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How the Weak Deter the Strong: Airpower, Technological Regression and the Coercion Balance in the Gaza Strip

Durham Middle East Paper No. 101
In Association with the Durham Global Security Institute

Flt Lt Jacob Davies
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ABBREVIATIONS

ACTS: Air Corps Tactical School
BDA: Battle Damage Assessment
C2: Command and Control
CL: Operation Cast Lead (2008-2009)
COIN: Counterinsurgency
IAF: Israeli Air Force
IDF: Israeli Defence Force
INSS: Institute for National Security Studies
ISF: Israeli Security Forces
ISTAR: Intelligence, Surveillance, Target Acquisition and Reconnaissance
JPost: Jerusalem Post
LIC: Low Intensity Conflict
MFA: Ministry of Foreign Affairs
OODA: Observe-Orient-Decide-Act
OHCHR: Office of the United Nations High Commissioner for Human Rights
Op: Operation
PA: Palestinian National Authority
PE: Operation Protective Edge (2014)
PGM: Precision Guided Munitions
PIJ: Islamic Jihad Movement in Palestine
PLO: Palestine Liberation Organisation
POD: Operation Pillar of Defence (2012)
QME: Qualitative Military Edge
RMA: Revolution in Military Affairs
SyAAF: Syrian Arab Air Force
UAV: Unmanned Aerial Vehicle
UNRWA: United Nations Relief and Works Agency
VISINT: Visual Intelligence

When trouble breaks out in a settled country, such as Palestine … the guilty and innocent parts of the population are living close together… the whole thing is on too small a scale to give scope for the characteristics of the aeroplane- its speed, hitting power and independence of communications, and it is therefore upon the Army that the main burden of this kind of police work must fall.[1]

Air Cdre C. F. A. Portal, DSO, MC, speaking at a lecture in 1937.

ABSTRACT

This article examines how a sub-state group has exploited the limitations of coercive airpower. It analyses mutual learning through conflict, and charts how Hamas has produced a deterrent power to equal that of its conventional superiors.

By increasing the costs of a comprehensive ground offensive, Hamas has exploited Israel's aversion to casualties and created deterrence. Confident it can deter reoccupation, it has constructed the remainder of its coercive strategy around the limitations of airpower. Through internal tunnels and 'lawfare', it has reduced the damage airstrikes cause, whilst its use of rockets and offensive tunnels simultaneously increase the harm it can inflict in return. Its redefinition of victory through a 'method-based' strategy means its attacks can be considered successful, even if they do not hit their targets.

Recent innovations into the 'sub-lethal' realm demonstrate the problems that occur when a targeting policy is left to fill a vacuum caused by deficient strategy. These methods represent a strategic improvement, as they fulfil Hamas' objectives from a less overtly aggressive starting position. The ostensibly peaceful intent of border protests mean they fall outside the remit of offensive airpower, but their escalatory potential ensures they are powerful coercive tools.

As Hamas has increased the damage it can cause, it has also increased the value of its restraint. Its innovation provides an example of how sub-state groups can reach strategic parity with the state, by countering complexity with simplicity.

Introduction

Although states choose some elements of their national strategy, some they are given. The latter is the case with Israel's reliance on deterrence and airpower. Both have been adopted as articles of faith due to the unique geopolitical challenges the nation faces. The regional context the Israeli Defence Force (IDF) operates in provides an unchanging framework to its strategy, even though current threats are markedly different from the wars of survival that characterised its early history.

Like many Western nations, the IDF struggles to marry its role fighting insurgencies with its preparations for conventional conflict. Although its strategy is tailored to individual threats, there are elements that transcend the situational. The IDF's operational blueprint stresses anticipatory and overwhelming force. This force is applied to win quick, decisive victories, reduce the enemy's capacity to strike again, and re-establish deterrence. The impressive capabilities of the Israeli Air Force (IAF) and the desire to minimise casualties necessitates airpower, and airstrikes in particular, as the primary military component.

Yet the same factors that encourage airpower's use also create exploitable weaknesses on the part of the deterrer. By providing policy makers with a military option at a lower risk to life, airstrikes increase the credibility of the state's threats. As the cost of action is reduced, it allows strategists to consider the use of force in situations where their commitment is lower. However, this also means that airstrikes are used in situations where the state's resolve is less, and therefore where they may be less likely to succeed.

In Gaza, it will be argued that sensitivity to casualties dictates the strategy of both parties. However, whilst Hamas' strategy is crafted around its opponent's strategic vulnerabilities, Israel's strategy is constructed around its own. By increasing the costs of a comprehensive ground offensive, Hamas has strengthened the already existing aversion of Israeli policymakers to reoccupation. In doing so it has created deterrence that matches Israel's.

International sensitivity to civilian casualties in Gaza ensures that, during operations, the IDF has a narrow window in which to improve the security situation. Hamas recognises this, and employs typical insurgent tactics to increase the civilian cost of Israeli action. By placing military assets in civilian or protected sites, it presents Israeli service personnel with intractable dilemmas to solve in real time. Alongside this employment of 'Lawfare', it has adjusted the tempo of its operations, aware that it can 'outwait' an Israeli incursion in Gaza.[2]

Confident in its ability to deter a sweep of the Gaza Strip, Hamas has been able to construct the remainder of its strategy around the limitations of airpower in an urban, asymmetric context. A 'Coercive Paradox' exists, whereby the more formidable an instrument of coercion is, the more likely it is that adversaries will be prepared for it.[3] Hamas has reduced the damage airstrikes can do by constructing tunnels and embedding military assets in civilian sites. Concurrently, it has increased the harm it can inflict in return, through rockets, offensive tunnelling and incendiary kites. These tactics have been deliberately tailored to be difficult to disrupt from the air.

Such 'method-based' strategies are not dependent on their military effectiveness for their success. Even if the damage they cause is limited, or they are effectively countered by the IDF, they still fulfil their objectives of harassing Israel and making it pay a cost for its policy towards Gaza. In an armed force that prides itself on its Qualitative Military Edge (QME), any military action is invariably costly.

The RAF is not the IAF, and lessons learnt in Gaza cannot be adopted wholesale by the UK's military. Israel routinely operates alone and from within its own borders, in contrast to the expeditionary, coalition warfare that has characterised recent British history. Yet the same factors that push Israeli planners towards airpower and deterrence pervade all Western democracies, and the UK is no exception. Continued global urbanisation implies a Future Operating Environment that is cluttered and congested, and there are few places more densely populated than the Gaza Strip.[4] Although the nature of the constraints on the IDF are different, it is constrained nonetheless.

British doctrine recognises that the enemy will 'seek to identify and exploit our weaknesses, creating favourable conditions for themselves, probably using novel technologies.'[5] However, whilst the potential for a 'technology jump' is well documented, the way sub-states exploit technological regression for strategic gain is less well understood. For this reason, Hamas' development of 'sub-lethal' tactics of border marches and incendiary devices will receive particular attention in this paper.

"THIS STUDY WILL ATTEMPT TO DRAW COERCIVE THEORY AWAY FROM ITS STATE-CENTRIC ROOTS..."

The IDF is not the primary focus of this research. This study will attempt to draw coercive theory away from its state-centric roots, and examine how insurgents adapt to deter conventional force. Consequently, it focuses on how 'airmindedness from below' has undermined a strategy based primarily on the use of airpower to coerce, and how Hamas has developed a strategy to shift the deterrence balance in its favour.[6]

This paper will first explore theories of coercion, and airpower's role as a uniquely coercive tool, before placing these concepts in the Israeli setting. As successful coercion implies knowledge of an adversary's decision-making processes, Hamas will be evaluated from a structural perspective to clarify its objectives and the sources of its strength. Then the deterrence balance between the two parties will be assessed in parallel, after which the innovations of both sides will be considered for their effectiveness.

Although the IAF can and has been used independently, as it attempts to affect actors on the ground, such action is 'inherently joint.'[7] Therefore, although analysis of Hamas and the IDF's adaptation will centre on Israel's use of airpower, other elements of military force will be referenced.

The Gaza Strip is perhaps the most politicised environment in the world. Actions in Gaza are inextricably linked to other issues in the Israel/Palestine arena, including settlement in the West Bank and advocacy for a one or two state solution. Whether Israel's attitude to Hamas amounts to an intentional 'separation policy' designed to keep the Palestinian Authority (PA) interminably divided is deeply controversial, as are on-going sanctions.[8] These issues are pervaded by complex internal politics, and deeper questions of historical grievance and what it means to be Israeli or Palestinian; they will not be examined here. Instead, this study will concentrate on Israel's military responses to its security concerns, and Hamas' corresponding process of adaptation and innovation.

Israel has enjoyed many tactical successes in their fight against Hamas, hard won through the dedication and professionalism of its service personnel. Yet such is the nature of the conflict that comprehensive success remains elusive, as Hamas continues to mould and shape its mode of operations to bypass the IDF's strengths. This paper will seek to explore the on-going learning process between the two parties, and how the weak have adapted to deter the strong.

Conceptual Background

Coercion: Deterrence and Compellence

The idea of manipulating force to achieve aims is as old as violence itself, but modern coercion theory originated in the strategic realities of the Cold War. Schelling's definitions of coercion, deterrence and compellence, as laid down in his seminal work Arms and Influence, has had the biggest influence on the development of coercion theory.[9] His ideas are firmly rooted in economic game theory, and the effects that modern arms, and in particular their capacity to harm, have on rational decision makers. Coercive strategies aim to use threats of force, or limited force, to manipulate the way an adversary perceives the potential costs and benefits of behaviour, and alter their actions accordingly.[10] Coercion can be briefly summarised as the following:

> *Getting the adversary to act a certain way via anything short of brute force; the adversary must still have the capacity for organised violence but choose no to exercise it.*[11]

Schelling's classification of coercion into two subcategories - deterrence and compellence - provides a useful framework for analysis. Deterrence can be described as the use of potential force to discourage an adversary from taking a potential action. Compellence is the use of force to encourage an adversary to act in a way that suits the compeller.[11] Compellence seeks a change of actions, whereas deterrence attempts to prevent action in the first place.

Evidently states employ non-kinetic stimuli in their attempts to coerce, notably through the enforcement of sanctions, no fly zones or airlift campaigns.[13] However, this paper will focus predominantly on the use and threatened use of military violence to manipulate adversaries, and on the utility of coercive airpower as the primary component of this force.

Latent Violence & 'Power in Reserve'

Coercion is founded on a remodelling of the state's power to hurt into a tool that can be used extract results from a foe. For Schelling, 'the power to hurt is bargaining power. To exploit it is diplomacy – vicious diplomacy, but diplomacy.'[14] Clearly, for such threats to influence enemy action they must be credible: an enemy is unlikely to be deterred by a threat if he believes his opponent has neither the will nor the ability to carry out.

Alongside credibility, clear communication that links the desired action or inaction with the prospect of violence is crucial.[15] Implicit in all coercive strategies are notions of rationality, and the assumption that the target can make reasonable choices based on a consideration of costs and benefits. This is simpler between peers with similar value systems, but successful coercion can occur between vastly different societies or groups, provided there is sufficient understanding to correlate actions or threats with desired effects.[16]

Coercion differs from brute force in that it leaves choice to an enemy, whereas brute force gives them no option but to comply. The IDF's strikes on Iraqi and Syrian nuclear facilities, in 1981 and 2007 respectively, provide an example of brute force rather than coercion, as the objective was a physical degradation of capability, achieved through force alone. Yet Byman and Wazman were right to highlight limitations in the distinction, which means that 'coercion is often in the eye of the beholder.'[17]

The distinction is often one of timescales. In the short term, actions may achieve their aims through brute force. However, this force may have coercive effects when considered as part of a broader strategy over a number of years. For instance, brute force satisfied the IDF's short-term objectives of eliminating extant nuclear programmes, but Israel's willingness to strike may act to deter future nuclear activity in the region. As strategies can be compulsive and coercive in tandem, primary and secondary intentions together dictate where an action falls on the sliding scale from compulsion to coercion. Ultimately coercion is distinct from brute force as some force on the part of the coercer is retained and threatened rather than used.

It is the withheld violence that provides the teeth to coercive threats. If coercive strategies break down into brute force, it is not the violence that brings about the change in an adversary's behaviour, but the capacity to do it again. This 'power in reserve' Byman and Wazman refer to as 'escalation dominance', but the essence is the same: the ability to

increase harm, and the choice not to.[18] The restraint implicit in coercion explains policy makers' attraction to it as a tool that can bring results without recourse to violence itself. This has implications for more than economy and conservation of force. Successful coercive strategies achieve more than isolated brute force, as they can produce actions in an adversary that physical force alone cannot.

This threat of violence underpins two of the fundamental approaches to coercion strategy established by Snyder in 1961: denial and punishment. Denial strategies rely on convincing the enemy that his military strategy cannot succeed, thereby making intolerable costs that would be acceptable if there was a chance of success.[19] Punishment strategies rely on the expectation that there will be high costs if demands are not met. Such costs often fall on civilian populations, either directly though bombing campaigns, or indirectly by inflicting intolerably high casualties on their friends and relatives on the front line.

There is significant debate over the effectiveness of punishment strategies and their ability to break the will of an adversary. Pape cites the galvanising effect of bombing on civilian resolve, whilst Byman and Wazman highlight the danger of 'overcoercing', when the stakes are raised so high that an adversary cannot concede.[20] Such considerations are particularly pertinent in cases of total war, with the rallying effect of the bombing of Pearl Harbour on the US and the continued resistance of Nazi Germany until the bitter end providing respective examples. Whether the strategy relies on denial or punishment, both are united by their aim to compel an adversary into favourable action through threatened violence.

Airpower and Coercion

Airpower's coercive potential is such that it was not only a useful tool, but was instrumental in the origins of the theory itself.[21] Aircraft can reach target areas at much greater speeds than naval or land assets, flying at a height that allows them to sidestep military and physical boundaries. With the improved endurance of Unmanned Aerial Vehicles (UAVs), it is even possible to maintain an extended presence in areas where organisations are either unable or unwilling to deploy ground forces. From its inception, it was clear that the air domain provided a step-change for the state's ability to project power, and in airpower's first century of intellectual development two capabilities for coercion are constant. These are the following: the ability to circumvent military and physical boundaries, and the ability to strike predetermined targets, calculated for maximum effect.

Italian general Giulio Douhet was the most prominent early proponent of airpower's ability to bypass

"...THE FUTURE POTENTIAL TO STRIKE AN ENEMY WHEREVER IT IS DEEMED MOST EFFECTIVE CEMENTED AIRCRAFT AS COERCIVE INSTRUMENTS IN THE PUBLIC CONSCIOUSNESS..."

fielded forces. As early as 1909 he recognised that the introduction of aircraft to the battleground was a qualitative change, 'for now it is possible to go far behind the fortified lines of defence without first breaking through them.'[22] Although Douhet underestimated the potential for air defence in repelling attack, his notion that airpower had enlarged the boundaries of the battleground from a field to a nation was prescient. Billy Mitchell and his disciples at the Air Corps Tactical School (ACTS) in the US during the interwar period took these ideas further, as did the men under Hugh Trenchard at the RAF Staff College in Andover.[23] These theorists disagreed over where and what to strike, but were united in their perception that the aircraft had eroded the line between combatant and non-combatant, civilian and soldier.[24]

This expansion clearly has implications for airpower's potential employment as 'the offensive weapon par excellence.'[25] Groups of the population or infrastructure that were previously unreachable now came within striking distance. Although not capable of doing so in their early history, the future potential to strike an enemy wherever it is deemed most effective cemented aircraft as coercive instruments in the public consciousness. If this far-reaching strike capability is

"...STRATEGIC BOMBING CAMPAIGNS OF THE SECOND WORLD WAR PROVIDED THE TESTING GROUND..."

to exert pressure on policy makers and populations, efficient targeting, and the ability to identify and strike targets successfully, becomes essential.

Although Douhet's blunt aim to 'inflict the greatest damage in the shortest possible time' essentially precursors nuclear deterrence, it has long been claimed that selective targeting can more effectively manipulate costs and benefits, and thus more effectively coerce an enemy.[26] Billy Mitchell and his followers at the ACTS devised theories that focused on the state's role as a producer and maintainer of war. This 'industrial web' was dependent on a number of critical points that, if struck, would have disproportionately negative effects to the whole effort.[27] He cites the example of how a well-placed bomb at the New York Stock Exchange could 'paralyse all the business' and 'cause a conflagration such as has never been known before.'[28] Alternatively, Trenchard cited the moral effect of bombing on civilian populations.[29] The strategic bombing campaigns of the Second World War provided the testing ground for both approaches, culminating in the development and release of the supreme instrument of inter-state coercion, the atom bomb.[30]

During the Cold War the absence of total war posed a strategic dilemma for Western policymakers. Nuclear deterrence was effective against peers

but it was of little use against smaller states in 'wars of choice', where its use would have clearly been disproportionate and incredible. In an international system based on norms, coercion implies some level of parity between parties and threats. Moreover, the Second World War and later conflicts, including Vietnam, demonstrated the strength of civilian resilience against even a prolonged heavy bombing campaign.[31] Following the collapse of the Soviet Union it seemed that in the near future Western military intervention was unlikely to take the form of a total war for survival, and the debate on how best to employ airpower to coerce in offensive 'wars of choice' received fresh stimulus.

Air Control

Alongside conceptual development for interstate war, from its inception airpower has been considered as a coercive instrument in asymmetric contexts. In less than a decade since the first powered flight, a doctrine of 'Air Control' was being developed on the job in the outposts of the British Empire. The same qualitative advancements that airpower promised in peer conflict were equally appealing to Imperial planners in the inter-war period. As with conventional airpower, for Trenchard and his disciples the debate was not on whether aircraft could do the job, but on how they would. The limits of what can be achieved on the ground from the air made the question one of coercion. The prospect of replacing vast and costly occupation forces with a few nimble RAF squadrons proved far too alluring for British strategists to miss.

Early successes in British Somalialand from 1920 onwards prompted the British government to roll out aerial policing to many of its newly acquired territories in the Middle East, including Mesopotamia, Transjordan, Palestine and Aden.[32] In 1937 Charles Portal, then Air Commodore and later Chief of the Air Staff, laid down the template for the 'Inverted Blockade' that he had utilised in his role as Commander of British forces in Aden. An ultimatum would be communicated to offenders in person, accompanied by leaflet drops to ensure that the message was disseminated to the rest of the village's population. Limited airstrikes, focusing on the tribe's leadership, would continue until the adversary conceded to demands. Following the strikes, British personnel would be flown in to provide medical assistance and defuse any unexploded ordinance.[33]

Although air control was conducted with bombers and biplanes, the principles of modern aerial coercion in asymmetric conflicts are recognisable. Both attempt to achieve 'Control ... without occupation' through the correlation of action or inaction with the threat of violence.[34] The association of a misdeed

with the consequences of airstrikes is clearly signalled, in the hope that a threat of violence is sufficiently credible to induce a change in behaviour. Despite the undeniably punitive element to these coercive strategies, there is an implicit hope that the technological superiority of airpower will have a psychological impact that surpasses its physical effects. Whether it is described as 'shock value' against tribesmen or 'shock and awe', the essence is the same: by delivering aggression without the option of a reply, air control strategies attempt to create a feeling of helplessness in their targets that prompts them to concede.[35] The air force withholds violence in reserve to strike again if the subject continues to resist, something Portal crudely contended that 'even the densest savage can appreciate.'[36] The psychological component of air policing can therefore be considered an attempt at coercion by denial.

These early experiments with air control did enjoy a degree of success, but they are also instructive of the limitations of aerial coercion in asymmetric conflicts. The effectiveness of air policing hinged on geography and the level of organised resistance. On the sparsely populated plains of Mesopotamia or Aden, airpower could be brought effectively against its intended targets and reduce the human and financial cost of administering the territories. Yet a determined and organised foe, operating in the densely populated territory of Palestine, then and now, present challenges for advocates of air control.[37]

The weaknesses of air control in Palestine were seemingly insurmountable as they originated in the unchanging attributes of airpower. The transient nature of aircraft incentivises insurgents to adapt and 'outwait' the attack, safe in the knowledge that it cannot last indefinitely. During disturbances in 1929 and the Arab Revolt of 1936, guerrillas reduced the effectiveness of RAF strikes by hiding in rock cracks until strafing aircraft left to refuel. These processes of adaptation are evident throughout the history of airpower in asymmetric conflict, as insurgents try, and often succeed, to counter complexity with simplicity.[38]

Most importantly, the difficulties of delivering discriminate force in urban areas encourages self-imposed constraints on airstrikes. The British Cabinet's fears of a counterproductive atrocity meant that during the Arab Revolt aircraft were not even permitted to overfly urban areas whilst carrying bombs.[39] Such constraints, whilst unavoidable, are readily exploited by the insurgent.

These limitations combined in Palestine to produce a chastening defeat for proponents of air power in a policing role. In 1936, further troops were moved to the territory, with command reverting back to the Army. There were notable successes for air control, particularly in a supporting role, but also leading policing in other territories. However, in an urban environment against a

"...IN 1964 THE BRITISH GOVERNMENT VETOED A BOMBING PLAN IN YEMEN..."

determined and organised foe, the experiment of air control was tried and found wanting.[40] The factors that undermined it then, particularly an aversion to civilian casualties, continued to grow in the post-war period. In 1964 the British government vetoed a bombing plan in Yemen, opting instead for a ground offensive to try and minimise international censure.[41] This veto seemed to signal the end for air control in an asymmetric context.

The Revolution in Military Affairs and Air Control

Technological developments promising to lift the 'fog of war' have led some to contend that air control deserves re-examination.[42] In the late 1970s, US strategists began to herald a 'Revolution in Military Affairs' (RMA), claiming that more capable platforms and networks could provide the basis for effective Western military intervention.

The RMA was underpinned by advancements in computing, sensors, space and munitions, that together fuelled a shift in doctrine. Planners focused on the clean and efficient delivery of force in situations that were previously outside the capabilities of Western militaries. The RMA has greatest implications for the air and space domain, where many of the technologies that powered it are operated.[43]

This revolution in technology and doctrine came together to devastating effect during Operation Desert Storm. A rapid, relatively bloodless victory over a powerful enemy seemed to confirm the prescience of the RMA's logic in conventional warfare. Most importantly, it validated the assertions of its architect, Colonel John Warden, that this revolution would be delivered from the air. Prior to the conflict, Warden had developed 'industrial web' ideas into a theory of five concentric rings.[44] He argued that well-placed strikes on 'critical nodes' could disproportionately affect the system, effecting 'strategic paralysis', pressure on the leader and a relatively bloodless victory.[45] Air assets' unique ability to deliver 'massive power' to the target areas made them the obvious instrument of choice. The objective was not the defeat of enemy forces; rather, it was 'to convince the enemy leadership to do what one wants it to do', brought about by the, 'threat or actuality of intolerable pressure against both its operational and strategic centres of gravity.'[46] Coercion had become the central aim of Western planners, with aircraft firmly established as their most effective tool.

These same technologies and concepts, utilised in the Gulf War, have far reaching implications for airpower's coercive potential in asymmetric conflicts. The difficulties encountered by the RAF in Palestine –delivering discriminate force in urban areas against an organised resistance– are rooted in the permanent characteristics of airpower. Yet what if these attributes can be moulded, amended, or even changed entirely? Unmanned systems have the potential to provide an indefinite presence over the battlefield and overcome the transitory nature of aircraft. Advancements in sensors and missiles make modern Precision Guided Munitions (PGMs) unrecognisable from the dumb bombs of the past, achieving the same objectives with a smaller warhead and reduced collateral.

Despite its American origins, the RMA is crucial to understanding the IDF's practice in asymmetric conflicts. As the largest cumulative recipient of US military aid, the IDF has also received US equipment and practices. American assistance is 'designed to maintain Israel's '"qualitative military edge"' in the region, but it has not been one-way traffic.[47] The IDF has developed these technologies and practices to address the unique challenges they face. As the US purchase of advanced Israeli equipment, such as the Iron Dome, shows, this relationship is truly bilateral.

Collins and Futter argued that the RMA is 'best considered as a holistic, global concept that continues to shape the way nations conceptualize, plan and fight wars and ensure their security.'[48] They are correct that, though the RMA began as an American theory, the US can no longer claim full ownership of its creation. However, it is wrong to consider one global conceptual framework. These US inspired ideas take on a unique character wherever they are employed that reflects the actors involved and the task that they have been put to. Such are the differences in the way RMA ideas and technologies have been applied, that it is more accurate to consider its many applications as separate, but complementary, concepts.

In the Gaza Strip the IDF has employed RMA technologies in an attempt to overcome the same limitations that critically undermined British air control in the 1930s. Yet claims that the permanent attributes of airpower can be changed through technology should be approached with caution. Revolutions in the nature and manner of warfare will never prevent the enemy from having their vote. An adversary is rarely static, and the impact of the state's innovation is dependent on their response. Hamas has reacted to the IDF's advancements in kind to undermine their use of coercive airpower and create their own deterrent power. Before analysing this strategic interaction, it is first necessary to examine the geopolitical context that explains how the IDF's strategy of aerial coercion has developed.

Context: Israel and Hamas

The IDF's History of Deterrence

Notions of deterrence, and deterrence from the air in particular, have enduring appeal for Israeli policymakers due to the unique geopolitical dangers they face. Although the form of the security threat has changed, elements of Israel's strategy have remained constant due to the unchanging strategic context it operates within. Regardless of tactical and operational innovation, its status as a small, democratic and Jewish nation in contested territory remains an enduring framework within which the strategy of the IDF has developed.

A number of geopolitical realities dictate that if Israel is to win a conventional war, it has to win quickly. Israel's size means that a lack of strategic depth is insurmountable. In the event of conventional attack it does not have territory to fall back on, nor does it have a large population from which to draw forces for a protracted struggle. Its reliance on reserves, and the necessary expense and disruption their mobilisation entails, incentivises short, decisive wars, as does the potential for fighting on multiple fronts against any number of its hostile neighbours.

This 'asymmetry in staying power' between Israel and its neighbours means that over any war of survival hangs a 'ticking clock'[49]: the more protracted and attritional a conflict, the less likely an Israeli victory becomes. In a region dominated by states that do not recognise Israel's right to exist, any conventional war takes on the characteristics of a war of survival.[50]

An asymmetry in staying power is accentuated in Israel's asymmetric conflicts. Limited casualty tolerance dictates that Israel has a narrow window during the course of its operations to improve the security situation. This sensitivity to casualties is exhibited both internally and externally. The Israeli public has no appetite for a long, protracted conflict for intangible gains. In a small democratic nation, reliant on reserves, public support for operations is vital.

Externally, the global media also acts to limit the length of the IDF's campaigns. The international community can accept legitimate Israeli security concerns, but there is limited tolerance for the use of high explosives in urban areas and the civilian casualties that this entails. These strategic vulnerabilities – an internal and external sensitivity to casualties - form the basis of Hamas compellence and deterrence strategies, and will be examined in detail later.

In 2015, the IDF's Chief of Staff Lt Gen Gadi Eizenkot summarised how these constraints dictate strategy in the first, and to date only, formal public doctrine of the IDF:

> *As to the use of force, strategy is based on unchanging principles- deterrence, early warning, defense, defeating the enemy, and victory.*[51]

IDF doctrine categorises operations on their severity into Routine, Emergency or War, and deterrence as an objective in itself permeates each of these levels. During routine operations the IDF is concerned with 'implementing, enhancing, and maintaining deterrence by building the force and creating a credible threat relative to our willingness and readiness to use it,' and in Emergencies and War it focuses on 'speedily removing the threat while minimizing the damage to the State of Israel and enhancing Israel's deterrence in the region.'[52] Regardless of the severity of the threat, the precarious nature of Israel's situation ensures that the danger must be dealt with quickly and decisively, and in a manner that prevents the threat from escalating or reoccurring. These objectives combine to form the following 'Offensive Military Concept', central to the Israeli psyche:

> *The basic assumption is that the enemy cannot be defeated through a defensive posture. Therefore, it is necessary to use force in an offensive posture to achieve clear-cut military results.*[53]

This translates into a doctrine of pre-emption, and the use of massive, anticipatory force against perceived existential threats. In practice, the superior speed and reach of air assets invariably make air strikes the first tool of choice. The intention of these strikes is to achieve a quick, decisive victory, and strengthen general cumulative deterrence against potential adversaries.[54]

Conventional Warfare: Theory in Practice

> *The IDF's principal approach to achieving victory is the maneuver approach. This approach is based on components of pin-pointed offensive actions against the enemy's weak spots, while exploiting the relative advantages with emphasis put on momentum, speed of action,*

"...IN ITS SHORT OPERATIONAL HISTORY ISRAEL HAS MASTERED THIS BETTER THAN MOST..."

> *and initiative, the combination of which achieve shock and awe.*[55]

The similarities of the IDF's 'maneuver approach' and Western models has led some theorists to contend that the IDF has been a passive recipient of Western doctrines of air power, adopting blueprints 'off the shelf' that focus on 'Shock and Awe' and Effects Based Operations in the absence of indigenous analytical innovation.[56] There are evidently similarities between the maneuver approach, and Warden's notion of 'critical nodes' to achieve 'strategic paralysis.' Moreover, the emphasis on initiative and shock and awe runs in parallel to Boyd's 'Observe-Orient-Decide-Act (OODA) Loop', both stressing the need to outthink the enemy and disrupt their decision-making processes.[57]

Despite clear crossovers between IDF and US combat theory, Israel has not been a passive recipient of doctrine. The IAF's dramatic success in conventional warfare has shaped the development of operational airpower, and strike capabilities in particular, in its own right. Despite many countries possessing capable and professional air forces, few states have the industrial and social base required to produce an air force of the top order.[58] In its short operational history Israel has mastered this better than most, due in part to its economic and technical resources, but also through intense combat experience that far outstrips most Western nations'. Israel's founders were acutely aware of the importance of the air domain, as demonstrated by the statement of Israel's first Prime Minister, David Ben-Gurion, to the Knesset on 2 November 1955.

> *Security means conquest of the sea and air, to make ourselves a maritime power and a force to be reckoned with in the air. Settlement is not limited merely to land, to the soil. There can also be settlement of the sea and of the air, and the great advantage here is that there are no territorial limitations and curtailing borders.*[59]

The IDF has been born of a hostile environment, and the sky around Israel has served as a testing ground for many nascent technologies, from the use of Remotely Piloted Vehicles in 1982, to the first combat mission of the F-35 in 2018.[60] The IAF's early history was characterised by dramatic and rapid victories in inter-state warfare. These successes were underpinned by pre-emptive and overwhelming force, in campaigns that both shaped and drew on Western conceptions of airpower.

The June 1967 'Six Day War' remains one of the most effective employments of offensive force from the air. The IAF virtually eliminated the Egyptian Air Force whilst it was still on the ground, vindicating Douhet's belief in attacking 'the eggs and the nests', rather than pursuing airborne assets.[61] Whilst the War of Attrition of 1969-70 and the October War of 1973 revealed the vulnerabilities of a small nation conducting defence on the large front of the Bar Lev Line, both operations were comprehensive successes for the IAF's mode of operations.[62] By 1982, in Israel's most recent full confrontation with an enemy air force, the IAF defeated the Syrian Arab Air Force (SyAAF) comprehensively, with achievements that include shooting down 25 planes in a morning without loss.[63] Indeed, following the Second World War, no other air force of the first order has had as many aerial engagements. The IDF has not been a passive recipient of US doctrine; rather, its dramatic successes have helped shape the American blueprint for conventional warfare that took form in the First Gulf War.

Asymmetry and the First Lebanon War

Although broader geopolitical constraints remain constant, since 1982 the nature of the threats, and consequently the conflicts that Israel has engaged in, have changed markedly. The First Lebanon War in 1982, and the prolonged period of counterinsurgency operations that followed, represented a strategic dilemma for the small professional force that had excelled in numerous wars of survival.

In some ways the war's template was familiar. In a short conventional campaign, the IDF brought overwhelming force from the air upon its adversaries, primarily the Palestine Liberation Organization (PLO) and Syrian forces. This was followed by a combined assault that quickly defeated the PLO in southern Lebanon. In the first stage of the war (6 Jun 1982-31 Aug 1982) the IAF displayed characteristic professionalism, destroying the PLO's 'sub-state' within Lebanon and achieving substantial victories over Syrian armour and SAM batteries.[64]

However, despite superficial similarities, Israel's campaign in Lebanon was largely a war of choice and represented a substantive difference to the kind of wars it had waged previously. The discrete military Operation Peace for Galilee, with limited objectives, sank quickly into the Lebanese 'quagmire', as the IDF found itself in a protracted counterinsurgency campaign that only ended with its unilateral withdrawal from Lebanon in May 2000. The operation that began to eliminate the PLO's terrorist 'state-within-state' soon took the IDF into its first true asymmetric conflict.

Prime Minister Menachem Begin tried to stress continuity between Lebanon and previous wars of survival. In an address to the National Defense College he claimed that the terror threat meant 'Operation Peace for Galilee ... does not really belong to the category of wars of alternative,' but in hindsight it clearly was a watershed moment for the IDF.[65] Even contemporary analysts were universal in their criticism of the IDF's conduct and strategy in Lebanon.[66] The Israelis quickly found themselves embroiled in a costly occupation against an unconventional foe, and this trend towards counterinsurgency operations has continued ever since.

In a sense, this proliferation of sub-state threats that has occurred since 1982 can be attributed to the successes of Israeli arms and deterrence, as Israel's enemies sought ways to bypass conventional military strength. Overwhelming superiority on the battlefield has led external actors, notably Syria and Iran, to avoid direct confrontation with Israel and instead attempt to further their interests in the region by supporting proxies. This argument should not be overstressed, as the recent rise of Low Intensity Conflicts is not unique to Israel by any means.[67] However, it is possible to discern a rationalisation of Arab aims in reaction the IDF's strength, and a subsequent shift in Israeli objectives in response to what is realistic in asymmetric warfare.[68] This was evident even in 1973, when Egyptian President Anwar Sadat, recognising that the destruction of Israel was unrealistic, contented himself with the limited objectives of recovering of the Sinai Peninsula.

This process of avoiding direct confrontation has been continued

"THE SAME LEARNING PROCESS THAT PUSHED ISRAEL'S ENEMIES TO SPONSOR SUB-STATE PROXIES HAS BEEN ADOPTED BY THE PROXIES THEMSELVES..."

by Israel's enemies. For example, despite Israel's difficulties during the Second Intifada, Syria did not see this as an opportunity to retake the Golan Heights, preferring to push its interests through proxies instead. Israel too has had to moderate its aims in the Palestinian theatre, as it has been forced to recognise it cannot impose its will political will on Gaza and the West Bank by using conflict in a Clausewitzian sense.[70] The same learning process that pushed Israel's enemies to sponsor sub-state proxies has been adopted by the proxies themselves, as they adapt to bypass Israel's conventional strength.

Despite developments in the regional context, the basic foundations of Israel's strategy have remained remarkably constant: the use of offensive, and at times pre-emptive, force to improve the security situation, degrade the enemy's capability to harm Israel and to maintain or restore deterrence. That is not to say that the way the Israel employs force is unchanged; indeed, the IDF has continued to innovate on all levels of war in its attempts to dominate the battlespace. However, geopolitical constraints mean that it has been a process of strategic adaptation rather than revolution, as the IDF has modified conventional notions of force and deterrence to counter unconventional adversaries.

Hamas: Resistance as an Objective

> *It is neither al Qaeda nor the Taliban. It owes something to Hezbollah, and much to the Muslim Brotherhood. It is Islamist, but nationalist; Sunni, yet supported by a Shi'a regional power; democratic, yet opaque; populist, yet cruel.*[71]

Before placing the IDF's conception of deterrence in the context of Gaza, as coercion and deterrence rely on assessments of rationality and values it is first essential to examine Hamas as an organisation. Successful coercion is underpinned by a thorough understanding of an adversary's decision making processes and value systems, and a knowledge of the enemy's centres of gravity is essential for threats of force to prove effective.

How Hamas is defined and operates has broad implications, which range from the obligations it owes to its citizens to what infrastructure Israel can legitimately target. The varied, and at times competing, functions of Hamas demonstrate how actor based conceptions of deterrence, though simple in theory, are extremely complex in practice. Efforts to coerce sub-state actors are further complicated by centres of gravity that fall outside the reach of traditional military power and targeting, and the intricate power relationships that fuel their strength.

A brief description of Hamas' origins and rise to power in Gaza will be followed by an examination of the elements of its message and structure that provide the foundations for its strength. It is an organisation that straddles many contradictions, as summarised neatly in Milton-Edwards' above remarks. It is a religious group, a provider of services, and a maintainer of law and order all at once. It foments terror in the envelope communities surrounding Gaza and in the West Bank, but also participates in democratic elections. These seeming contradictions provide a partial explanation of the complex security situation the IDF faces, and the nature of its conflicted responses to the threat.

Following Israel's withdrawal from Gaza in 2005, few predicted Hamas' dramatic ascendancy. Yet in the elections of January 2006, among the freest elections ever held in the Middle East, Hamas took 74 of the 132 seats on offer.[72] By July 2007, following a week of violence which left over 100 dead, Hamas had taken full control of Gaza and split the PA in two.[73] Condemnation on the group, already designated a terrorist organisation by much of the international community, intensified, with fresh sanctions and isolation that has continued virtually unabated to the present day.[74]

Yet despite these measures, Hamas continues to function, not only as a resistance but also as the government of a de facto state. Neither repeated military exchanges with the IDF,

punctuated by several intense escalations in 2008-09, 2012 and 2014, nor its transition from protest to power has been able to change its aims as enunciated in its Charter of 1988.[75] A Document of General Principles and Policies in May 2017 reaffirmed its fundamental aims, with any compromise framed as interim steps to establishing their goals.[76] Throughout its history, four objectives have remained a constant. These are the following:

1. **'Liberation.'** 'The full and complete liberation of Palestine, from the river to the sea,' with Jerusalem as its capital.
2. **Right of Return.** The 'inalienable right' for Palestinian refugees to return to where they or their ancestors were displaced from, whether in 1948, 1967, or at any other time.
3. **Rejection of Zionism.** A refusal to recognise the state of Israel, or the validity of the 'Zionist project.'
4. **Resistance.** The continued legitimacy of resistance, and in particular armed resistance, 'which is regarded as the strategic choice for protecting the principles and the rights of the Palestinian people.'[77]

The strength of the State of Israel and its clear resilience and growth in the face of adversity ensures that 'resistance' remains the most important element of Hamas' strategy. As Kirchofer highlights, like many terrorist groups with ambitious strategic aims, Hamas has more immediate 'process' goals which allow it to redefine success and claim victory without tangible progress towards its ultimate objectives.[78] Prior to 2006 Hamas' shorter-term goal was to attain power in Gaza, and following its ascent to government its aim has been to consolidate and maintain it.[79] In the absence of progress in its lofty strategic ambitions, Hamas relies on the 'process', or method, of resistance. In their own words:

> *Hamas is a comprehensive institutional movement taking resistance against the Israeli occupation as its main goal and strategic project. It is involved in the Palestinian community politically, economically, educationally, socially, culturally and on media, popular and relief levels. The movement is active at the Palestinian, Arab, Islamic and international levels and works amongst youth, women, students and all other segments of society.*[80]

It is this fusion of resistance with community level associations and the provision of services that is particularly revealing about the nature of Hamas' power in Gaza. This broad social and cultural involvement helps explain how Hamas became the first Islamist group to be elected in the Middle East and also how it has maintained its hold on Gaza, despite significant foreign and

"LONG BEFORE ITS ELECTION HAMAS HAS MAINTAINED A FOCUS ON EDUCATION..."

internal pressure. From the First Intifada onwards, Islamist groups began to rival and then supplant the secular nationalist authorities as providers of security and services, and Hamas was consistently the most significant of these groups at a grassroots level. For instance, by 1995 up to 10,000 orphans in Gaza were in receipt of some provisions from Islamist associations, with 5,000 more of Gaza's poorest families receiving similar levels of assistance.[81] Long before its election Hamas has maintained a focus on education, penetrating refugee camps in particular with schools and summer camp programmes.[82]

There is disagreement on the primary focus of Hamas' civic activities and the degree of cynicism they should be approached with, but what is clear is that they are crucial in generating popular support.[83] This communal activity's importance is evident both in Hamas' early triumphs over the Islamic Jihad Movement in Palestine (PIJ), for leadership of the Islamic movement, and in their 2006 election win.[84]

A focus on education and youth organisations is consistent with Hamas' aims as a transformative movement but also with the demography of Gaza, where 66% of the population is under 25 years old.[85] Its Charter singles out youth in particular as responsible for the 'raising of consciousness', accompanied by 'fundamental changes in educational curricula in order to cleanse them from all vestiges of the ideological invasion.'[86]

Community support is intrinsically connected to Hamas' ideology of resistance. This ranges from the overt, as voiced below by Hamas official Fathi Hammad, to more indirect methods, such as the provision of practical assistance to the families of martyrs or imprisoned fighters.

> *We will teach our kids in the kindergartens, the elementary schools, and the middle schools how to move forward and liberate their land, with the help of Allah alone. Our achievement today is that out of the two million people [of Gaza], one million children have enrolled into a national, Islamic, Jihadi, religious course. They all excelled and got first place in fence-breaking and confrontation.*[87]

Essential to an understanding of these activities is the Islamist framework which they operate within. Hamas' rise to power both fuelled and exploited a shift in the Palestinian liberation movement from nationalism to Islamism. Hamas was formed in 1987 as the Islamic Resistance Movement and a wing of the Moslem Brotherhood in Palestine.[88] It frames its conflicts within the broader traditions of struggle against the Zionist 'invaders', allowing it present itself as the latest iteration in generations of resistance.[89] The failure of the nationalist led peace processes to translate into practical improvements for the people of Gaza, and the defeat of secular, nationalist Arab regimes, provided strength to the renewal of Islam as a solution for longstanding political problems. In this context, the Intifadas that began in 1987 and 2000 represent a concerted effort by Islamist groups to pull the Palestinian arena away from a secular, nationalist dispute, and place it back within the broader traditional narrative of Muslim-Jew conflict.[90]

After moving from protest to government, religion has remained the reference point for Hamas' rule. It has had to tread carefully, simultaneously attempting to satisfy its hard line supporters and prevent alienation of more moderate inhabitants and its international audience. Its efforts to introduce conservative regulations to Gaza are well documented, with laws banning women from smoking nargileh or legally enforcing gender segregation in schools demonstrating its commitment to Islamic rule.[91] However, significantly, it has stopped short of creating a strict Taliban-style state, a decision that some depict as demonstrative of a government motivated more by self-preservation than ideology.[92]

Hamas is subject to constant tension, trying to justify its leadership of the Islamist movement and also present an image acceptable to more moderate sectors within Gaza and internationally. It faces frequent challenges from more radical Islamists such as Salafi-Jihadists, and the Islamic State even went as far as to declare war on Hamas, denouncing them as 'infidels' that have 'nullified' their faith.[93] This opposition from other Jihadist groups extends to overt violent rebellion at times, as was the case on 27 August 2019, when bomb attacks on two Hamas police posts killed three officers and prompted a wave of arrests of jihadist activists.[94] The more moderate tone of its Covenant of 2017, which makes no mention of the Muslim Brotherhood, is a reflection of the awareness Hamas' leadership has of its external image.[95] These tensions have an acute impact on decision-making processes and their responses to IDF pressure and will be examined in greater detail later.

Complementing Hamas' civic, social and religious functions is its role in the internal security of the Gaza Strip. Hamas' mechanisms of maintaining control over the civilian population of Gaza have far reaching implications for the potential utility of airpower to deter in Gaza, and for targeted bombing campaigns in particular. Clearly, the notion that properly targeted airstrikes can induce a civilian population to exert pressure on a ruling party is reliant on the ability of a population to access government, indirectly at the very least. Such theories are not well suited to Gaza, where the de facto government maintains a firm grip on public outlets of dissent through oppressive security forces.

One explanation of Hamas' election success in 2006 were its promises to tackle the lawlessness and corruption of the PA, and following its full takeover it acted quickly to secure control. Indeed, Gaza's security provides an example of the unforeseen consequences that can arise from attempts to use sanctions to coerce. In 2007 the instructions of the PA to its employees to abscond presented Hamas with an opportunity to reform the region's security apparatus in its own image. By 2008, of the 57 judges in post prior to Hamas' takeover only one was still active, and by 2011 the internal security force had swelled to 15,000, almost 40% of the public sector.[96] Although significant overlap exists between internal security forces and the al-Qassam brigades, a distinction does exist, demonstrating Hamas' aspirations for the legitimate monopoly on the use of force as a state entity. Early attempts by the PA to weaken Hamas by withdrawing administrative support did the opposite, as Hamas acted quickly to fill the vacuum and establish themselves as the most important actor in the region's internal administration.

These many tensions within Hamas' function and identity illustrate how actor based theories of deterrence, simple in theory, become extremely complex when transposed from grand diplomacy to the sub-state level. Treating Hamas as one rational actor capable of being coerced is not impossible, but the task becomes a challenge of intelligence so complicated that success is invariably elusive. Decision-making processes are clearly more difficult to access in opaque, authoritarian regimes than democratic ones.

Despite Hamas' dominance within Gaza, it remains one actor competing for authority in the region, and for leadership in the struggle against Israel. Even the membership of Hamas does not represent one coherent ideology, but is a loose coalition of mutual interest with disagreement on how best to achieve their aims. Implicit to successful coercion is the knowledge of an enemy's decision-making processes and critical nodes, and the complexities of Hamas' control in Gaza aptly demonstrate that in practice this intelligence gap can prove insurmountable.

Deterring Insurgents: The Challenge

A Rationalisation of Aims

Israel's strategic dilemma is acute. It will not accept a regime that violently refuses to recognise its right to exist, but since its unilateral withdrawal in 2005 there is limited appetite for a long term, comprehensive offensive into Gaza to improve the security situation by crushing the Islamist movement. Hamas' long-term aims are unlikely to be affected by any degree of force unaccompanied by significant reform that addresses the socio-economic and political causes of discontent. Even in the event of a multi-national relief effort, there are still concerns that the security situation would remain unchanged and that reconstruction would only serve to strengthen a hostile neighbour. Such voices point to Israel's withdrawal in 2005 and Hamas' subsequent rapid rise to power as a case in point.

Israel's policy towards Gaza is bound in other highly political issues in the Palestinian arena, including settlement in the West Bank and debates over a one or two state solution that will not be examined here. Suffice to say, generational Arab-Israeli conflict and failed peace processes have hardened attitudes on both sides. In this context of generational conflict, Israel pursues a policy of maintaining the status quo whilst attempting to reduce threats to Israeli citizens. The desired end state hinges on what level of violence is tolerable for Israeli planners, a standard that is interpretative and fluid.

Israel's immediate objectives are to exert pressure to weaken Hamas, improve the security situation through operations that undermine Hamas' military capabilities, reinforce deterrence and prevent a humanitarian crisis. These aims represent a pragmatic reassessment of Israel's strategic desires, underpinned by the state's strengths, vulnerabilities and limitations. Israel's key asset is clearly its overwhelming conventional and numerical strength, manifest in its world class military and air arm in particular. Vulnerabilities include a lack of strategic depth and its adherence to democratic process, both of which are exploited by its unconventional enemies. Most importantly, Israel's status as a democratic nation ensures an acute awareness of Israeli casualties, either military or civilian, which in turn dictates the terms, staying power and methods employed by the IDF.

The desire to reduce friendly casualties and the effect this has on the use of armed force has received much attention in liberal democracies. Whether it amounts to a 'casualty phobia' that translates into an 'unprecedented timidity in using force', as Record claims, is debatable, particularly in the context of Israel.[97] However what is clear is that the desire to reduce casualties inevitably pushes decision makers towards air assets, their appeal being what Cohen termed 'gratification without commitment.'[98] The 'Vietnam Syndrome' that provides the basis for theories designed to minimise casualties, including Warden's, is transferable to the Israeli context.

The level of a population's aversion to civilian casualties depends on a variety of factors, most important of which are the necessity of action, the legitimacy of the cause, or the likelihood of success.[99] An inherent sensitivity to casualties, combined with recent IDF occupations costly in blood and treasure for limited tangible success, has resulted in an extreme reluctance to commit ground forces into Gaza for anything other than a short campaign with limited objectives. In this context, the air component, alongside the discrete use of special forces, provides the basis for IDF action.

Hamas in turn has been forced to moderate its objectives in face of massive conventional strength and the strategic reality that it will not be able to abolish the Israeli state. Consequently, its efforts are aimed at the more immediate objectives of maintaining and strengthening its position in power and relieving the Israeli 'siege.' Its consolidation of power is dependent on controlling the population of Gaza and depicting itself as the only organisation capable of leading the effort to 'resist' Israel. This resistance is both defensive, through foiling Israeli raids or air strikes, and offensive, manifest in attacks that aim to extract a cost from Israel for its policy towards Gaza.

In recognition of Israel's civilian population as a centre of gravity, and due to the limited resources they require to operate, Hamas has turned to relatively low-technology, improvised methods, including attack tunnels, mortars, rockets or, most recently, arson devices, such as burning kites or balloons. These attacks are for two audiences, their supporters and opponents. Hamas is trying simultaneously to make the situation intolerable in Israeli envelope communities in an effort to extract concessions from Israel, and also to demonstrate its commitment to resistance to external supporters and competing groups in Gaza.

It is the interaction of Hamas' attempts to coerce Israel and vice-versa that dictates the fragile deterrence balance between two

sides, with both continuing to use force to try and shift the balance in their favour.

Both the IDF's and Hamas' strategies are based on Israel's primary strategic vulnerability, an aversion to civilian and military casualties. Alongside a natural aversion, Hamas employs carefully considered tactics to deter Israel from considering a comprehensive ground sweep of Gaza. Confident in its deterrence, it can construct the remainder of its deterrence and compellence strategies around the same limitations of air control that the RAF encountered in Palestine in the interwar period. IDF innovation and RMA inspired techniques and equipment have been unable to overcome the fundamental limitations of air control in an asymmetric setting. Delivering discriminate force against an organised resistance in densely populated areas remains a challenge.

Assessing Deterrence: Methodological Issues

Assessing the success of either party's deterrence strategies is clearly difficult, as it requires the correlation of events or lack of events with previous action. The absence of an attack may not be due to effective posturing, but could be attributable to internal pressure, a concerted effort to reserve force for a later attack, or for any number of other reasons. Such is the nature of prediction that it is difficult to discern whether an attack has been prevented, or if one would never have occurred in the first place. This interpretative element and its importance in a militarised, democratic state politicises discussion of deterrence in Israel, ensuring that debates on the matter are national business.

The manner in which the rocket attacks of 13 June 2019 were utilised by both sides of the political divide for different purposes demonstrates the debate's interpretative nature. In the context of 10 confirmed incendiary arson attacks on the previous day, rocket fire intercepted by the Iron Dome prompted multiple retaliatory airstrikes from the IDF, which struck what it reported as underground terrorist infrastructure in the southern Gaza Strip.[100] To opposition leader Benny Gantz, these rocket strikes demonstrated diminished deterrence, his distain evident in a tweet on the following day:

> *Hamas' continued firing indicates they are not deterred. Only taking a heavy military stance will make it clear that the State of Israel not only speaks but also uses force.*[101]

However, this same interaction of fire, and its place within broader trends of attack, was used by Culture Minister Miri Regev to defend the government's deterrence policy.

> *If we had lost [the ability to deter] Hamas, they would have attacked us all the time, and we would have reacted to every event. Hamas and the Islamic Jihad understand that if they raise their heads too much, we will bring them down.*[102]

These conflicting interpretations of the same event demonstrate aptly the political character deterrence assessments take. That both Gantz and Regev reached the upper echelons of the IDF prior to politics is revealing of the manner that political and military matters often overlap in Israel.

These difficulties assessing deterrence are further compounded by an asymmetry in objectives and expectations. For a sophisticated military with significant operational success, anything short of total victory can be presented as defeat, whereas for the insurgent, mere endurance is an indicator of victory. This expectation gap should not be overstressed; the difficulties facing conventional forces in asymmetric settings are well documented, and particularly in a theatre of persistent conflict there is a public recognition of what is achievable through armed force alone. Assessments of deterrence can only analyse the interaction between both side's use of violence, and whether they have shifted the balance to favour their objectives.

Indirect Deterrence

In response to the numerous sub-state threats to its citizens, Israel has adapted its conventional deterrence model to one of 'Indirect Deterrence.' In regions such as Lebanon and Gaza, where many groups intent on attacking Israel operate in areas with virtually no Israeli military footprint, Israel has adopted a strategy of deterrence by proxy, holding the ruling party of these areas as responsible for all attacks directed towards Israel.

In this model any violence from Gaza, such as rocket strikes, clashes at the border or infiltration raids, are held as emanating from the ruling party, regardless of whether they were believed to have perpetrated the attack. By holding Hamas accountable, the IDF is attempting to coerce it into controlling violence within Gaza and reduce it to levels that Israel finds tolerable. In the absence of a physical presence in these regions, the only way to enforce this strategy of indirect deterrence is from the air.

Indirect deterrence was adopted in response to the targeting dilemma militia type groups present, and due to opposition to a prolonged ground offensive. Targeting Hamas is difficult in itself, but as a ruling party they have physical manifestations of power, such as police buildings, military installations or government offices, which can be struck in an effort to exert pressure on the

"THE IDF IS SUB-CONTRACTING ITS DETERRENCE..."

governing body. The same is not the case for its competitors for leadership of Gaza, which outside of office can maintain a looser, more informal structure with fewer physical targets.

Much work has been done on the responsibility of government acting as a moderating influence on former protest groups, as they engage in the inevitable compromises of administration.[103] The IDF is trying to use an organisation that is to some extent accountable to restrain more radical groups such as the PIJ, whose actions are unrestricted by obligations to citizens. In effect, the IDF is sub-contracting its deterrence, attempting to coerce Hamas who, in turn, will act to minimise violence emanating from rival groups within its territory.

The strategic logic is laid out in the following quotation from Amos Yadlin, reproduced in Israeli doctrine:

> *Vis-a-vis Hamas and Hezbollah, we haven't destroyed their capabilities, but we were able to establish deterrence. This is basically because we hit them hard, and because the terrorists, in a way, became non-full-state-entities, but half-state entities.... The terrorists have discovered that when they are responsible for their economy,*

> *for education, for the life of their people, suddenly they are not daring to use terror all day.*[104]

This indirect deterrence did not originate in Gaza, but was developed in response to the protracted struggle in Lebanon in the late 1990s. Faced with the mounting economic and human costs of occupation, under Defense Minister Moshe Arens, Israel formally adopted a policy it had already been attempting to enact. The IDF held the Lebanese government accountable for all aggression directed towards Israel, hoping that an incentivised Lebanese government could compensate for a limited Israeli ground presence.

In reality this indirect deterrence could not offset the damage done to Israel's deterrent posture following its unilateral withdrawal from Lebanon in 2000. In this context, the Second Lebanon War of 2006 is demonstrative of a failure of deterrence, as Hezbollah was sufficiently emboldened to believe that its attack on IDF soldiers would not invoke the subsequent scale of reaction from Israel.[105]

Despite some achievements, the 2006 Lebanese War also demonstrated the challenge of delivering a substantial blow to an enemy force firmly embedded within a civilian population. Delivering discriminate force in densely populated areas reveals the tension between the state's responsibility to protect its own citizens and its duty to reduce civilian casualties. This is accentuated by deliberate tactical choices on the part of insurgents, designed to increase the civilian cost of any IDF action, tactics that will be examined in greater detail later.

The IDF response has been to broaden the targets and the intensity of its force, in efforts to exert pressure on sponsors of terror and strengthen deterrence. Gadi Eisenkot, then GOC Northern Command but later Chief of the General Staff, summarised this concept during an interview in 2008.

> *We will wield disproportionate power against every village from which shots are fired on Israel, and cause immense damage and destruction. From our perspective, these are military bases. This isn't a suggestion. This is a plan that has already been authorized.'*[106]

The use of excessive force for deterrent purposes became known as the Dahiyah Doctrine, in reference to the IDF's attacks on the Dahieh district of Beruit in 2006. This doctrine is in part an outcome of the high human cost that the IDF would incur fighting opposition heavily embedded in a civilian population, and in recognition of the importance of low IDF casualties in maintaining public support for a conflict. This logic is preceded by Asa Kasher and Amos Yadlin in an article of 2005. They argue that, 'Where the state does not have

effective control of the vicinity, it does not have to shoulder responsibility for the fact that persons who are involved in terror operate in the vicinity of person who are not.'[107]

For Kasher and Yadlin, the state's responsibility to minimise IDF casualties is greater than its responsibility to protect those that knowingly endanger civilian lives, or the civilians themselves. This is reflected by their assertion that 'a combatant is a civilian in uniform', a remark that is particularly pertinent in a democracy reliant upon national service.[108] This wide delineation of the battlefield chimes with early theorists of airpower, who maintained that aircraft had eroded the distinction between combatant and non-combatant, civilian and soldier.

This doctrine has not gone without criticism, both in Israel and abroad. A prominent critic, Levy, contends that it amounts to a 'death hierarchy', whereby a 'new social order' is used to grade the value of life and place Palestinians beneath Israelis, and numerous reports from international organisations have criticised Israeli conduct in Gaza and Lebanon.[109] The most significant international criticism in Gaza emanated from the United Nations Fact Finding Mission on the Gaza Conflict, the Goldstone Report, although the IDF has consistently denied accusations of indiscriminate force.[110] Despite such censure, Israel's indirect deterrence policy remains largely unchanged. On 25 January 2019, President Reuven Rivlin reaffirmed this strategy, remarking that, 'If we are threatened by Lebanon, we will not remain silent. Lebanon is responsible for its sovereignty and will be responsible for any activity by the Hezbollah from its ground.'[111]

The application of force in Lebanon is also revealing of the limitations of a policy of indirect deterrence reliant predominantly on the air arm, and these difficulties persist in the Gaza theatre. These include the hazards of using disproportionate force in congested areas, and the contradictions of using a weak state to enforce restraint on sub-state actors within its territory. These problems are accentuated by the waning nature of deterrence in the period between kinetic operations, and the way that attempts to achieve escalation dominance can quickly morph cumulative deterrence into cyclical patterns of escalation which may inherently suit the sub-state group. These limitations of indirect deterrence from the air, evident in Lebanon, will be examined in greater detail in Gaza.

Restraint and the Limits of Sub-State Power

> *There are some difficulties in attributing responsibility for all rocket attacks to Hamas. There are independent militias operating in Gaza, and even prior to Hamas, governing authorities were unable to prevent all rocket firings despite their best efforts to do so.*[112]
>
> Richard Faulk, UN Special Rapporteur, speaking on 9 January 2019.

"...ROCKET FIRE FROM GAZA IS ROUTINELY MET BY AIRSTRIKES FROM THE IAF..."

Israel's strategy of indirect deterrence suffers from a paradox that emanates from the nature of Hamas' authority in the Gaza Strip. As previously discussed, Hamas does not have absolute control over Gaza, and even within Islamist sectors it faces internal challenges for leadership of the resistance against Israel.

Rocket fire from Gaza is routinely met by airstrikes from the IAF, which can loosely be described as an effort at coercion by punishment, manipulating the costs of an action in an effort to halt further and future aggression. However, although it may not be in Hamas' interest to prevent violence directed towards Israel, in some instances it is also outside of their power. If this is the case, then no strategy of coercive airstrikes could hope for complete success, as even if Hamas is incentivised to restrain aggression it may still prove unable to do so. Israel is simultaneously seeking to both to weaken Hamas and hold it accountable for actions that occur within its territory, a strategy that proves contradictory in practice.

Several instances of aggression from the PIJ in early months of 2019 demonstrate the limitations of indirect deterrence in the face of organised efforts to escalate violence. Changes to the PIJ's leadership in September 2018 has seen the group pursue a more radical policy, as it aims to establish new rules of interaction and challenge Hamas' leadership of resistance against Israel. The sniper fire directed at an IDF officer in January 2019 and the rocket launch of 28 April 2019, both at the initiative of the commander of the PIJ's military wing in northern Gaza, is indicative of an emboldened, assertive organisation.[113] Following the rocket launch the IDF even took the unusual step of releasing images of the commander they deemed responsible and refrained from retaliatory airstrikes.[114]

Such actions can be interpreted as Israel's self-recognition of the limited effectiveness of such airstrikes in this instance, and of their role in contributing to escalation against the stated wishes of either side. Israel's inability to prevent these activities highlights the difficulties associated with deterring sub-state actors with centres of gravity that can prove impossible to target. In this instance, the role of Iran as the PIJ's primary sponsor, and the context of escalating regional tensions between Tehran and Jerusalem, undermines attempts to moderate the PIJ in Gaza.

Case Study: Exchanges of Fire in March 2019

It is not only concerted escalations from rivals for power that undermine indirect deterrence. Acts of aggression denied by all major groups demonstrate that even if deterrent strategies affect the leadership of organised resistance, the nature of terrorist groups is such that leaders may be unable to restrain their own operatives.

Exchanges of fire in Gaza in March 2019 are representative of the issues that occur when actor based theories of deterrence are applied to sub-state groups that struggle to control their own territory or personnel. On 14 March 2019, two Fajr rockets were fired from Gaza towards Tel Aviv, one of which was intercepted by the Iron Dome whilst the other fell onto open ground.[115] Although no casualties occurred, it was the first time since Op PE in 2014 that air raid sirens were heard in central Israel, and as such it represented a significant escalation.

The al-Qassam Brigades denied responsibility, with senior Hamas official Ismail Haniyeh attributing it to a 'technical malfunction', whilst PIJ spokesman Daoud Shebab labelled accusations of responsibility as 'baseless lies and claims.'[116] Israeli jets struck a reported 100 targets overnight to the response of 9 further rockets from Gaza, and the exchange ended with an unofficial

"HAMAS CHIEF ISMAIL HANIYEH GAVE A SPEECH ON 27 MARCH DEMONSTRATING HIS CAPACITY TO ESCALATE..."

ceasefire the following day with no reported casualties.[117]

Israel did not dispute Hamas' claims that the fire did not emanate from them, with the IDF publicly agreeing with Hamas' assessment that it was a mistake. Nevertheless, Prime Minister Benjamin Netanyahu made it clear that, from the Israeli perspective, 'Hamas bears the responsibility for all attacks from the Gaza Strip, whether the firing is intentional or in error.'[118]

Within 10 days another long-range rocket was fired, damaging a home in Mishmeret, injuring seven Israelis. Hamas again denied responsibility for the launch as an anonymous spokesman evoked the possibility it may have been caused by 'reasons caused by nature.'[119] Israeli airstrikes hit between 15 locations in Gaza (according to IDF tweets) or 50 (reported by the Palestinian Information Centre) in response.[120] Targets included military compounds, the shafts of tunnels used to move weapons, military outposts and rocket launching positions.[121]

Despite fears of escalation, both sides showed relative restraint. Israel delayed its response for a number of hours, allowing militants to vacate compounds likely to be targeted, and Hamas mortar and rocket fire was limited to envelope communities near the frontier,

rather than the Israeli interior. Hamas and PIJ sources on Twitter indicated that they would escalate according to the extent of the Israeli response, cancelling a speech scheduled to be given by Yahya Sinwar, head of the Hamas political bureau in Gaza, and ceasing the activities of the Night Harrassment Units that had been active at the border. During the 'hot night' proclaimed by the joint operations room of Palestinian terrorist organisations in Gaza, 70 rocket launches into Israeli territory were identified by the IDF, causing no casualties.[122] The exchange was over in 12 hours, with seven Palestinians reported as injured by a spokesman for the ministry of health in the Gaza Strip.[123]

By 26 March 2019 Hamas had announced an Egyptian-mediated truce, although this was denied by Israeli sources.[124] Crucially, Hamas chief Ismail Haniyeh gave a speech on 27 March demonstrating his capacity to escalate. In this address, he urged Gazans to 'march in their millions' at an upcoming demonstration on 30 March, before rescinding this threat after a fragile truce was announced on 29 March.[125] Israel reportedly committed to increase access at the Kerem Shalon border crossing, to expand Gaza's fishing zone and to upgrade the electricity supply, in exchange for a reduction in violence and a 300m exclusion zone on the security fence at marches, among other measures.[126]

The regional context that the exchange occurred in was politically sensitive for both parties. On 14 March 2019 spontaneous protests broke out in Gaza under the slogan 'we want to live,' and dozens of protesters, activists and journalists were arrested in the subsequent crackdown. On 19 March 2019 Hamas expressed "regret" over elements of the suppression, but did not release detained activists despite threats for further protests.[127] In Israel, a key motivation for quiet was the upcoming Knesset election, scheduled to take place on 9 April 2019.

This example has been selected due to the way it is characteristic of firing exchanges. It illustrates the fragile deterrence balance between the two parties and highlights the limitations of punitive airstrikes as an enforcer of Israel's deterrence.

The exchange of fire does to some extent demonstrate the credibility of Israeli deterrence: in both situations potential repercussions made Hamas reluctant to accept responsibility for the strikes, despite its stated policy of resistance against Israel. Whether Hamas' claims can be believed is not relevant in this regard, as its denials demonstrate that threats of Israeli force are a consideration in Hamas' decision-making processes.

Yet what remains significant is that even if it is not in Hamas' interests to direct violence towards Israel in this instance, the attacks occurred nonetheless. This is an outcome of the difficulties of applying deterrence to sub-state actors that do not enjoy a monopoly on the use of force within their territory. The Israeli response to strike symbols of Hamas' power, even if they did damage Hamas' organisation or prestige, will not be able to prevent aggression of this type, as there is a disconnect between the costs inflicted by airstrikes and the perpetrators of the violence. Damage to Hamas will not be able to prevent dissatisfied individuals or organisations outside of Hamas' remit from initiating attacks against Israel.

That some violence remains does not necessarily invalidate Israel's policy of indirect deterrence, but it is possible that such strikes may prove ineffective, or even counterproductive. Although in this instance an escalation of violence was against the stated aims of either party, and some restraint was demonstrated on both sides, the realities of this transactional deterrence relationship meant that escalation was to some extent inevitable. To maintain the credibility of their deterrent posturing both sides could not risk inaction in the face of perceived aggression.

However, does such cyclical escalation, although detrimental to both sides, invariably favour Hamas' strategic strengths? Escalation of violence against a foe consciously embedded within a dense civilian population inevitably entails heavy casualties; whether these casualties are shouldered by the civilian population or the offensive military is in the hands of Israeli and Palestinian policymakers. What must be examined first is whether the cyclical escalation that such deterrence entails is favourable to Hamas' strategic logic, and, if this is the case, whether Israel's retaliatory airstrikes assist their objectives.

Mutual Learning and the Gaza Wars

Although the IDF's formal occupation of Gaza finished with its withdrawal in 2005, this has not signalled the end of Israeli military activity in the territory. Virtually continuous military activity has been punctuated by three intense operations in 2008-09, 2012 and 2014. Air campaigns were integral to Op Cast Lead (CL, 2008-09) and Op Protective Edge (PE, 2014), and during Op Pillar of Defense (POD, 2012) the IDF relied on airpower in isolation.

Despite 'disengagement', the level of Israel's involvement in Gaza has led many international organisations to contend that it remains an occupying power. Israel continues to control the airspace, maritime and territorial borders of Gaza, in addition to providing electricity, water and telecommunications. The legal implications of an occupation are far reaching, ranging from responsibility for the welfare of Gaza's citizens to the treatment of enemy prisoners.[128] Israel maintains that it has no effective control over the Gaza Strip and therefore that does not have a duty to ensure welfare or maintain public order.[129]

The legal position of Israel's control over Gaza is field of study in itself, and cannot be examined here. Occupiers or not, IDF action still falls under the laws of armed conflict and international human rights law. The occupation debate shall be left to the lawyers, and the focus here will be on the tactical and strategic interactions between the warring parties.

There is little Israeli appetite for a reoccupation of Gaza. In reaction to Hamas' practices the IDF has continued to innovate on a tactical level. Many of these adaptations employ RMA inspired doctrines and equipment, particularly in the air. The IAF's employment of UAVs, PGMs and networked systems has produced an impressive technical record over these campaigns, but strategic success remains elusive.

In response to Israel's tactical changes, Hamas has adapted doctrinally to undermine technical achievements and produce a deterrent power of its own.

Their strategy has been deliberately designed to be difficult to disrupt from the air. Time acts as a constant restraint on Israeli strategists, and internal and external audiences will only tolerate a campaign that is limited in its length and objectives. Well aware of these limitations, Hamas has produced a strategy that relies on outwaiting Israeli offensives, whilst simultaneously extracting costs from Israel for its actions.

The IAF's reliance on technical excellence is in stark contrast to Hamas' improvised rocket doctrine. Yet for Hamas, the lethality of its own attacks is almost irrelevant. The very fact that they occur, and that Israel has had to counter them, fulfils their objectives of harassing the envelope communities and makes Israel pay a price for its policy: if the rockets hit a target then it's almost an added bonus. By concurrently increasing the costs of any offensive, Hamas has deterred Israel from a comprehensive sweep of the Gaza Strip. This has permitted it to formulate its offensive compellence strategy around the limitations of airpower.

There is a punitive element to this deterrence strategy, through threatening the lives of Israeli citizens and soldiers and forcing the state to absorb the costs of countermeasures. However, more importantly, by constructing a strategy that is unaffected by the capabilities of the IDF, Hamas has made it seem as though Israel will not be able to achieve its aims by applying force. What appears to be a punishment strategy at first glance is, in fact, one of denial.

The IDF: Tactical Adaptation and Technical Excellence

Long before the RMA, Israel's small population and precarious position in relation to its neighbours has led it stress high technology solutions, and a QME, to deter its enemies.[130] Part of Israel's absorption of RMA inspired technologies and doctrines is an attempted denial strategy, trying to make its defeat seem impossible and instil a sense of hopelessness in their adversaries.

IDF planners have sought to harness dramatic improvements in technology within a networked system, delivering real time intelligence to try and counter Hamas' asymmetric tactics. In doing so it is bidding to overcome the weaknesses of air control that critically undermined the RAF in Palestine. Despite impressive technical achievements, strategic success has continued to evade the IDF. Advancements in platforms and sensors are still unable to alter the fundamental characteristics of airpower: delivering discriminate force from the air to an urban area remains a challenge. Deliberate tactical choices on the part of the insurgent augment this problem.

It is undeniable that the IDF has maintained its QME, combining significant foreign aid with a strong domestic defence industry. Israel is

a world leader in military technology, particularly concerning airpower. As a pioneer in UAVs, PGMs, sensors and missile defence, the IAF have skilfully employed new systems and tactics with devastating results.[131] Its current dominance in the production of 'loitering' munitions' shows that it remains at the vanguard of the UAV industry.[132] The indigenous nature of many of its platforms and systems readily lends itself to interoperability and the network centric operations the IAF favours.[133]

Yet these improvements in identifying and striking targets cannot stand in for a lack of a coherent strategic direction in the face of Hamas' adaptation. Rudnik and Segoli are correct to assert that the IAF's role in asymmetric campaigns has progressively widened, moving from a "bombing contractor" to "operational architect".[134] However, the limited success of bombing campaigns in Gaza results from tactics filling a void left vacant by a lack of strategy.

UAVs, PGMs and the IAF[135]

The IAF has long been at the cutting edge of unmanned aviation. Its use of the small propeller driven Zahavan 'Scout' in Lebanon from 1982 was a stimulant to the Pentagon's UAV programmes, and by 2006 the use of drones and the VISINT they produced had increased markedly.[136] From an intelligence perspective, the initial strike conducted in the Second Lebanon War of 2006 was a great success. Unmanned platforms were used extensively to provide continuous monitoring of the ground, for battle damage assessment (BDA) and for the identification and designation of targets.

However, the Second Lebanon War also revealed a gap between intelligence and the ability to generate new targets in real time.[137] The IAF entered the conflict with a 'one digit concept', aiming to prosecute targets within 9 minutes, but it quickly became clear that this timeframe needed revising. Within two days the IAF achieved a sensor to shooter cycle of 20 seconds in Lebanon, a significant tactical achievement. Yet even this impressive on-the-job innovation often proved insufficient to address Hezbollah's 'shoot and scoot' tactics.[138]

The IAF has sought to overcome this gap through increasing the number and quality of its unmanned systems. Their increasing reliance on UAVs in Gaza has marked a shift from raiding to presence.[139] UAVs flew more hours than manned systems for the first time during Op CL, making up 60% of the total flying hours.[140] By Op PE the change was so complete that unmanned systems flew twice as many hours as all other aircraft combined.[141] The increased use of enduring platforms is a deliberate attempt to counter the transitory nature of air-led control strategies that proved fatal to the RAF in 1936. The intelligence provided by these sensors compels insurgents to alter their behaviour on the surface, 'the divide between seeing and targeting being a slim one.'[142]

The expansion of intelligence provision has enabled a revolution in the IAF's use of PGMs in Gaza. PGMs have been employed extensively in attempts to deliver force in a cleaner manner, and also to reduce the risks to pilots. As US pilots in Vietnam and their Soviet counterparts in Afghanistan can testify, control of the air begins on the ground. The risk posed to air assets from ground fire in both campaigns pushed bombers higher, as planners compromised on accuracy to reduce risks.[143] Improvements in precision have allowed air forces to apply force at a lower risk to their personnel. This has been used to attempt to shift the deterrence equation in their favour, by increasing their willingness to use force and therefore the credibility of their threats.

Op CL represented a turning point in the IAF's use of PGMs in asymmetric conflict. Of the 5,500 munitions employed, 81% were precision guided, compared with just 36% during the Second Lebanon War.[144] PGMs, utilised within a greater network of sensors and shooters, have continued to dominate Israeli operations in Gaza since Op CL. During Op POD airpower in isolation was relied upon to deliver the campaign's objectives, as a ground offensive was forestalled in favour of a strategic bombing operation. The transition was so complete by Op PE that over 90% of the munitions dropped from planes during the operation were precision guided.[145]

Targeted Killings

Alongside these intense campaigns, the effective integration of PGMs and ISTAR has permitted Israel to develop a programme of targeted killings in Gaza. This policy has a legacy that extends back beyond the RMA. Unconfirmed reports of Israeli administered assassinations date back to the 1950s, with Op Wrath of God following the Munich massacre of 1972 demonstrating Israel's willingness to use lethal force outside of war. Much academic attention has already been devoted to the development and the controversy surrounding Israel's policy. Rather than tread old ground, the focus here will be on how these strikes fit within Israel's broader conventional doctrine and its conception of airpower.

Targeted killings through airstrikes can best be understood as a natural combination of Israel's previous assassination policy and it conventional doctrine, enabled by RMA inspired technologies. Central to the IDF's conventional deterrence is its willingness to use force to protect its interests outside of war. This principle has provided the foundation for numerous airstrikes overseas, including those on Osirak in 1981, Al Kibar in 2007, and on an alleged strike on an arms convoy in Sudan, bound for Gaza in 2009.

"THE SUBJECTS OF TARGETED KILLINGS CAN BE USEFULLY DIVIDED INTO INDIVIDUALS OF TWO FUNCTIONS: OPERATIONAL OR LEADERSHIP..."

The primary purpose of these strikes is not coercive: they attempt to practically alter the realities of the region through brute force. However, their secondary purpose is to instil deterrence by denial. Such strikes intend to showcase Israel's resolve and establish the principle that crossed lines, such as nuclear experiments, will be met with disruptive action. This is intended to create a sense of futility on the part of their adversaries, and discourage them from attempting an action that seems doomed to failure.

This long established strategy, combined with an improved ability to identify and strike targets, has been put to into the asymmetric context of Gaza. The subjects of targeted killings can be usefully divided into individuals of two functions: operational or leadership. Strikes on personnel of operational significance, including bomb makers, tunnel diggers or local leaders, are primarily brute force efforts to hamper Hamas' processes, and are not coercive by design. Strikes on Hamas' central leadership also have some reliance on brute force, but these attacks on decision makers are more overtly coercive.

Whilst both may have a practical impact on Hamas' function, the distinction is one of timeframes. Whereas operational strikes attempt to address distinct tactical or operational problems in the short term, strikes on leadership aim to have enduring effects on the Hamas' institutional thinking.

The use of airpower to strike leadership dates back to the RAF's early air control experiments outlined previously. Its modern antecedent can be found in Warden's model, where he contended that strikes on the enemy's 'inner ring' could disrupt command and control (C2), facilitate rebellion and prompt relatively bloodless concessions.[146] Such strikes were classified by Pape as coercion by decapitation.[147] During the Second Intifada Israel made extensive use of this policy, reportedly killing 339 Palestinians from 2000-2006.[148] Israel has continued to target Hamas members in leadership and operational roles, with B'Tselem identifying 54 Palestinians in Gaza as the objects of targeted killings since Op CL.[149]

Targeted killings have been hotly contested on the basis of morality, legality and utility. Critics contend that they represent a 'chronic inability to think in terms of asymmetrical warfare', relying on force to rectify situations which demand restraint.[150] Several objections originate in the structure of insurgent leadership. Hughes contends that attempts to remove leaders only leads to their replacement by more intransigent successors,[151] whilst others argue that they empower local commanders to redirect violence from military to civilian targets.[152]

Conversely, the unique structure of terrorist groups that amplifies the importance of leadership has prompted some to champion decapitation strategies in a counterterrorist setting.[153] Byman correlated targeted killings with a reduction in the frequency and lethality of terrorist attacks, contending that the loss of skilled operatives had a discernable impact on Hamas' ability to function.

The legality of these strikes are as contentious as their utility. Critics of these measures contend that they run counter to international law and comprise a state sponsored extra-judicial assassination policy. Within Israel, in 2006 the Supreme Court rejected that they were inherently illegal, but imposed limits based on long established principles of proportionality, that 'terrorists may not to be harmed if the damage anticipated to civilians is excessive in relation to the military advantage to be gained.'[154] This controversy is not unique to Israel, and has led some to argue that international law requires reform as it has not kept pace with technological advancements.[155]

Alongside concerns of legality, the collateral damage such strikes can cause highlights the dangers of airstrikes in urban areas. Sophisticated sensors and platforms can only be so useful; when explosive ordinance is used in an area as densely populated as the Gaza Strip, civilian casualties are almost unavoidable. From 2000-2006, of the 339 Palestinians that died during targeted killings, B'Tselem identified almost 40% as civilians. Similarly, of the 134 Palestinians killed during the course of targeted killings since Op CL, only 54 were the objects of the strikes.[156] Such figures raise severe questions on the ability of airpower to deliver discriminate force in urban areas.

This collateral damage may even have the effect of making such strikes counterproductive by bolstering Hamas' support. The most high profile example of the negative potential of such strikes occurred on 22 July 2002, when the IDF dropped a one tonne bomb on an apartment block in Gaza. The strike killed its target, founder of the Izz ad-Din al-Qassam brigades Salah Shehadeh, but also led to the deaths of at least 14 civilians, including 9 children. International governments and organisations were united in their condemnation, to the extent that the censure acted as a moderating influence on Israeli strikes in the immediate aftermath.[157] Its effect on Palestinians in the vicinity can be deduced from the account of Dubliner Knel Deeb.

> *[There were] pieces of flesh everywhere, one man running away holding a lump of flesh on a metal tray and another pulling out a baby boy with his face half blown away, obviously dead. Everyone was screaming, shouting, crying and shouting 'Revenge to the Israel child killers'.*[158]

This case is not an example of the IDF's intent, but provides a sobering reminder of the potential consequences of a targeted killing gone wrong. The question becomes one of whether processes and equipment are sufficiently capable to reduce the risks of such unintended consequences. Practices on the part of the insurgent, deliberately formulated to increase risks to civilians, muddies the debate further, and will be examined in greater detail later.

Despite frequent objections, Israel continues its policy of targeted killings for one reason: it believes that they work. Whether they degrade Hamas' capability is debatable, as are questions on their proportionality and legality. More easily identifiable is the role they play in placating domestic opinion in the wake of attacks on Israel's home soil. For Israeli politicians these strikes provide a clear and forceful reaction to terrorism, allowing them to satisfy public demand for a response, at a relatively low risk to IDF personnel.

This role of targeted killings in satisfying domestic opinion highlights

fundamental issues associated with the use of airpower in a coercive role. One of the great strengths of air strategies in COIN role is that they can provide action at a relatively low risk to the state. However, RMA inspired technologies, whilst easing power projection, have 'bred overconfidence.'[159] The obverse of a reduced cost is that air strategies are considered in cases where the state's commitment is lower, in situations where they are less likely to succeed.

If the intention of an air strike is to satisfy domestic public opinion then the method of force becomes the end objective of strategy. By disconnecting the strike from its results planners run the risk of employing air power in situations unsuited to its use. In a democracy, these political motivations are unavoidable, but in the Israeli context they have resulted in an incoherent strategy that has been exploited by Hamas' innovation. In recognition of Israel's centres of gravity – public opinion, casualty avoidance and time constraints – Hamas has constructed its own method-based strategy. However, by basing their doctrine on the Israel's vulnerabilities rather than their own, they have been able to outmanoeuvre the conventional superiority of the IDF and create their own deterrent power.

Hamas: How the Weak Deter the Strong

> *Therefore, however cruel the war may be, we must absolutely and firmly endure until the last five minutes of the struggle. This is especially the case with our present enemy, who finds his advantage in a rapid decision in the war, whereas our advantage is to be found in a strategy of protracted war.*[160]
>
> Mao Tse-Tung, 1937.

Hamas has constructed its doctrine firm in its belief that time is on its side. It perceives that is can outwait Israel, both during its operations in Gaza and in the longer term. In doing so it relies upon Israel's status as a democracy acting to constrain its operations and ultimately force it to concede to some of Hamas' demands. Whether it is a humanitarian crisis in Gaza, Israeli public opinion or international isolation that brings about the change is immaterial to Hamas. Israel has a policy of maintaining the status quo, but Hamas perceives that this maintenance of the status quo is in their favour. Israel has not made concessions on a significant scale yet, but after over a decade of sanctions Hamas remains entrenched in its waiting game. In the meantime, the cost invariably falls on Gaza's inhabitants.

Hamas has recognised that Israel's centre of gravity is its population, military and civilian. Consequently, it seeks to constantly harass envelope communities and service personnel on the border to exact a cost for Israel's

policy towards Gaza. Simultaneously it aims to deter Israel from attempting any comprehensive ground offensive by ensuring that casualties would be intolerably high. It is using the same vulnerability – a limited tolerance of casualties – as the basis of its compellence and deterrence strategies. It tries to compel Israel to change its policy, whilst also deterring it from a reoccupation of Gaza.

Thus far, its efforts to deter Israel from reoccupation have been successful. One such deterrent is its vast network of tunnels within the Gaza Strip, designed to facilitate surprise attacks and maintain C2 in the event of an IDF advance. During Op PE Hamas' internal tunnel network assisted an intense defensive effort that resulted in 700 IDF casualties, 45 of which were fatalities.[161] These tactics, formulated to increase Israeli losses to intolerable levels, will be examined in greater detail later.

In this deterrence effort Hamas has the advantage that there is little Israeli appetite for reoccupation. The human and financial costs of administering Gaza would be huge, eclipsing the reconstruction efforts of German reunification at the end of the Cold War. In 2015 Defense Minister Moshe Ya'alon estimated that reoccupation could cost as much $2.5 billion annually.[162] In a small nation reliant on conscription and the mobilisation of reserves, the support of the population for such an expensive strategy is crucial. As it stands, for the majority of Israelis the costs of reoccupation are simply too high.

A combination of this natural aversion and Hamas' actions continues to deter Israel from conducting a comprehensive sweep of Gaza. The success of Hamas' deterrence means they can construct their compellence strategy relatively safe in the knowledge that the IDF will rely on airpower as their primary force component. This ensures that they can mould their offensive methods of harassment around the vulnerabilities of air control.

Rocket Doctrine

Confident in their ability to deter a reoccupation of Gaza, Hamas has developed a 'rocket doctrine', whereby projectiles are used to ensure Israel continues to pay a cost for its policy. It has since employed other offensive methods of harassment including attack tunnels and sub-lethal methods. Whilst it aims to compel Israel to loosen restrictions on Gaza, it also seeks to deter airstrikes by establishing that Israeli strikes will be responded to in kind. This reciprocal 'tit-for-tat' relationship will be examined further, as will Hamas' innovations underground and in the sub-lethal arena. As it was the strategy that developed first and continues to underpin other avenues of the organisation's resistance, first it is necessary to assess the logic that underpins Hamas' rocket doctrine.

Context: Rockets and the Arab World

Part of Hamas' employment of rockets is an outcome of necessity rather than choice. In this regard, they are not alone in the Arab world. There is a long tradition of Arab nations turning to projectiles as a relatively cheap, low technology way to address the IAF's overwhelming superiority in the air. In a conventional setting such missiles find their roots in the V-1 and V-2 rockets, indiscriminate weapons designed to strike non-military targets, but these early experiments lacked the destructive capability to live up to their coercive promise.[163]

During the Yom Kippur War of 1973, Egypt, overwhelmed in the air, turned to rockets to hit the Israeli hinterland, firing three Scud missiles towards Israeli forces.[164] Throughout the Iran-Iraq War of 1980-89 Iraqi forces fired more than 300 Scud-B ballistic missiles, but it was the Scud strikes during the First Gulf War that was the watershed moment for Israel's projectile problem. For the first time during a conventional war the Israeli home front was opened up to missile attack, despite Israel's formal neutrality during the conflict.[165] Van Creveld charted how, at a fraction of the cost and the expertise, Iraq was able to achieve a similar effect to that envisaged by Warden of a fighter-bomber. In threatened regions the strikes prompted evacuations and ground civilian life to a halt, instigating a state of 'semi-paralysis.'[166]

Just as conventional Arab nations have turned to projectiles in the absence of alternative, so too have Israel's non-state enemies. Hezbollah was the first to define success as based on endurance and rocket based deterrence.[167] This rocket doctrine was a response to the impact of projectiles during the Gulf War and in response to the RMA type models the IDF began to employ during Op Accountability in 1993.

Rockets to Deter

Similarly to their regional counterparts, Hamas has adopted projectiles due to their low cost and the minimal expertise required to operate. Its short and medium range rockets are manufactured predominantly in Gaza from easily obtainable equipment, with metal tubing fashioned from plumbing or road signs. The explosive element is smuggled or scavenged from undetonated IDF ordinance, and they are launched from metal stands transportable by hand or truck. In statistics and analysis, short-range rocket fire is often grouped with mortar fire, as there is little substantive difference in their effects.[168]

Their ease of production and use ensure that these rockets make up the majority of Hamas' arsenal. Although a number of groups in the Gaza strip operate missiles, such is their centrality to Hamas' doctrine that they have become known as 'Qassams' after the operatives that fire them.

Clearly methodological issues make gauging the number of rockets difficult, but the IDF estimated that prior to Op PE Hamas possessed 6,000 of the 10,000 rockets in Gaza.[169] Then as now, the overwhelming majority of Hamas' rockets are short and medium range.

From 2008 these have been supplemented by dozens of long range missiles which can strike up to 200km away. Such projectiles are generally 122mm manufactured missiles or multiple missile systems, with larger and more consistent payloads. Some Grad type missiles are produced or improved in situ, whilst many of these more sophisticated projectiles are smuggled into Gaza.

Hamas has made no secret of Iran's importance as a supplier of arms and expertise. In a speech of May 2019, leader of Hamas in Gaza Yahya Sinwar was unequivocal regarding Tehran's role in equipping Hamas with Fajr missiles, stating, 'Let me iterate- if not for Iran's support for the resistance in Palestine we would not have obtained these capabilities.'[170]

The importance of Iran as a patron complicates Israel's efforts to deter Hamas, and highlights the difficulties of actor based deterrence theories in complex and shifting power relationships. Threats of violence to Hamas are unlikely to deter Iran from its efforts to destabilise the region or arm Israel's enemies. Iran's sponsorship of the PIJ in preference to Hamas encourages competition for leadership of the resistance movement, and further incentivises violence from Gaza.

Although more difficult to acquire, operate and conceal, Hamas has steadily expanded its arsenal of long range missiles since Op CL due to the deterrent power such systems confer. In 2012 Hamas demonstrated that it could strike Tel Aviv, and by July 2014 its missiles stretched as far north as Haifa.[171] It is estimated that up to 60% of Israel's population falls within range of Hamas' rocket arsenal.[172] The greater range and payloads of these systems increases the potency of threatened or used force, and therefore the deterrent value of Hamas' firepower.

These rocket strikes have been established as illegal methods of warfare under the Fourth Geneva Convention. Even if aimed towards military objects, the severe imprecision of these missiles means they cannot satisfy distinction criteria and constitute deliberate attacks on civilian populations.[173] However, this is an unfortunate reality of asymmetric warfare, with terrorism often cited as the weapon of the weak.[174] Already isolated from the global community, Hamas has little to fear from international censure.
In this regard, the limited military effectiveness of these methods can act as

a strength, and heavy imbalances in casualty figures are often cited as evidence of IDF wrongdoing. Hamas has continued to exploit the propaganda benefits of harassment methods with limited lethality. In this respect the development of sub-lethal methods, such as marches and fire kites discussed later, is consistent with Hamas rocket doctrine. Hamas is trying to make the security situation intolerable, but not to the extent that Israel perceives the benefits of reoccupation to outweigh the costs. By ensuring the costs of an offensive are high, Hamas can skew this equation in their favour. Hamas rocket doctrine forms an integral part of this deterrence strategy. Safe in the knowledge that a ground offensive is unlikely, Hamas has been able to construct its doctrine and tactics around the weaknesses of air control.

Just as Israel seeks to establish that rockets will be met with airstrikes, Hamas has ensured that the reverse is true. Both during operations and the campaign between wars, Hamas consistently responds to airstrikes with rockets. In the words of spokesman Sami Abu Zuhri, Hamas is seeking to impose 'the equation of blood for blood and buildings for buildings.'[175]

This reciprocal strike relationship has been unable to prevent the extensive use of missiles by both parties. From 2000-2014, 16,500 rockets have been fired at Israel from Gaza, and the IDF has waged three protracted and costly campaigns against Hamas.[176] The rocket fire from Gaza was highest during these campaigns: 3,852 rockets were fired during Op PE alone.[177]

In stark contrast to the nuclear deterrence at play during the Cold War, a mutual capacity to harm has been unable to prevent each side from using their firepower. This does not necessarily entail that the deterrence of either party has failed, as the threshold of force has yet to prove an existential threat to either side. What must be examined further is whether this relationship of reciprocal violence automatically favours the strategic logic of one party over the other.

Cumulative or Cyclical Deterrence?

For Israel, deterrence has not failed if it comes under attack; indeed, such is the nature of the challenge that even the most well conceived military strategy may not eliminate all threats. The discussion therefore hinges on whether the IDF's strategy has reduced the effects of Hamas' threats to an acceptable level, whether this is by a reduction in the lethality or frequency of attacks on Israel. The litmus test for Israeli success is whether a strategy of retaliatory airstrikes, punctuated with relatively short periods of intense military activity in 2008, 2012 and 2014, has achieved Israel's limited aims of reinstating deterrence and improving the security situation.

"THE SEPARATION OF COERCION INTO PUNISHMENT AND DENIAL IS MISLEADING..."

Underpinned by the assumption that there will always be a level of violence, some theorists have presented the reduction in rocket fire following Israeli campaigns in 2008, 2012 and 2014 as indicative of the success of 'Deterrence Operations.'[178] For Vinson and Kirchofer, Israeli airstrikes in these campaigns should not only be perceived in the context of punishment for previous offences, but also as a method of denial to prevent future potential acts of aggression. In this sense, the separation of coercion into punishment and denial is misleading, as clearly acts of aggression very rarely will serve only one of these purposes.

Within Vinson's framework these operations represent tailored and measured responses to re-establish the credibility of Israeli posturing and restore the status quo. Each of these interactions forms part of a 'tactical deterrence' equation, as both sides seek to shift the fragile balance of the relationship.[179]

Kirchofer took such ideas further, putting these operations within a broader trend of 'Cumulative Deterrence', with each campaign lowering the threshold of permissible violence and creating conditions more favourable for peace.[180] Under such logic these campaigns, accompanied by responses to violence in the Campaign Between Wars, represent a success in establishing escalation dominance and contributing to a gradual reduction in violence to acceptable levels. Such views are influential in political and military circles, and can be characterised by the commonly used metaphor of 'mowing the lawn,' as employed by HaBayit HaYehudi leader Naftali Bennet at a security conference in 2018.[181]

Judged on the frequency of rocket strikes alone, the Israeli campaigns of 2008, 2012 and 2014 did have an effect on reducing the threat to Israeli civilians. For example, prior to Op CL, in 2008 there were 1,159 recorded rocket strikes on southern Israel. In the two years following the operation this had been reduced to 261. The 787 rocket strikes recorded prior to Op POD in 2012 was reduced to 36 in 2013. During the operations in question there were sharp spikes in the number of rockets fired, particularly during Op Protective Edge, when almost 4,000 rockets emanated from the Gaza Strip, but the following three years saw a period of unprecedented calm, with fewer than 100 rockets fired towards Israel.[182] Based on these figures it is clear to see that these operations either degraded the capabilities of Hamas, or that the memory of these campaigns acted to restraint rocket fire in the subsequent period.

Yet these figures of rocket strikes alone do not account for the way that Israeli planners by 2014 felt compelled to wage more protracted and violent campaigns to establish the same deterrent effect. Although three campaigns is insufficient evidence to deduce long-term trends, the most damaging campaign by far was in 2014, where 2,202 Palestinians were killed, in comparison to 1,166 casualties during Op CL during 2008-2009. Op POD in 2012 represented a campaign with more limited objectives, with air power used in isolation to degrade Hamas' capabilities and reinstate deterrence. The Israeli civilian casualties in each operation were relatively similar, ranging from 3-6, although many more injuries were recorded.

Despite improving its targeting and intelligence capabilities, airpower in isolation had little impact on Hamas' rocket fire during the Gaza campaigns. Measuring the success of IDF strikes is difficult, but during each operation the effect of airstrikes on rocket fire was limited. Without an accompanying ground offensive, airstrikes had a negligible impact on Hamas' motivation or ability to fire projectiles at Israel.[183] Hamas has limited the effectiveness of strikes through typical 'airminded' insurgent strategy. These include the exploitation of international war ('Lawfare'), extensive use of tunnels and structural adaptation. In doing so it relies on its deterrence of a comprehensive ground offensive as an enabler for its 'rocket doctrine'.

Israeli Defence and Method-Based Resistance

In response to this persistent threat, Israel has invested heavily in short-range air defence. The Iron Dome has had a significant enabling effect on Israeli planners. By reducing the harm of rockets on populated areas it has allowed them to consider longer campaigns with less fear of mass Israeli civilian casualties. Its technical achievements and role in saving Israeli life is remarkable. However, questions of vulnerabilities and cost mean that it has not been able to undermine the strategic logic of Hamas' rocket doctrine. Despite improvement, the potential for rocket strikes continues to have a deterrent effect on Israeli strategists.

Ten Iron Dome batteries, each including three or four launchers, provide protection to Israel's population. Each battery has 20 Tamir missiles, which have a range of 70km. A sophisticated network identifies and prioritises threats, and electro optical sensors and moveable fins steer the proximity fuse blast warheads to their objectives. Fielded since 2011, it is already the worlds most used air defence system. Its successes have not gone unnoticed: in early 2019 the US Army announced its intent to buy two Iron Dome batteries to fill a capability gap.[184]

The relatively low Israeli casualties during Op PE, despite the high number of rockets emanating from Gaza, is attributable the Iron Dome. The interception of 735 rockets, 90% of those it deemed to be a threat to Israeli civilian populations, ensured that Israeli civilian casualties remained relatively low.[185] The effectiveness of this defence reduced the human cost of such an operation on the Israeli home front, and consequently has an enabling effect on Israeli planners.

Although the Iron Dome represents a dramatic improvement to the safety of Israeli populations and infrastructure, it cannot, at present, provide comprehensive cover to all of the communities at threat. The border settlements closest to Gaza fall outside of its protection, and are reliant on 'colour red' alerts and hardened shelters for protection. These communities are comprised of some 60 towns in four regional councils, and during Op PE the projectiles directed towards them numbered in the thousands.[186] Concerns also exist on how unrecognised Bedouin settlements fall outside the remit of Israel's defences.[187]

Hamas' rhetoric focuses on the possibility of overwhelming the Iron Dome. For example, during exchanges of fire in November 2018 statements on Hamas' website claimed that the Iron Dome was only ably to intercept 100 of the 400 rockets fired.[188] A concentration of rockets in one area, or 'saturation', is a known vulnerability of missile defence systems, and Hamas has adapted their practices to exploit it.[189] Improvements to the Iron Dome have the potential to improve its coverage, but the nature of the threat and the inability to counter it from the air ensure that it will never be entirely eradicated.

Yet even if the Iron Dome were able to achieve complete coverage, rocket strikes would still fulfil Hamas' objectives of increasing the costs of Israeli incursions into Gaza. Rocket strikes during these campaigns are designed to shorten the IDF's window of opportunity during the campaign and reduce Israeli planner's appetite for future action. In this respect Hamas has enjoyed substantial success.

Rocket doctrine is a method-based strategy, structured around Hamas' fundamental objective of resistance. Comprehensive Israeli defence may reduce the damage of the projectiles, but it will not be able to reduce the cost. Defensive strategies will never be able to act as denial for Hamas' motivation to employ these strikes, as the strikes do not depend on hitting their destination to be of value. By forcing Israel to adopt precautions, Hamas has fulfilled its objectives; even if casualties are low, Israel has still paid a price.

The asymmetry in costs between the state and the insurgent is a problem prevalent in all Western militaries. The Iron Dome is no exception. Each Iron Dome Tamir missile costs between $50,000-100,000 a unit, and it is common for two to be fired to intercept a dangerous rocket.[190] Hamas' rockets can cost as little as $500. Just as Hamas rocket stocks are finite so too is the IDF's supply of interceptor missiles. With approximately 10,000 missiles believed to be in Gaza, not to mention the 100,000 missiles Hezbollah maintains, it is not difficult to envisage how the Iron Dome could be economically or physically overwhelmed.

The cost of Israeli defence is not limited to the Iron Dome. An enduring criticism of RMA inspired technologies is their expense.[191] Although calculating the exact costs of military offensives into Gaza is notoriously difficult, they are certainly expensive. The back-of-a-fag-packet figure the Israeli government agreed to be the total cost of Op PE was $2.2 billion. Evidently, over 36,000 flying hours and 9,662 PGMs does not come cheap.[192]

There is a tendency for militaries to focus on the tactical and technical successes of their arms, but in a democracy these technologies cannot be disconnected from their cost. Moreover, these figures do not account for the disruptive effect of rocket strikes on the Israeli economy, which was estimated to be around $443 million.[193] Rising expense should not preclude military action, but

"...THESE VOICES HAVE LOST SIGHT OF ISRAEL'S OBJECTIVES..."

clearly the security outcome has to justify the means. By increasing the cost of a military campaign, Hamas is increasing the benefit required to justify future Israeli incursions.

Although the Iron Dome does increase Israel's staying power in a conflict, the other time limiting factor – the tolerance of the international community – is unaffected. Some analysts have gone as far as to claim that Israel's improved defence is a disadvantage, as it skews the Israeli/Palestinian casualty ratios further.

The argument follows that lower Israeli casualties reduces the international community's tolerance of IDF incursions into Gaza, to the extent that its offensives are critically undermined.[194] The security situation can never be significantly improved as Israel has removed the justification it requires to address it.

These voices have lost sight of Israel's objectives. The aim of IDF offensives into Gaza is to reduce Israeli casualties, and to suggest that this goal could be furthered by increasing the civilian death toll stretches credulity. What this argument does highlight, however, is how international opinion ensures that during operations the IDF has a narrow window in which to improve the security situation. Allegations of disproportion following airstrikes

and international condemnation do act to constrain IDF operations, but this can be attributed to Hamas' strategic adaptation, rather than the successes of the Iron Dome.

By recognising Israel's casualty tolerance as its centre of gravity, Hamas has effectively deterred Israel from a ground sweep of the Gaza Strip. The success of this deterrent means that it has been able to construct its strategy around the inherent weaknesses of airpower as the primary force component in an asymmetric, urban environment. In doing so it has augmented its deterrence against ground offensives through its exploitation of 'lawfare' and its internal tunnel network. Concurrently it has constructed methods of compellence that are difficult to counter from the air, including projectiles, attack tunnels, and, most recently, ostensibly non-violent, 'sub-lethal' methods. In reaction to these methods the IDF continues to innovate tactically in the absence of a strategic response.

Compellence and 'Airmindedness from Below'

By increasing the costs of a ground offensive, Hamas has been able to deter Israel from maintaining a physical presence in Gaza. Hamas has recognised that the Israeli public will only stomach boots on the ground for a short period of time, and only if the benefits outweigh the costs in blood and treasure. The tactics outlined above are act to make this window narrower and increase the price of Israeli action.

Alongside its deterrence of ground forces, Hamas has adapted its tactics to deter Israel from airstrikes. Hamas employs common insurgent tactics to increase the costs of airstrikes to Israel. By burying military objectives deep within civilian populations and protected sites, Hamas ensures that if the IDF does use airstrikes collateral will be high. As well as hampering IDF ground forces, its network of internal tunnels shields its personnel and equipment from IAF strikes. This denial strategy blunts Israel's attempts at aerial deterrence and increases Hamas' staying power in protracted campaigns.

Just as its deterrence strategy is constructed around Israel's centre of gravity – its military and civilian population – so too are its methods of compellence. Confident in the success of its deterrence, these harassment strategies are structured around the limitations of airpower. Offensive tunnels have been of limited military utility, but their psychological effect outweighs their proven utility. Akin to rockets, these tunnels constitute a method-based strategy. Consequently, they fulfil their objective of harassing Israel and forcing them pay a cost for their policy, even if attacks are not successful in a conventional sense. These costs are magnified in a military that stresses RMA technologies and maintaining a QME.

Most recently, the development of sub-lethal methods of harassment has posed more acute dilemmas for a deterrence policy based on a willingness to deliver force from the air. Border marches and incendiary terror fall outside of the remit of conventional military force, and the IDF has struggled to find a response that both addresses their security concerns and adheres to

international norms. As with all of Hamas' compellence strategies, the potential to escalate increases the value of these sub-lethal methods as coercive tools.

By continuing to exploit Israel's vulnerabilities, Hamas produced a coercive power that matches that of its enemy. It has been able to reach parity with its far superior rival by implementing a strategy based on 'airmindedess from below.'[195]

Civilians as Missile Defence

The manner in which Hamas has embedded its military structures within the civilian population and among sites protected under international law is well documented. Hamas' practices have extensive precedent in other asymmetric conflicts and comprise what Dunlap termed as 'lawfare', that is, 'the use of law as a weapon of war'.[196]

Hamas and Hezbollah routinely operate on or near protected sites, such as schools, mosques, medical facilities or UN facilities, using them to cache or launch weapons from. Such action exploits ambiguity in international law and presents IDF decision makers with intractable problems that need to be addressed in short time frames. Should the IDF refrain from an attack, the target remains unimpeded, but should they strike they could cause significant civilian casualties and international censure. For the insurgent, it is a zero sum game. Prominent liberal Zionist, the late Amos Oz, summarises the situation from an Israeli perspective:

> *I am afraid that there can be no way in the world to avoid civilian casualties among the Palestinians as long as the neighbor puts his child on the lap while shooting into your nursery. This is why for Israel it is a lose-lose situation. The more Israeli casualties, the better it is for Hamas. The more Palestinian civilian casualties, the better it is for Hamas.*[197]

The scale of this practice is contested, but sufficient evidence exists to rebuke Hamas' claims that allegations are 'utter lies.'[198] The IDF allege that 550 of the 4,500 rockets and mortars fired during Op PE were launched from or near 'sensitive sites', including schools, UN facilities, hospitals and places of worship.[199] Although the UN (and UNWRA in particular) had made it absolutely clear that the neutrality of their sites must not be compromised, during the same operation there were instances of weaponry being discovered in UN sites, as reported by Mike Cole, head of the United Nations Relief and Works Agency's (UNRWA) legal field office in Gaza from 2012-2015.

> *Without a shadow of a doubt, protected places like UN sites were being used to store or fire weapons from, and when we found it we shut it down immediately. There was no connivance.*[200]

The IDF has attempted various methods to minimise casualties and fulfil their commitments to international law. Byford traces the significant tactical adaptation the IDF has undergone to shorten its sensor to shooter cycles and enable it to prosecute targets of opportunity.[201] In Lebanon in 2006 the IDF's warning system was limited, but by Op CL a sophisticated network of phone calls, written notices, leaflet drops and radio communications was in place to try and disperse civilians prior to a strike.[202] Providing warning is particularly important for Kasher and Yadlin, and international law, due to the way that it transforms unwitting civilian shields into voluntary defenders, thus reducing the obligation on the IDF to minimise casualties. IAF warnings have experienced some success. A Situation Report, issued by the UN Office for the Coordination of Humanitarian Affairs on 9 July 2014, reported that prior to airstrikes residents had been warned 'in most cases.'[203]

Such are Israel's efforts to minimise casualties and the skewed censure of the international community that it has led some to argue of double standards, in both action and the degree of truth required for legitimacy.[204] This view was famously voiced by former British Prime Minister Tony Blair in 2010, speaking in his role as envoy for the Quartet:

> *A constant conversation I have with some, by no means all, of my European colleagues is to argue: don't apply rules to Israel that you would never dream of applying to your own country. In any of our nations, if there were people firing rockets, committing acts of terrorism and living next door to us, our public opinion would go crazy. And any political leader who took the line that we shouldn't get too excited about it, wouldn't last long as a political leader. Israel is a democracy. Israel lost 1,000 citizens to terrorism in the intifada. That equates in UK population terms to 10,000. I remember the bomb attacks from Republican terrorism in the 1970s. There weren't many arguing for a policy of phlegmatic calm.*[205]

It may well be the case that there are different standards of truth and action required of both sides, yet, unfortunately, this is an unavoidable feature of asymmetric warfare. As Galula recognised, in such situations the state is 'tied to his responsibilities and to his past, and for him, actions speak louder than words. He is judged on what he does, not on what he says.'[206] The legality of an action does not matter as much as whether such an action is perceived as legitimate and proportionate. Discussions on who bears blame for civilian casualties do not prevent the damage the action causes to the image of those that caused such deaths.[207]

Regardless of any level of precaution, the use of airstrikes to counter insurgents in an area as congested as Gaza will inevitably cause casualties and destruction. Despite the mitigation procedures outlined above, in the first two weeks of Op PE the IDF destroyed 3,000 homes, 46 schools and 54 mosques, with a reported 16 hospitals and clinics coming under fire.[208] Although in many cases, including those of the Al-Aqsa and al-Wafa hospitals, the IDF published evidence of the very close proximity of rockets to hospitals and detailed the ways they tried to avoid unnecessary damage, this was still insufficient to avoid international condemnation.[209] This criticism can have an immediate strategic effect, as was the case following the Qana airstrike of 30 July 2006. After two bombs killed 28 civilians, Israel suspended airstrikes on Lebanon for 48 hours at a particularly sensitive point in the operation.[210] For Israel the challenge remains how to combat insurgents intentionally endangering civilian populations, whilst maintaining deterrence through a doctrine based on excessive force.

The debate surrounding Israel's 'knock on the roof' procedure reflects the severity of the challenge. Developed in 2009, a smaller, typically 25lb hellfire, missile precedes a main strike, in an effort to provide warning and encourage civilians to evacuate. Like much of the IAF's air control efforts, this practice has precedent in interwar air policing. During the Mohmand Campaign of 1935 the RAF dropped 'harmless 11-lb stannic-chloride practice bombs as "frighteners"' for the first time, to try and force the eviction of villagers prior to a strike.[211]

The criticism associated with Israel's use of this technique is indicative of the difficulties of using air strikes to deter in urban areas. The Goldstone Report claimed that it was 'not effective as a warning and constitutes a form of attack against the civilians inhabiting the building.'[212] Human rights group B'Tselem is strong in its criticism of the practice, alleging that on 14 July 2018 a warning strike killed two Palestinian teenagers.[213] There is no standard time gap between the initial and the main strike, and the IDF has faced accusations that the window is sometimes too small to allow civilians to evacuate.[214]

Moreover, whilst such strikes may warn civilians of an impending attack, they also alert insurgents. It follows that if they do reduce the danger to civilians then they will also reduce the danger to Hamas' operatives. Pre-warned airstrikes will only be useful for destroying physical infrastructure and equipment, and will not be an effective way to kill the enemy. Such compromises are inevitable when airstrikes are used to coerce an enemy embedded in a civilian population. Again, for Hamas it constitutes a zero sum game.

Tunnels

Alongside the use of civilians and protected sites as shields, Hamas has also undermined Israel's ability to affect their operations from the air by moving assets outside their reach. The enduring aerial presence over Gaza, and the risk of observation, and therefore strike, from above, has pushed Hamas underground.[215] The comments of a Hamas commander following Op CL demonstrate this logic.

> *It was a completely different conflict to the ones in the past. In 2008, the airstrike and air surveillance took us by surprise. That war cost us a lot, so we made strategic plans to move the battle from the surface to underground.*[216]

This move produced extensive tunnel networks for smuggling, C2 and attack purposes. The sprawling network of tunnels within Gaza is a defensive asset, designed to deter Israel from using ground forces in the region. They also act to blunt the effectiveness of airstrikes by protecting operatives and materiel from their destructive effects. Offensive tunnels fulfil Hamas' objectives of harassing the Israeli population to make the government pay a cost for its policy towards Gaza. Generally speaking, Hamas has employed defensive tunnels to deter, with offensive tunnels to compel.

Defensive Tunnelling and Deterrence

The size of Hamas' C2 tunnel network within Gaza remains unknown, but there is some truth behind Hamas' bluster that it is twice as large as the Viet Cong's was at the height of Vietnam War.[217] The extent and utility of the network was demonstrated by the maintenance of functional command over the 50 days of fighting during Op PE. In this conflict tunnels were used extensively to aid rocket launches and their subsequent concealment.[218] Internal networks also act as a significant deterrent to the Israeli decision makers by increasing the potential casualties of any comprehensive ground offensive. Even during the limited offensive into Gaza during Op PE soldiers encountered extensive booby traps, with cases of fighters emerging from tunnels following house searches to open fire.[219]

The enabling effect of Gaza's internal tunnel network for Hamas is akin to that of the Iron Dome for Israel. The network extends Hamas' staying power during a campaign by reducing the effectiveness of IDF airstrikes and provides a capacity to 'outwait' their opponents. UNRWA's Mike Cole made the following comments on Hamas' pattern of operations during Op PE:

"USCIENTUM VOLUPTAME AUT AUT VEL EST ET QUIASIT ILLABORUM..."

> *They went underground immediately. You didn't see anybody. Politicians and military forces appeared to go underground, and for obvious reasons. Their use of tunnels is very well documented and probably quite effective. The use of tunnels is absolutely widespread.*[220]

The relative predictability of the IDF pattern of operations modelled around retaliatory airstrikes ensures this capacity to 'outwait' Israel is crucial, and the minimal casualties Hamas suffered during the exchanges of fire in March 2019 is a reflection of how these tactical assets have strategic effect.

Defensive tunnels simultaneously increase the cost of an Israeli ground offensive and reduce the effectiveness of airstrikes. In doing so they provide the deterrence that is the basis for Hamas' airminded compellence strategy.

Offensive Tunnelling and Compellence

Hamas has incorporated offensive tunnelling within its model of method-based harassment. Similarly to its rocket doctrine these tunnels have a strategic impact that is not dependent on the success of individual raids.

"TACTICAL INNOVATION ON PART OF THE IDF HAS MANAGED TO REDUCE THE SEVERITY OF THE OFFENSIVE THREAT..."

That the IDF has to expend effort to counter this threat represents a success in itself. As with Hamas' other harassment strategies, these tunnels have a compellence purpose, but the capacity to escalate through such assets produces a secondary deterrent effect.

The first known tunnel attack from Gaza was in 1989, but industrial tunnelling operations originated in the smuggling corridors that emerged with sanctions in 2007.[221] Offensive tunnelling is well integrated into Hamas' attack doctrine. What began as explosive attacks under IDF positions has developed into cross-border raids to attack or abduct Israelis.[222] The long dispute following the kidnap of IDF soldier Gilad Shalit, and his ultimate return in 2011 in exchange for over 1,027 Palestinian prisoners, demonstrates the effectiveness of these attacks.[223] Moreover, the asymmetry of the exchange indicates the value Israel places on Israeli life and the heavy price it will to pay to preserve it.

The length and scale of offensive tunnelling has steadily increased over time. Its industrial nature is reflected by the 1800m long tunnel discovered in October 2013 and the 30m deep, one mile long tunnel discovered in 2016.[224] A typical offensive tunnel reportedly takes 10 months to complete, but some can take more than two years.[225] Hamas' force structure reflects their focus on such tunnels as a strategic weapon, with a specialised 'Nukhba' unit ('The Chosen Ones') 5,000 strong and trained to operate in the subterranean environment.[226] These offensive tunnels clearly represent a substantial strategic threat in their potential to enable terrorist attacks on a large scale, and Hamas has used the possibility of escalation to shift the deterrence balance in their favour.

Tactical innovation on part of the IDF has managed to reduce the severity of the offensive threat, but has proven unable to remove it. A stated objective of Op PE was to nullify the hazard posed by such tunnels. Defense Minister Moshe Ya'alon predicted that the task would take 2-3 days, but in reality it took weeks to discover and destroy 32 tunnels.[227] Innovative measures included the use of disappearances of phone signals to pinpoint the tunnel entrances, although in practice the IDF found that destroying the entrances made identifying the remainder of the tunnel more difficult.[228]

From the air, thermal imagery feeds from UAVs were used to identify insurgents exiting tunnels on the Israeli side of the border, whilst the 'kinetic drilling' of dozens of Joint Direct Attack Munitions was used to destroy pre-identified tunnel lines.[229] After Op PE the IDF has continued improve, with some analysts questioning whether it was accountable for a spate of tunnel collapses in 2016.[230] More recently, in January 2018 the IDF credited the destruction of four tunnels in three months to the 'Steel Dome.' This multi-layered system of technologies and tactics will be complemented by an $800 million sensor-fused, underground barrier that is near completion.[231] The IDF's defensive improvement has been on such a scale that it has led some to claim it was behind the rise in off-the-shelf drone attacks in the summer of 2019. Hamas' change in tack can be interpreted as tacit recognition that successful underground terror attacks are becoming increasingly more difficult.[232]

Yet the vast scale of responses to Hamas' offensive measures reflect the severity of the danger they pose, and such is the nature of the threat that it can never be entirely eliminated. Indeed, even if no such attacks occur, the potential for such a strike has a significant terror effect on Israeli border communities. These fears are evident in the comments of the founder of a border agricultural community, who reported to Reuters that, 'The threat of a mortar bomb is nothing compared to a militant force of 10 men coming into our community to carry out a massacre.'[233]

Such reports are corroborated by witnesses to the UN Report into Op PE who reported 'trauma and persistent fear of the tunnels as core features of everyday life for people in the kibbutz during the hostilities.'[234] An Israeli mother's

remarks to UN investigators are particularly revealing of the psychological effect of such tunnels, even on communities hardened by persistent threats. During Op PE she commented that, 'All the time I was living in fear. So if my husband forgot to lock a door or window I was hysterical that someone would come in and take one of the children. Eventually we decided to move.'[235] Civilians' fears of these tunnels is founded not on their current form, but on their as yet untapped potential to 'enable a 9/11 scale attack.'[236]

Alongside the potential severity of the threat, fears are magnified as it is unknowable how complete the IDF's defence has been. Uncorroborated reports of the execution of tunnel diggers during Op PE demonstrate the importance Hamas places on secrecy regarding tunnels.[237] Interviews conducted with Al-Qassam Brigades members inside tunnels during Op PE signal Hamas' recognition of how the potential of further tunnels can incite fear.[238] The secrecy of such assets also allows Hamas to claim resilience in the face of IDF offensives regardless of their success; their declaration that airstrikes had only 'partially collapsed' their objectives during Op PE is characteristic.[239]

Despite the significant progress made by the IDF, the border attack of 21 August 2019, when 10 Palestinian gunmen and 4 IDF soldiers died in the ensuing gunfight, served as a grim reminder that the threat is not entirely removed.[240] This does not nullify successful Israeli attempts to reduce the danger, as it is clearly preferable to diminish it even if it cannot be known to be eliminated. What it does signal, however, is how tactical adaptation to bypass airpower allows insurgents to redefine victory and claim triumph, even with limited tactical success.

Tunnels, Lethality and Legitimacy

Both the use of offensive tunnels and the integration of military infrastructure into the civilian population have allowed Hamas to significantly weaken the strength offered to the IDF by its aerial assets. However in the battle for internal and external support for the IDF's operations, the clear severity of the threats they face act in Israel's favour.

The transition from wars of survival to wars of choice has forced Israeli policy makers to be more attuned to the potential to lose public opinion during a conflict. Diminishing support for Israel's occupation of southern Lebanon contributed to the decision to withdraw in 2000. Towards the end of the occupation, public protest groups, such as the Four Mothers, undermined the legitimacy of the campaign. There is even a potential for dissent to spread to the armed forces. In 2003, in opposition to Israel's policy in Gaza and the West Bank, 27 IAF pilots signed a petition against 'carrying out illegal and immoral orders to attack.'[241] The impact waning support had on Israel's occupation of Lebanon shows the importance of public support for military campaigns. In this respect, the severity of lethal force emanating from Gaza increases the public's appetite for military action.

In Israel, the clear lethality of tunnels and rockets has galvanised support for operations in the Gaza Strip. Record's view that Western democracies have what amounts to a 'casualty phobia' is unjustified in the Israeli case.[242] Nincic challenge stands: democratic populations will tolerate casualties if they are perceived as justified by the threat and the chances of success.[243] Such is the 'fog of war' in counterinsurgent operations that Hamas can deny using human shields even in the face of significant evidence, but well documented proof of tunnel attacks is undeniable.

Unsurprisingly, regular attacks from lethal weaponry and armed insurgents in tunnels galvanises public opinion in Israel.[244] For example, during Op PE the IDF released aerial footage of missiles repelling insurgents as they emerged from an attack tunnel in Israel. These images were widely shared in the Israeli and international media.[245] The location of the tunnel entrance was already known to the IDF and under surveillance, but rather than attack the tunnel when it was discovered they elected to wait until Hamas attempted to use it. The IDF has not commented on whether this was for military purposes, but the images certainly provided compelling evidence of Hamas' lethal intent to the media.

The lethality of these threats also assists efforts to canvas support from foreign governments and provide the IDF with greater freedom of action. After the initial phase of airstrikes that began Op PE on 17 July 2014, the IDF launched a ground offensive with the limited stated objectives of degrading 'terror organisations' military infrastructure, and [... neutralising] their network of cross-border assault tunnels.'[246] Hamas' indiscriminate targeting of civilians prompted various statements of solidarity from world leaders, such as the following from Prime Minister David Cameron:

> *The Prime Minister spoke to Prime Minister Netanyahu earlier this evening about the situation in Israel. The Prime Minister strongly condemned the appalling attacks being carried out by Hamas against Israeli civilians. The Prime Minister reiterated the UK's staunch support for Israel in the face of such attacks, and underlined Israel's right to defend itself from them.*[247]

This expression of solidarity is fairly typical, with similar statements made by US, EU, German and French leaders.[248] The Canadian Prime Minister even went as far as to 'hold

"IT MUST BE NOTED THAT THE SUPPORT OF ISRAELI CITIZENS OR THE GLOBAL COMMUNITY FOR IDF OPERATIONS IS NOT DEPENDENT ON THE PROVEN LETHALITY OF THE THREAT..."

the terrorist organisation Hamas responsible' for the loss of civilian life in Gaza.[249]

It must be noted that such support is also conditional on IDF conduct, and it is far from universal within the countries named here. Solidarity from the international community should not be overstated, as it is a reflection of the severity of the threat Israel is facing; clearly, it would be preferable if such a threat were not present in the first place. Rocket launches and offensive tunnelling are undeniably aggressive. This means that they can be accommodated within the IDF's doctrine of excessive force to reduce enemy capability and maintain deterrence.

It must be noted that the support of Israeli citizens or the global community for IDF operations is not dependent on the proven lethality of the threat, but on its perceived lethality. Support can be galvanised for a threat that has resulted in relatively few casualties if it has the potential to cause more significant loss of life. For example, since Op CL 16 Israeli civilians have died from projectile fire, whilst none were killed in tunnel raids.[250]

These skewed casualty figures owe much to Israeli defence and vigilance and should not undermine the severity of the threat: 12 soldiers were killed repelling tunnel terror attacks during Op

PE alone.[251] Yet the imbalance in civilian casualties between the Israelis and Palestinians is often cited as evidence of disproportionate force. For instance, UN Special Rapporteur Richard Faulk, following Op CL, referenced the 'one-sidedness of casualty figures' as a 'measure of disproportion.'[252]

The use of casualty imbalances to prove disproportion is evidently problematic, as simply because Hamas has not yet demonstrated the capability to cause mass civilian casualties through rockets and tunnels that does not invalidate their efforts to do so.[253] The unquestionable lethal intent of such methods of attack, alongside their indiscriminate targeting, provides Israel with a clear justification for action of some nature. What is proving more challenging for the IDF to counter are the tactics Hamas has developed that are below the lethal threshold of violence, but still cause the same intolerable harassment to Israeli civilians. How the IDF can marry incendiary devices and border marches with a doctrine based on excessive force from the air remains a challenge as yet unsolved.

7

Bypassing Deterrence and the 'Sub-Lethal' Realm

The instigation of border marches and arson terrorism in March 2018 has circumvented Israel's policy of airstrike-facilitated deterrence. Such innovation, though less overtly lethal than Hamas' extant methods of harassment, represents an improvement in strategy. These compellence strategies fulfil the objectives of Hamas' method-based resistance by exacting a cost from Israel for their policy towards Gaza. However, the ostensibly peaceful nature of these marches renders the sophisticated capabilities of the IDF irrelevant. Alongside their compellence purposes, by retaining the capacity to escalate Hamas has been able to weaponise these marches into a tool of deterrence.

Although Hamas may not have been the initiators of these tactics, they have incorporated them within their strategy of resistance and control the tempo and intensity of these activities. By falling below the threshold of acts of war, these methods permit deniability and accusations of disproportion whatever the IDF response.

Hamas has also used such demonstrations as a 'pressure valve', directing protest towards external outlets and away from opposition to their rule in Gaza. The distractive element of such protests serve to undermine the logic of using airstrikes to exert pressure on the population, which will in turn press the government.

Moreover, these newer methods of harassment complement rather than replace Hamas' more traditional methods of resistance, affording Hamas the capacity to escalate from actions that are less overtly aggressive to the international community. It is this capacity to escalate, both at the marches themselves and by accompanying them with other methods, that make these sub-lethal tactics a strategic improvement that has proven so difficult to counter.

The 'Great March of Return'

Incendiary terrorism and border marches emerged in tandem in the spring of 2018 following four years of relative quiet after Op PE. The Great Marches of Return began through grassroots online activism. On Friday 30 March 2018, 40,000-50,000 Palestinians attended the first border protest on the anniversary of 'Land Day', a protest against Israeli land appropriation in 1976 where 6 Israeli Arabs were killed.[254] The movement began in opposition to what Palestinians perceived as Israel's illegal occupation and 'siege' of Gaza, the relocation of the US embassy to Jerusalem, and to reaffirm the 'right to return' of refugees to their ancestral lands in historic Palestine. The protests were intended to take place every Friday for six weeks, but have continued almost every week to date.

The attendance and intensity of the marches varies, and the motivation and the actions of both protesters and the Israeli Security Forces (ISF) have come under severe criticism. Israel has reported significant violence at the border, including stone throwing, Molotov cocktails, hand grenades, IEDs, shootings and attempts to infiltrate Israel. In response to marches the ISF have used tear gas, rubber coated bullets and live rounds to disperse demonstrators, killing 195 Palestinians and injuring nearly 29,000 in the first year of the marches.[255] Although there are antecedents, these marches comprise qualitative step change in Palestinian protest and the security threat to Israel.

From 13 April 2018 onwards, organisations in Gaza were reportedly releasing airborne incendiary devices. These typically consist of burning pieces of fabric, soaked in fuel and attached to balloons or kites, released with the intention of starting fires in Israel.[256] As of 2 July 2019, the Israeli government reported 2,155 fires had been started by such devices, burning 8,747 acres of land.[257] Airborne arson attempts are only effective in the summer, and although balloon incursions were reported over the rainier winter of 2018/2019, they bore IEDs rather than incendiary materials.[258]

Deniability

For Hamas, a crucial strength of these methods is that their organisational footprint is sufficiently light that it leaves space for deniability. As such they fulfil Hamas' aim of creating a security situation that is intolerable for Israel, but not attributable to Hamas. The marches were born through the organisation of social activists, stating in the 'General Principles' on the organisation's Facebook page that 'It is a peaceful march that will not resort to any other form of struggle. It aims at [calling for the right of] return in a completely peaceful manner.'[259] Yet even before even the first march took place on 30 March 2018, Hamas was already established as the enablers and leaders of the protests.[260]

To this end Hamas has encouraged the appearance of civilian control in the organising committee of the Supreme National Authority of the Return Marches and Lifting the Siege. Although the organisation is nominally non-partisan, the 14 Hamas representatives on the committee make up the largest contingent, with the next largest the 13 PIJ representatives, followed by 4 Fatah operatives and a variety of personnel from a combination of other organisations.[261] Hamas has been content to either permit or assist harassment at the fence or through incendiary devices. By relying on self-declared "units" without formal ties to armed groups, they retain a degree of separation from the more hostile elements of the marches.[262] That Hamas controls their tempo is demonstrated by the high numbers of its members that can be found closest to the border fence engaging with the IDF, and consequently the large percentage of the total casualties that the group incurs.[263]

Similarly, the type of the damage caused by incendiary devices permits Hamas to deny that it is responsible, or even that incendiary devices caused the fires in the first place. The importance Hamas places on deniability in efforts to manipulate the narrative is reflected in publications on Hamas' website. The following words from Dr Basem Naim, head of the Council of International Relations in Gaza and former Palestinian minister of health, is characteristic of their propaganda:

> *According to our observation, the fires are caused by hot weather or burning crops by Israeli farmers for financial reasons. The Israeli occupation, however, claimed that such fires were caused by arson balloons. We do think that this behaviour is a desperate attempt by Israeli leaders to find a way out the internal crises in the Israeli occupation, especially the upcoming elections and the formation of a new government. Indeed, the Israeli leaders want to export such crises to Gaza at the expense of our people and their freedom and life.*[264]

The deniability of the terror intent of these sub-lethal methods allows Hamas to fulfil its mantra of resistance at a lower risk of an escalation to full-scale conflict, such as Op PE, which is against its stated interests. This is particularly important regarding its internal audience in the Gaza Strip, both as a pressure valve for public anger and for maintaining its position of leadership in the struggle against Israel. The overt opposition to Israel provides an external outlet for public anger and discontent, thus shifting the focus from Hamas' rule to Israel's sanctions. The addition of "Breaking the Siege" to the title of the organising committee was against the wishes of the original organisers, and provides an example of how Hamas shifted the focus of peaceful protests to fit such tactics within their narrative of violent resistance and struggle.[265]

"...WHETHER THE ISF HAS BEEN PROPORTIONATE IS HOTLY CONTESTED..."

Opposition to Hamas' rule, such as the 'we want to live' protests on 14 March 2019 discussed earlier, can be deflected onto Israel, and the IDF's response to border threats has assisted this distraction tactic. These protests against Hamas' rule were not isolated incidents: over a 10 month period in 2018 the Independent Commission for Human Rights in Palestine recorded 81 complaints of arbitrary arrest and 146 complaints of torture against Hamas security forces. The function of the marches as a pressure release valve for Palestinian discontent undermines Israel's efforts to apply what former Prime Minister Yitzhak Rabin termed 'circular pressure', using airstrikes and other methods to induce the population of Gaza to apply pressure on Hamas as the ruling party.[267]

Proportionality

Moreover, the sub-lethal nature of these tactics means that even if Hamas' culpability is undeniable, a disproportionate response is unavoidable. Whether the ISF has been proportionate is hotly contested, and will not be examined in this paper. The focus here will be the way Hamas exploits a sub-lethal perception to label Israel as disproportionate regardless of its actions.

The simplicity of these methods fit Hamas' self-projections to the international community. They

permit it to portray themselves as a resistance movement taking on a 'nuclear superpower with four slingshots', contributing to its redefinition of victory as endurance.[268] The civilian nature of the marches means that there is no use of armed force that will not attract censure. For instance, during the demonstration of 12 October 2018, 20 demonstrators cut the separation fence with machetes, axes and wire cutters and penetrated Israeli territory. They retreated after Israeli forces shot at them with live ammunition, killing between one and three demonstrators.[269]

The IDF claimed that during this incident three Palestinians attempted to storm a sniper post, whilst another approached an IDF soldier with a knife in an attempt to steal his weapon.[270] Such incidents occupy a definitional grey area between conflict and protest, challenging Israel to respond to threats to its territory without the use of armed force.

Censure from organisations such as Human Rights Watch stems from an interpretation of the Israeli role as policing rather than defence, prohibiting the use of lethal force except as a last resort to prevent an imminent threat to life.[271] Yet in the context of previous infiltrations and terror attacks, border defence is a highly charged issue with the potential for a significant loss of Israeli civilian life. The stated unarmed and peaceful intention of these demonstrations leave Israeli forces with virtually no armed response that will not attract international condemnation.

The Limitations of Targeting as Strategy

Even with considerations of proportionality aside, such tactics are, by design, almost impossible to target using conventional armed force. At the Marches of Return the lack of central leadership and an 'enemy' that is made up, in part, of women and children, render the IAF's considerable capabilities obsolete. These methods have bypassed a mode of operations based on excessive force to re-establish deterrence, and Israel has been pushed to adopt passive defensive measures in the absence of an alternative.

Warnings to Gaza residents of Israel's willingness to use armed force to defend its border, both from leaflets dropped by the IAF and in public statements by COS Lt Gen Eizenkot, have not deterred demonstrators.[272] Defensive measures include reinforcing positions with strengthened and additional fences, trenches, underground barriers and berms, accompanied by an additional 100 sharpshooters at the first demonstration.[273] Further restrictions on Gaza, including halting the flow of fuel and gas, withholding funds to the PA and restricting Gaza's maritime area, have been unable to prevent continued friction at the border or incendiary terror. Moreover, they have attracted criticism as 'measures

that amount to collective punishment.'[274] Israel has been forced to move to structural changes in its land use to reduce the damage in 2019, including firebreaks and the introduction of intensive grazing, alongside two on call fire alert teams.[275] These defensive measures, combined with the adaptation of UAV tracking systems such as the Skyspotter, have reduced the damage to more tolerable levels, but have been unable to remove the threat entirely.[276]

Together with these defensive measures, by early 2019 the IDF's responses to incendiary terror had become consistent with that of its responses to Gaza originated terror in general. Similarly to rockets, the IDF relies on retaliatory airstrikes on Hamas military positions to reduce dissidents' capabilities and re-establish deterrence.

The exchange of 2 May 2019 is a typical example of how the IDF has applied its extant doctrine of coercive airstrikes to incendiary terror. Following two large fires in Israel 'several terror targets in a military compound' were targeted in the northern Gaza Strip. An IDF spokesmen signalled that 'The attack was in response to the dispatch of explosive and incendiary balloons into Israeli territory,' also repeating that it held Hamas responsible for all terror that originates from Gaza. Following these strikes, warning sirens were activated in Israel after the IDF reported two rocket launches which caused no damage or casualties.[277] This pattern of operations is typical of the Israeli response, with Israel responding similarly to several other balloon based attacks in 2019.[278]

The numbers of fires caused fluctuates in accordance with political tensions and the seasons, and the deniability of these tactics, alongside Israel's preventative measures, make it difficult to assess the damage caused by incendiary devices. However, what is clear that there is not a correlation between these strikes and the capacity or the will of armed groups to perpetrate terror.[279] Importantly, these examples also demonstrate the ease at which Hamas' tactics slide from the sub-lethal to the lethal realm in efforts to maintain escalation dominance.

These tactics are inseparable from Hamas' overarching strategy of method-based harassment. As with rockets and tunnels, by forcing Israel to take preventative measures these methods have enjoyed some degree of success. What these sub-lethal tactics demonstrate is the limitations of relying on technical competence to fill a void left vacant by a lack of strategy. A focus on targeting and efficiency has proven ineffective at nullifying Hamas' asymmetric tools of compellence, such as rocket launches or tunnel attacks. Against Hamas' methods of sub-lethal harassment, an aerial coercion strategy based on targeting has proven largely useless.

Sub Lethal Tactics and Escalation Dominance

The capacity to escalate is the most important strength of sub-lethal tactics, and ensures that these innovations must be considered a strategic improvement and not a reduction in violence. Hamas has developed their capacity to escalate both at the marches themselves and more broadly through its more typically military capabilities; it is this potential for escalation that is affecting the deterrence balance between the two warring parties.

Even if the marches are peaceful in their current form, the weekly presence of tens of thousands of discontented residents of the Gaza Strip at the security fence could be rapidly weaponised to present a severe problem. In their present form Hamas maintains control of the marches' tempo. According to Israel Hayom, information obtained by Shin Bet from interrogations of protesters revealed that Hamas pays activists to charge the fence, whilst forbidding its own personnel from approaching the border until it is breached.

If it is broken, operatives are instructed to infiltrate Israel and carry out armed attacks.[280] A designated Night Disturbance Unit has been formed to harass Israeli civilians. During the marches themselves there has been the reported use of off the shelf quadcopters to direct protestors, including military personnel, towards pre-identified vulnerable spots in the barrier.[281] This escalatory power cannot be impeded by offensive action from the air; in effect, sub-lethal innovations have rendered one of the four roles of airpower, attack, irrelevant.

Such activities represent a substantial threat to Israel, but Hamas' deliberate disconnect from the marches permits a separation between peaceful protest and violent resistance which is artificial in reality. This is evident in the Office of the United Nations High Commissioner for Human Rights (OHCHR) Report of 2019 that criticises Israel's responses to the demonstrations in the strongest possible terms. Although it mentions the shooting of an IDF soldier by a sniper at a demonstration of 20 July 2018, and Israeli citizens' fears of fires and border raids, as 'these events occurred outside the time and place of the demonstration, the commission did not investigate them.'[282] The arms-length control Hamas maintains over the marches ensures that they must be treated as civilian demonstrations, and the capacity to weaponise such events is approached as a different issue rather than an integral part of the same problem.

Hamas' attitude concerning the marches is demonstrated by the way it accompanies the demonstrations with traditional methods of violence. For Hamas, civilian demonstrations do not represent a distinct struggle, but are incorporated as one of their

"IN THE FIRST YEAR OF THE MARCHES THERE WERE SEVEN ROUNDS OF FIGHTING..."

many tools within a doctrine of violent resistance. The expediency with which Hamas has utilised peaceful protest is evident in Yahya Sinwar's statement of 16 May 2018, when he commented that, 'This method of struggle is appropriate for this stage, but circumstances may change, and we may have to return to the armed struggle.'[283]

These remarks are particularly telling as they seek to assert that Hamas has chosen non-lethal protest over violence, whereas in reality these tactics complement violent resistance. In the first year of the marches there were seven rounds of fighting, during which 1,100 rockets and mortar shells were fired into Israel.[284] During the exchanges of fire in March 2019 outlined earlier, the threat of Hamas chief Ismail Haniya on 27 March 2019 that Gazans could 'march in their millions' on 30 March demonstrates the effective amalgamation of peaceful and violent resistance.[285] In this instance, the threat of escalation was followed by concessions in an Egyptian brokered ceasefire.

In a framework of indirect deterrence, the price of Hamas' restraint is dependent on the potential for violence, with the capacity to escalate increasing the value of this restraint. Hamas exercises its ability to restrain violence at protests in return for Israeli concessions. This is evident

"...THE CAPACITY TO CAUSE MORE HARM INJECTS A LEVEL OF URGENCY INTO EGYPTIAN BROKERED NEGOTIATIONS..."

from the quieter atmosphere of protests of 2 and 5 November 2018. Hamas reduced the numbers of protestors congregating, enforced a 500m separation zone from the fence and prevented its own operatives and those of other groups from firing rockets missiles and incendiary kites.[286] In the previous week Israel permitted a Qatari fuel shipment worth $60 million, and following Hamas' restraint Israel authorised further relief, although ceasefire negotiations quickly deteriorated after IDF agents were discovered in Gaza.

Moreover, the capacity to cause more harm injects a level of urgency into Egyptian brokered negotiations. These talks necessarily involve Hamas as the ruling party and undermine the PA's claims to be the legitimate governors of Palestine. The PA's easing of sanctions at Egypt's insistence in November 2018 indicates the way negotiations unavoidably undermine the PLO's stance that reconciliation must precede a ceasefire, and improve Hamas' legitimacy as rulers of Gaza.[287] Importantly, the easing of restrictions was achieved by restraining marches, not ceasing them entirely, allowing Hamas to retain the escalatory potential of the demonstrations in reserve.

Patterns of near automatic escalation favour the party that has the greatest capacity to increase

their opponents' costs whilst minimising the damage they receive in return. By incorporating sub-lethal methods into their broader framework of violence Hamas has improved its capacity to escalate and simultaneously undermined the ability of the IDF to respond with its conventional strength. The following response of Dr Amira Abo el-Fetouh to criticism after exchanges of fire in November 2018, although clearly propagandist in nature, contain an echo of truth:

> *This is short-sighted and those of this opinion have not yet understood the strategy of deterrence and what it actually means.*
>
> *We are not in a decisive war that will resolve the conflict. Rather, we are in one of its rounds. Whether we like it or not the conflict will be ended by a truce – or, let us say, a stabilisation of the truce – between the belligerent parties. Each party wants to improve its conditions and even impose its conditions on the other. This is what has happened with Hamas. Zionists were quick to ask for a truce.*
>
> *The only reason behind this request was that the Zionist foe realised the balance of power was not in its favour and that the Palestinian resistance now has the same deterrent power the Zionists used to consider a source of pride.*[288]

Conclusions

The Gaza Strip is a unique environment, and many of the lessons learnt by Hamas and the IDF are not easily transferable to other settings. However, some observations on their mutual relationship are relatable to theories of deterrence and airpower in general.

Firstly, the same limitations that critically undermined RAF air control experiments in Palestine continue to hamper the IAF. RMA inspired technologies and doctrine have been unable to overcome the difficulties associated with delivering discriminate force in urban areas against an organised enemy. The dramatic improvements UAVs, PGMs and improved networking offer have been unable to lift the 'fog of war' in the Gaza Strip.

This is in part due to the physical realities of delivering munitions to densely populated urban areas. Yet it also highlights a deeper criticism of state-centric models, that they presume that insurgents will be static when faced with innovation. A competent asymmetric enemy will avoid battle on terms that are favourable to conventional force, and build a coercion strategy that bypasses the state's considerable strength. By constructing a successful deterrence strategy based on Israel's centre of gravity, Hamas has been able to mould the remainder of its tactics around the limitations of airpower.

In some respects, the strengths of airpower can also act to undermine its coercive potential. The lower risks of airstrikes compared to ground offensives do increase the credibility of threatened force, as strategists can employ them with limited risks to humans or equipment. Yet this invariably means that airstrikes are used in situations where the state's commitment is lower, and perhaps in settings where they are less likely to succeed. In instances where the state's resolve is limited, insurgents adapt their pattern of operations to 'outwait' airstrikes. Through its use of tunnels and civilian shields, Hamas has mitigated the damage of airstrikes on its equipment and operatives. Simultaneously, it has constructed methods of harassment, such as rockets, offensive tunnels and incendiary kites, which have proven difficult to target from the air.

Hamas' compellence strategy also provides a reminder of how insurgents redefine victory by employing method-based tactics. By focusing on the process of resistance and exacting a cost from Israel for its policy, Hamas can claim success regardless of whether attacks strike their military objectives. Even impressive defensive measures, such as the Iron Dome, can be considered a success for the insurgent, as they have forced the state to act, and by doing so have made them pay a price. In a society that stresses its Qualitative Military Edge, any military action is invariably expensive.

The IDF's difficulties deterring Hamas reveal the problems associated with transposing conventional models to an asymmetric setting. A strategy based on efficient targeting is of little use against an enemy with few tangible manifestations of its power. Doctrines of excessive, pre-emptive, aerial force face difficulties in urban areas, against tactics designed to increase the civilian death toll of airstrikes. In this respect, Hamas provides a classic example of how insurgents exploit ambiguities in international law and perceptions to further their aims. The IDF's difficulties in Gaza highlight how it is necessary to reassess the value of conventional strength in an asymmetric setting, and recalibrate public expectations of what can and cannot be achieved from the air.

In its use of relatively primitive equipment to counter conventional strength, Hamas draws from a long tradition of insurgent adaptation. More novel are its moves into the 'sub-lethal' realm, tactics Hamas has exploited to increase its deterrent power. By employing violence below the threshold of war, Hamas has sidestepped the IDF's considerable conventional capabilities. Most importantly, the capacity to escalate sub-lethal tactics is key to understanding their coercive potential. These tactics supplement rather than replace Hamas' arsenal of violent resistance; by increasing the harm it can cause, Hamas has also increased the value of its restraint.

The success of Hamas' deterrence does not invalidate the efforts of the IDF to counter it. Significant tactical adaptation by the IDF, and the IAF in particular, has resulted in impressive technological achievements that have saved many Israeli lives. Nor should the success of Hamas' compellence be overstated: it remains a pariah in the international community, under sanctions and in the midst a steadily deteriorating humanitarian crisis. Yet still it exists, and, despite the best efforts of a nuclear power for over a decade, it continues to exact a cost from Israel for its policy towards Gaza. By redefining victory as endurance, for Hamas this can be considered a success.

Endnotes

[1] C. F. A. Portal, 'Air Force Co-Operation in Policing the Empire', *RUSI Journal* 82(526) (1937), 344.

[2] The term 'Lawfare' was popularised in an article of 2001 by Charles J. Dunlap. It refers to the use of law as a weapon of war; See Charles J. Dunlap, 'Law and Military Interventions: Preserving Humanitarian Values in 21st Conflicts', Paper presentation for the Humanitarian Challenges in Military Intervention Conference, Washington, 29 November 2001; For a summary of the discussion on 'Lawfare', see Charles J. Dunlap, 'Lawfare 101: A Primer', *Military Review* 97 (2017), 8-17.

[3] Daniel L. Byman, Matthew C. Waxman and Eric Larson, *Air Power as a Coercive Instrument* (Santa Monica: RAND Corporation, 1999), 131.

[4] Ministry of Defence, *Future Operating Environment 2035*, 14 December 2015.

[5] Ibid., 24-5.

[6] For a discussion on how 'airmindedness' is a frame of mind which begins on the ground, see James Robinson, 'Concealing the Crude: Airmindedness and the Camouflaging of Britain's Oil Installations, 1936-9', in *From Above: War, Violence and Verticality* ed. by Peter Adey, Mark Whitehead and Alison Williams, (London: C. Hurst & Co., 2013), 145-162.

[7] Ministry of Defence, *Joint Doctrine Publication 0-30: UK Air and Space Power*, December 2017, 5.

[8] For a summary of allegations of a policy of separation, see 'What is the "Separation Policy"', Gisha- Legal Centre for Freedom of Movement Position Paper (2012), 1-11.

[9] Thomas C. Schelling, Arms and Influence (London: Yale University Press, 2008).

[10] Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (London: Cornell University Press, 1996), 4.

[11] Daniel Byman and Matthew Wazman, *The Dynamics of Coercion: American Foreign Policy and the Limits of Military Might* (Cambridge: Cambridge University Press, 2002), 3.

[12] Schelling's definition of compellence is broadly the same as Pape's use of 'Coercion' as an effort to alter behavior. For this work, Schelling's basic definitions of coercion, deterrence and compellence have been adopted; Pape, *Bombing*, 6; Schelling, *Arms*, 69-78.

[13] For a defence of soft power in preference to military power, see Joseph Nye, *The Future of Power* (New York: PublicAffairs, 2011).

[14] Schelling, *Arms and Influence*, 2.

[15] Stu Patton, 'Deterrence at a Distance: Air Power and the Conventional Deterrence in the Emerging Global Environment', *Air Power Review*, 20(2) (2017), 158-9.

[16] Stein challenges the usefulness of rationality and the way it serves as a 'get out clause' to an elegant, but self-confirming theory. Her objections undermine the terminology of coercive theory, but not the theory itself and consequently commonsense notions of rationality will be incorporated into this paper. Janice Gross Stein, 'Rational Deterrence against "Irrational" Adversaries? No Common Knowledge', in *Complex Deterrence: Strategy in the Global Age*, ed. by TV Paul, Patrick Morgan and James J. Wirtz (Chicago: University of Chicago Press, 2009), 60.

[17] Byman and Wazman, D*ynamics of Coercion*, 5.

[18] Ibid., 38-44, Schelling, *Arms and Influence*, 3.

[19] Robert A. Pape, 'Coercion and Military Strategy: Why Denial Works and Punishment Doesn't', *Journal of Strategic Studies*, 15(4) (1992), 424.

[20] Ibid., 432-422, Byman and Wazman, *Dynamics of Coercion*, 36-7.

[21] For more on the mutual development of airpower theory and coercion, see Richard Overy, 'Air Power and the Origins of Deterrence Theory before 1939', *Air Power Review*, 20(2) (2017), 10.

[22] Giulio Douhet, *The Command of the Air trans*. by Dino Ferrari (New York: Coward-McCann, 1942; repr. Washington: Office of Air Force History, 1983), 8.

[23] Allan D. English, 'The RAF Staff College and the Evolution of British Strategic Bombing Policy, 1922–1929', *Journal of Strategic Studies*, 16(3) (1993), 408-431.

[24] Douhet, *Command*, 10; Mitchell wrote that aircraft meant 'entire nations are combat forces.' Billy Mitchell, *Our Air Force: The Keystone of National Defense* (New York: Dutton & Co, 1921), xxii.

[25] Douhet, *Command*, 15.

[26] Ibid., 51.

[27] Phillip S. Meilinger, *Bomber: The Formation and Early Years of Strategic Air Command* (Maxwell AFB: Air University Press, 2012), 19.

[28] Mitchell, *Our Air Force*, xxiv.

[29] English, 'RAF Staff College', 419.

[30] The target list compiled by USAAF planners at Air War Planning Division 1 (AWPD-1) in 1941 is the physical manifestation of the ACTS's industrial web theory; From the British perspective, at a War Cabinet in October 1940, Churchill made it clear that, although RAF targets were predominantly military, 'the civilian population around the target areas must be made to feel the weight of the war'; Philip S. Meilinger, 'The Prescient Planners of AWPD-1', *Air Force Magazine* (July, 2011), 72-75; Minutes of War Cabinet 280(40), 30 October 1940, 265.

[31] Clodfelter's work on Vietnam describes the galvanising effect heavy handed bombing campaigns can have on civilian resolve. See Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York: Macmillan, 1989).

[32] Walters' summary is a good starting point for discussions of air control; A. J. C. Walters, 'Air Control: Past, Present, Future?', *Air Power Review* 8(4) (2005), 1-20.

[33] Portal, 'Air Force Co-Operation', 343-358.

[34] Ibid., 350

[35] For a view on the psychological impact of airpower on tribesmen in the interwar period, see Michael A. Longoria, *A Historical View of Air Policing Doctrine: Lessons from the British Experience Between the Wars 1919-1939* (Maxwell AFB: Air University, 1992), 42; US principles of 'Shock and Awe' are laid down in Harlan K. Ulman and James P. Wade, *Shock and Awe: Achieving Rapid Dominance* (Washington DC: National Defense University Press, 1996).

[36] Portal, 'Air Force Co-Operation', 354.

[37] For an overview of the failure of air

control in Palestine, see David Omissi, 'Technology and Repression: Air Control in Palestine 1922-36', *Journal of Strategic Studies* 13(4) (1990), 41-63.

[38] Ibid., 45.

[39] Ibid., 56-7.

[40] For a critical appraisal of British air control, see Martin Van Creveld, *The Age of Airpower* (New York: PublicAffairs, 2011), 342-349.

[41] A. J. C. Walters, 'Air Control: Past, Present, Future?', *Air Power Review* 8(4) (2005), 1-20, 4.

[42] Although he does not reference the RMA explicitly, Walters argues effectively that technological advancements merit a cautious reappraisal of air control; Walters, 'Air Control', 1-20.

[43] The 'revolutionary' nature of the RMA has been contested, with some maintaining that the scale of the changes can more accurately be described as an evolution. For this paper, the validity of the concept is not as important as the influence that the ideas have had, whether they are right or wrong; For a contemporary reassessment of the RMA, see Collins and Futter's introduction in Jeffrey Collins and Andrew Futter ed., *Reassessing the Revolution in Military Affairs: Transformation, Evolution and Lessons Learnt* (Basingstoke: Palgrave Macmillan, 2015), 1-15; For a critique of the RMA as a concept, see Michael O'Hanlon, 'A Retrospective on the So-called Revolution in Military Affairs, 2000-2020', Foreign Policy at Brookings (2018), 1-20.

[44] For a discussion on how ACTS ideas fed into Warden, see Scott D. West, Warden and the Air Corps *Tactical School: Déjà vu?* (Maxwell AFB Alabama: Air University Press, 1999).

[45] John A. Warden, 'Employing Air Power in the Twenty-first Century', in *The Future of Air Power in the Aftermath of the Gulf War* ed. by Richard H Schultz and Rober L. Pfaltzgraff (Maxwell Air Force Base: Air University Press, 1992), 78-80; Warden's approach is evident in the RAF's conception of 'strategic attack', which is 'most effective when a wide array of targets are attacked simultaneously, causing maximum shock effect, placing significant stress on an adversary's processes and limiting their ability to adapt and react'; MOD, JDP 0-30, 33.

[46] Warden, 'Employing Air Power', 62

[47] Congressional Research Service, US Foreign Aid to Israel, 7 August 2019, 2.

[48] Collins and Futter, *Reassessing the RMA*, 2.

[49] Ariel Levite, *Offense and Defense in Israeli Military Doctrine* (Oxford: Westview Press, 1990), 47.

[50] 17 of the 22 members of the Arab League do not formally recognize the State of Israel, although many of these have effective working relationships with the nation; 'Israel International Relations: International Recognition of Israel', *Jewish Virtual Library*, 1 July 2019.

[51] Graham Allison (foreword) *Deterring Terror: How Israel Confronts the Next Generation of Threats. English Translation of the Official Strategy of the Israel Defence Forces*, 2015 trans. by Susan Rosenberg (Cambridge, MA: Belfer Center Special Report, 2016), 1.

[52] Ibid., 5.

[53] Ibid., 4.

[54] For a full discussion of Israel's pre-emptive and preventive attack doctrine see Karl P. Mueller, Jasen J. Castillo, Forrest E. Morgan, Negeen Pegahi and Brian Rosen, *Striking First: Preemptive and Preventive Attack in US National Security Policy* (Santa Monica: RAND 2006), 189-218.

[55] Allison, *Deterring Terror*, 16.

[56] Raphael D. Marcus, *Israel's Long War with Hezbollah: Military Innovation and Adaptation Under Fire* (Washington: Georgetown University Press, 2018), 8.

[57] For an explanation of Boyd's OODA loop, see Grant T. Hammond, ed., *A Discourse of Winning and Losing* (Maxwell AFB: Air University Press, 2018), 383-385.

[58] Stephens attributes the successes of the IAF in conventional warfare to its successful adoption of the 'Trenchard Model', based on national economic and technical strength; Allen Stephens, 'Modelling Airpower: The Arab-Israeli Wars of the Twentieth Century', in *Airpower Applied: US, NATO and Israeli Combat Experience, ed. by John Andreas Olsen* (Annapolis: Naval Institute Press, 2017), 452.

[59] Ben Gurion, David, 'Statement to the Knesset by Prime Minister Ben-Gurion', (2 November 1955).

[60] 'F-35 stealth fighter sees first combat, in Israeli operation', *BBC*, 22 May 2019.

[61] Douhet, Command, 35; That the war is known by some in the Arab world as the Naksa, or 'the setback' is revealing of both the different perspectives of the warring parties, but also of the way that individual conflicts are seen as part of an on-going narrative of violence between Israel and its neighbours.

[62] Stephens, 'Modelling Airpower', 447-582.

[63] 'The Lebanon War: Operation Peace for Galilee (1982)', *MFA* (2013).

[64] Reuven Erlich, 'The Road to the First Lebanon War', Meir Amit Intelligence and Terrorism Information Centre, 1 August 2012.

[65] David Ben-Gurion, 'Address by Prime Minister Begin at the National Defence College', *MFA*, 8 August 1982.

[66] Cohen scathingly describes the war as 'without a doubt, the most serious error committed by Israeli strategists in their fight against terror,' whilst Van Creveld labels it 'The IDF's greatest folly.' Even official sources label the operation 'a failure'; Samy Cohen, *Israel's Asymmetric Wars* (New York: Palgrave Macmillan, 2010), 43; Martin Van Creveld, *The Sword and the Olive: A Critical History of the Israeli* Defense Force (New York: PublicAffairs, 1998), 288; 'Lebanon War', *MFA*.

[67] For a discussion of the debate on 'New' and 'Old' wars see Mary Kaldor, 'In Defence of New Wars', *Stability* 2(1) (2013), 1-16.

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