research compound in Dimona, Jordan permitted Iraqi combat planes to use its airspace to take aerial photographs of Israeli territory.

True, peaceful relations exist today between Israel and Jordan, which include mutual respect for both countries' territorial airspace, civilian air links, and coordination of the passage of planes through the international air corridor separating them. However, there is no guarantee that such coordination will continue in the future. In fact, in the past, prior to a planned Iraqi mission to carry out an aerial attack on Israel's nuclear research compound in Dimona, Jordan permitted Iraqi combat planes to use its airspace and to fly on a route parallel to the Israeli border in order to take aerial photographs of Israeli territory. In other words, despite the current relative calm, Israel cannot entrust its security to the goodwill of the Jordanians or the Palestinians in the future.

Defending Ben-Gurion International Airport

Israel faces another great challenge in defending Ben-Gurion Airport, both from hostile fire at its runways, and from possible attempts to shoot down civilian planes during takeoff or landing. Takeoff and landing routes are influenced by the direction of the wind, which means that sometimes planes must pass over Palestinian communities and adjacent developed areas. Israel suffers from a major topographical security disadvantage because all international civil aviation could be exposed to possible attack from hostile Palestinian elements using shoulder-launched

anti-aircraft missiles, fired from the West Bank mountain ridge that rises up to 3,000 feet higher than Israel's main airport and major coastal cities.

At the beginning of 2000, with the outbreak of the Palestinian terror war that came to be known as the Second Intifada, many commercial airlines canceled their flights to Israel. It may be expected that if Palestinian terrorists opened fire on Ben-Gurion Airport, all foreign airlines would immediately halt their flights, effectively isolating the country.

This is why full security control of the airspace is absolutely necessary, though it is not sufficient. Equally crucial is Israeli security control on the ground in the areas closest to the airport (i.e., Beit Liqya, Harbata, and Beit Aryeh).

The Israel Air Force must preserve full operational freedom in a unified airspace, and maintain the security arrangements required to protect civil aviation, in general, and Ben-Gurion Airport, in particular.

To protect the country's skies and to prevent terrorist attacks on its population centers and on strategic and military targets, Israel must insist on five fundamental requirements:

- Primary Israeli control over a unified airspace (an area whose width totals 40 nautical miles), which cannot be divided.

- Freedom of operation for the Israel Air Force in the entire airspace west of the Jordan River and the Dead Sea (and over a possible Palestinian state).

- Elimination of potential aerial threats from a Palestinian state towards Israel. For example, Israel would lack the capability to intercept a hostile plane taking off from the Atarot (Kalandia) airfield and immediately crashing into Jerusalem.

- Restriction of foreign air traffic due to the crowded conditions of civilian and military air traffic, which already impose restraints on the amount of training carried out by the Israel Air Force.

- Establishing security arrangements to preclude the interception of planes landing and taking off from Ben-Gurion International Airport.

The Palestinians see the control of the airspace above their state as a symbol of sovereignty. They also seek to establish an international airport linking the Palestinian state to other countries, serving as an international passageway for passengers and goods.

An Israeli F-16 takes off on a mission to southern Lebanon, July 16, 2006. The Israel Air Force must preserve full operational freedom and maintain the security arrangements required to protect civil aviation, in general, and Ben-Gurion International Airport, in particular.

Israel's Airspace Vulnerabilities: The Limited Time for Interdicting Hostile Aircraft

4 minutes from the Jordan River to the Mediterranean

› In the event of an aerial attack on Israel, the hostile plane must be downed at least 10 miles from a city to avoid munitions striking heavily populated areas.

› It takes approximately 3 minutes for an Israeli interceptor plane to identify an enemy aircraft.

LEBANON

JORDAN

Haifa

Hadera

Tulkarem

Nablus

Netanya

Kalkilya

Petah Tikva

Tel Aviv - Yafo

WEST BANK

3 minutes

Rehovot

Ben-Gurion
Airport runways

Ashdod

ISRAEL

Modi'in

During previous rounds of negotiations with Israel, the Palestinians agreed to limitations on their military air capabilities, acknowledging that they have no need for combat aircraft or attack helicopters and other offensive aerial weapons that could threaten Israel. Nevertheless, they demanded freedom of operation in the airspace above their state for planes and helicopters, civil aviation, and internal-security (policing).

The Palestinian position posits:

- A prohibition on Israeli military activity in Palestinian airspace.

- The operation of airfields, and maintaining a major aviation artery between the Palestinian state and the rest of the world.

- Permanent and institutionalized air links between the West Bank and Gaza via an air corridor over Israel.

- Reliance on international conventions – primarily the Chicago Treaty – which maintain that a state should exercise sovereignty in its territorial airspace.

What emerges is a considerable gap regarding the issues. Israel's point of departure in any negotiations is its security needs, while the Palestinian interest involves sovereignty, honor, and economics.

To bridge this gap, arrangements must be designed that protect Israel's security requirements while agreeing to expressions of Palestinian sovereignty. Any arrangement between the parties on the issue of territorial airspace requires their agreement on the following principles:

- A unified territorial airspace will need to be preserved, with Israel assuming overall responsibility to enable it to deal with deviant situations, in light of the severe time constraints Israel faces in responding to potential security threats.

- By virtue of its sovereignty, a prospective Palestinian state would need to grant Israel prerogative in security control in Palestinian airspace.

- The Palestinians would have the right to operate civil aviation that meets the safety and security standards of the Israeli Civil Aviation Administration, on the basis of international criteria.

- The Palestinian side would receive financial remuneration for the use of its airspace, in accordance with what is customary in international aviation.

- Air traffic control will be undertaken by Israel.

- A Palestinian air controller can be integrated into the Israeli civilian air traffic control station, and will maintain contact with Palestinian and foreign civilian aircraft operating in or traversing the airspace above the Palestinian state, subject to Israeli control.

- The border between Israel and a Palestinian state would need to reflect the security needs of Ben-Gurion Airport. In addition, special security arrangements are required to secure the flight paths to and from the airport.

Palestinian Airports

The Palestinians have demanded control over the Kalandia (Atarot) airfield in Jerusalem, to have it become the international airport of the Palestinian state. They also intend to establish additional airports for internal Palestinian air traffic. Israel opposes handing over Atarot airfield to the Palestinians since a Palestinian airport adjacent to Israel's capital poses an unacceptable risk.

The operation of a Palestinian airport in the West Bank would also entail substantial risks – both in terms of security and in terms of flight safety. Israel would lack the sufficient response time required to intercept a hostile plane on a mission to attack an Israeli target. In addition, there is the danger of traffic overload in the international corridor between Israel and Jordan, and an overlap of activity (circling) involving Ben-Gurion Airport, Israeli military airports, and civilian airports in the West Bank.

In the event that Israel is prepared to take the security and safety risks associated with the establishment of a Palestinian airport, its establishment should meet the following strict conditions:

- Any airport must be located far from Israeli population centers, preferably on the Jordanian or Egyptian side of the border a prospective Palestinian state would share with its neighbors. Although in the past, Israel had agreed to the operation of the Dahaniye airport on the Gaza-Egypt border, Israel cannot assume the same risk in the West Bank due to the proximity of this territory to Israel's major coastal cities and its strategic interior. Therefore, any Palestinian airport should be located in Jordanian territory to ensure proper supervision of the passage of travelers and cargo into the PA. In other words, the Hashemite Kingdom's superior security services would be responsible for the security, inspection, and safety aspects of the endeavor.

- Landing approaches and take-off paths must be located on the Egyptian and Jordanian sides of the border, with Israeli authorization required for any entry into the unified airspace of Israel and the PA.

- The airport will be operated in accordance with prevailing Israeli and international criteria in the realm of security and safety. Should the airport be used for international flights, it will serve as an international crossing and all the arrangements for international crossings shall apply to it, including the capability to effectively inspect personal baggage and merchandise, and to prevent the smuggling of war materiel and illicit goods. In addition, measures will be required to prevent the infiltration of terrorist elements into the prospective Palestinian state, such as allowing Israeli supervision – and even intervention – possibly with the involvement of a third party.

- No equipment that could constitute a direct threat to Israel or abet parties hostile to Israel will be installed at the airport. (For example, airport radar might be capable of monitoring sensitive aerial activity within Israel, information which could be passed on to parties hostile to Israel.) In addition, electromagnetic coordination of radio frequencies will be required to prevent mutual jamming, which could constitute a major hindrance to air safety.

Finally, an agreement between the parties would enable the opening of an international flight path that traverses the shared airspace, facilitating transport to the east, with an accepted "payment" to the Palestinian side. Israel can consider opening such an aerial corridor if Israeli commercial planes are permitted to use international flight paths that pass over Arab states. This would significantly shorten flights to India, China and the Far East.

Control of the Electromagnetic Spectrum

Similar to Israel's vital security requirement to control a unified airspace if a Palestinian state is established, the topographical conditions and limited distance between the population and communication centers of the two entities do not allow for division of the electromagnetic spectrum. Since it largely occupies the central mountain ridge, the Palestinian Authority enjoys a topographical advantage – with its communication systems far less vulnerable to disruptions and jamming than those of largely coastal Israel. A small Palestinian transmitter station on Mount Eival, near Nablus, for example, could jam virtually the entire communication system in Israeli areas broadcasting on the same frequencies.

This problem of disruption is not new to Israel, which has suffered from a recurring problem of jammed civil aviation communication channels at Ben-Gurion Airport. At times it has been necessary to close the airport to landings. Generally, these disruptions are caused by unlicensed local radio stations broadcasting on the frequency ranges of the control tower. When they originate from a radio station in the Palestinian territories, Israel demands that the PA halt the station's activity. If the disturbances do not cease,

forces are dispatched to impound the transmitter.

Since borders cannot stop the spread of electromagnetic waves, the electromagnetic spectrum cannot be divided.

In the framework of the interim accords between Israel and the PA, a committee for electromagnetic coordination was established to allocate frequencies to both parties, and prevent mutual jamming and disturbances. Indeed, throughout the world it is customary to maintain electromagnetic coordination between states in areas up to 80 km from the border. This means the entire area between the Jordan River and the Mediterranean Sea, including all of the Palestinian areas. It is thus clear to both parties that electromagnetic coordination is required. The question remains, however, whether one of the parties will have overriding responsibility and the final say.

Israel must guarantee that the Palestinians do not exploit their topographical advantage to block or neutralize Israel's communication systems, or to gather intelligence on their own behalf or on behalf of hostile states.

Israel's interest is to preserve the normal functioning of its public, private, and military communications systems. Equally crucial is guaranteeing that the Palestinians do not exploit their topographical advantage to block or neutralize Israel's communication systems, or to gather intelligence on their own behalf or on behalf of hostile states.

This concern is well-founded. For example, when IDF forces entered Lebanon during the Second Lebanon War in 2006, they discovered advanced Iranian intelligence-gathering systems whose coverage capability extended deep into Israel. In light of this, Israel's position is that it must retain overriding control of the electromagnetic spectrum, and there must be an effective supervisory apparatus in place to guarantee that its decisions are implemented.

The Palestinians, on the other hand, view this issue – as in the case of airspace – in the context of sovereignty. They demand full independence in managing the electromagnetic spectrum and consider Israel's demands to be excessive and their own to be based on international conventions.

The way to bridge the gap between the parties is to establish a new joint committee for electromagnetic coordination whose tasks will be:

- Allocating frequencies on the electromagnetic spectrum for use by the parties.

- Guaranteeing Israel's security needs, and assuring the demilitarization of the Palestinian state's military capabilities in the area of communications (for example, by prohibiting jamming and disruption equipment). For this purpose, effective inspection at international border crossings is required to prevent the introduction of equipment prohibited under the agreements.

- Upholding the understandings between the parties about limitations on Palestinian military capabilities, which means limiting frequency ranges allocated for military use.

- Imposing limitations on the operation of systems that damage the continuity and reliability of the communications of the other party. In this context, the Palestinians currently operate communications systems using antiquated technology that breaks into other frequencies and causes local communications disruptions.

- Preventing illegal broadcasts and ensuring enforcement capability in supervision, monitoring, and inspection in the Palestinian areas.

- Creating a mutual apparatus to terminate disruptive broadcasts and to reach agreements on the continued operation of communications systems.

- Supervising the installation of antennas and other equipment that could be exploited for use by hostile parties.

Due to its topographical and technological vulnerability and its security needs – and in order to prevent damage to its existing communications capabilities – Israel must have overriding prerogatives on this committee.

The mutual lack of trust between the parties stems from contradictory interests, as well as differences in how they approach the issue. Israel views the electromagnetic spectrum from the perspective of security and the maintenance of normal functioning of communications systems, while the Palestinians are primarily concerned with demonstrating their sovereignty. In order to overcome this divide, a third party can be enlisted to supervise the honoring of agreements by both sides, and verify whether significant or deliberate harm has been done to the interests of either party.

Summary

The Palestinians repeatedly argue that they understand Israel's security needs, but insist that peace will bring security. They therefore believe their own interests take precedence over Israel's. Conversely, Israel views its security as a necessary condition for maintaining peace and stability, and cannot agree to proposals that would base its vital security needs solely on diplomatic agreements.

It is only through a mutual understanding of the other party's needs – and by building an effective coordination apparatus to provide fitting solutions to demands on both sides – that a stable and viable agreement can be implemented. In light of the special time, space and topographical conditions of the area, it is not possible to divide the airspace and the electromagnetic spectrum between Israel and a future Palestinian state. For both of these, unified solutions are required. In this context, the brunt of responsibility for making decisions and implementing them must be in the hands of one of the parties. Given Israel's complex security needs, including the need to maintain stability and security following the establishment of an independent Palestinian state, overall responsibility must be in Israel's hands. At the same time, the Palestinian need to exhibit elements of sovereignty in the realms of airspace and the electromagnetic spectrum should be respected. This can be accomplished through joint apparatuses for coordination, management, and problem-solving.

An Israeli soldier in the southern Lebanese village of Maroun al-Ras, July 29, 2006. When IDF forces entered Lebanon during the Second Lebanon War in 2006, they discovered advanced Iranian intelligence-gathering systems, whose coverage extended deep into Israel. In light of this, Israel insists on retaining overriding control of the electromagnetic spectrum.