

POLITICAL WEAPONS: MILITARY TECHNOLOGIES,
TERRITORY AND ISRAEL'S GEOPOLITICAL
MANAGEMENT OF SECURITY IN THE 2014 GAZA WAR

by

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ABSTRACT

This thesis applies a hybrid materialist epistemology that borrows from Object-Oriented-Ontology and Actor-Network-Theory to call for a more precise understanding of the political agency of military technologies in relation to the state, which avoids the corollary errors of subordinating technologies to human control, or reifying them with hegemonic power. Israel's conflict with Gaza – particularly the 2014 Gaza War and its context – is applied as a case to evaluate the more-than-human complexity of geopolitical phenomena in which the state enrolls military technologies to stabilise itself as an object. However, these technologies become *excessively* entangled with human agencies and the elemental in complex and volatile ways. Three empirical studies work through the territorial volume of Gaza-Israel to illustrate this: 1) *Surficial* applies the Israeli military's use of 'statistical' artillery in urban warfare in Gaza to consider the unruliness of technologies' political agencies that arise from their ambivalent capacities; 2) *Subterranean* narrates the limitations faced by Israeli techno-scientific attempts to locate cross-border tunnels when confronted with the combination of Hamas' insurgent strategy and geophysical materialities underground; 3) *Aerial* evaluates the role of the Iron Dome missile defence system within the security atmosphere of the Western Negev to illustrate how technologies transcend and confound human intentionalities in governing security. These case studies demonstrate that to produce more sophisticated explanations of war, geopolitics must attend more closely to the specificities of place to account for the formal, practical and everyday interrelations between human, geospatial and technological factors that constitute a given conflict. Technologies' imbrication in conflict must be also considered through the dynamic contestation and negotiation between their material agencies, their limitations and the enrolment of their underlying ontological capacities with divergent human political desires.

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¹ Slesinger, I. (2018) 'A cartography of the unknowable: technology, territory and subterranean agencies in Israel's management of the Gaza Tunnels', *Geopolitics*.
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N.B. Some brief contextual elements from the article have been moved elsewhere in the thesis for continuity purposes.

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LIST OF ABBREVIATIONS

ANT- Actor-Network-Theory

APC- Armoured Personnel Carrier

BDS- Boycott Divestment and Sanctions (Palestinian movement)

DARPA – [United States] Defence Advanced Research Projects Agency

DT- [Israeli] Development Town

FCO- [UK] Foreign and Commonwealth Office

FDEM- Frequency Domain Electro-Magnetic imaging

GPR- Ground Penetrating Radar

IAF- Israeli Air Force

ICBM- Intercontinental Ballistic Missile

IDF- Israel Defence Forces

IGO- Inter-Governmental Organisation

IHL- International Humanitarian Law

LOAC- Laws of Armed Conflict

MAD- Mutually Assured Destruction

MAFAT- [Israeli] Administration for the Development of Weapons and Technological Infrastructure (acronym transliterated from Hebrew)

MAG- [IDF] Military Attorney General

MBM- Campaign Between Wars (acronym transliterated from Hebrew)

MENA- Middle East North Africa

MoD- [Israeli] Ministry of Defence (not to be confused with its UK counterpart)

MoFA- [Israeli] Ministry of Foreign Affairs

MTG- “Mowing the Grass”

NGO- Non-Governmental Organisation

OOO- Object-Oriented-Ontology

PGM- Precision Guided Missile

PIJ- Palestinian Islamic Jihad

PLO- Palestine Liberation Organisation

PNA - Palestinian National Authority [sometimes abbreviated as the PA (Palestinian Authority)]

RMA- Revolution in Military Affairs

STS- Science and Technology Studies

UAV- Unmanned Aerial Vehicle

UN- United Nations

UNHRC- United Nations Human Rights Council

UNITAR- United Nations Institute for Training and Research

UNRWA- The United Nations Relief and Works Agency for Palestine Refugees in the Near East

CHAPTER 1. INTRODUCTION: RETHINKING TECHNO-POLITICS THROUGH THE GAZA-ISRAEL CONFLICT

1.1 Recalibrating technological agency

The research for this thesis began in September 2015 with a visit conducted over several days to the Defence and Security Equipment International arms industry trade exhibition, which is held at the ExCeL Centre in London once every two years. Its organisers promote it as “the world leading defence and security event,” and the 2015 edition included “over 1,500 exhibitors from 53 countries [presenting]... [t]he full spectrum of platforms, systems, equipment, technologies and services needed to meet longstanding and emerging threats...” (DSEI, 2015: 28). Three distinct ethnographic moments from this event stuck in my mind long after I attended the event. The first was a bold claim made to me by a sales representative for the Danish company Systematic, a developer of computerised Command and Control software platforms, which are designed as a spatial tool for commanders to manage military operations and battles. He stated to me unequivocally that his company’s product “has lifted the fog of war,” alluding to the 19th century Austrian military theorist Clausewitz’ famous concept that a defining characteristic of war is its chaotic uncertainty.

The second moment was my experience of a virtual reality simulation designed for training specialist military personnel to mark targets for laser-guided bombs during battle scenarios. The task was a presumably simple one, to pivot a pair of binoculars on a tripod across a digital projection of an imaginary battlespace – which was a simulacrum of a Middle-Eastern desert landscape with palm trees and mosques, albeit one bizarrely inhabited by

hordes of zombies and giant monsters attacking fleeing civilians – and push a button on the binocular device to activate the laser to mark a hostile target, whilst avoiding causing any civilian casualties. However, what became quickly apparent was that once a selected target was bombed, the cloud created by the explosion blocked the targeter's view of spatial depth, making the accurate identification of any potential target behind it impossible for a considerable amount of time.

The third moment was part of a fascinating discussion with a US Army attack helicopter pilot. He related a story to me about an absurd exchange he had with a Predator Unmanned Aerial Vehicle (UAV) operator located at a military base in Nevada, whilst conducting a combat operation in Afghanistan at approximately 11am local time. The Predator UAV was meant to be providing reconnaissance support for the pilot's mission, and the remote operator asked the pilot whether he needed night vision for the Predator's aerial camera feed, even though it was bright daylight in the battlespace. The reason for this misunderstanding was that the time zone in Afghanistan is 12 hours and 30 minutes ahead of Nevada, meaning it was late at night in Nevada when the UAV operator made his suggestion.

These three disparate and contradictory presentations of what technologies can or cannot do in war suggests that a paradox exists in how military technologies are represented in contemporary discourses, one which also affects the social sciences. The first moment depicts contemporary military technologies as hegemonic, omniscient and omnipotent. The second moment suggests that technologies are in actuality weak, intrinsically flawed and

subordinate to human agency. These binary discursive representations of military technologies are not the error or fault of one particular political or intellectual position, and occur in both normative strategic thought (Gray, 2010; Boot, 2006; e.g. Gray, 1997; van Creveld, 1989) and the scholarship in critical geopolitics opposing it (Shaw, 2016, 2017a; Shaw and Akhter, 2014; Graham, 2010a, 2012; Gregory, 2011a). This indicates a pressing need for a more precise accounting of the relationship between military technology and the state.

In comparison with the other two accounts, the third moment from the above paragraph gives a more sophisticated problematisation of technological agency by situating technological agency relationally to its spatio-temporal context or environment. Such an approach can give a more realistic and nuanced sense of what technologies are and what they can or cannot do. Bearing in mind this imperative to recalibrate the representation of technological agency, the research question this doctorate sets out to address is: *in what ways do advanced military technologies have political agency and what is the extent of their agencies in relation to the state?* In order to answer this question, it is first necessary to set the contextual parameters in which agency becomes apparent, and the comparative framework through which agentive potential can be measured.

This thesis draws from several related strands of more-than-human theory to construct a more incisive analytical framework for critically interrogating the nature of technology in war, which can better explain the varied ways that technologies can be agentive as political actors in geopolitical conflicts. Whilst there are some significant contestations both within and between each of these branches, they all share a similar

ontological emphasis on the power of nonhuman agencies to shape the world. Philosopher Graham Harman's Object-Oriented-Ontology (OOO) figures prominently as an analytical model throughout the thesis. Its conceptualisation of objects as ontologically stable provides a useful paradigm for thinking through the state in terms of its empirical realness. Furthermore, applying OOO's analytical test of "duominging" (Harman, 2016: 7-13) to detect instances in which technological agency is being overdetermined or underdetermined, or paradoxically both, is also useful for explaining the problem of how technologies are frequently depicted in discourses on military power.¹ However, OOO does not necessarily offer a better epistemology than the other theoretical approaches that have a more subtle influence on this thesis, namely Actor-Network-Theory (ANT) and assemblage theory. Consequently, this thesis uses the productive differences and tensions between these three theoretical models to inform its analysis.

The central argument the thesis makes is that a given technology's agency must be assessed carefully in relation to its interaction with other human, technological and elemental agencies, as well as the excessive immanence that comes about through the convergence of these agencies in a particular place. Reference to *excessive* capacities, powers and agencies will be made throughout this thesis to convey the 'more-than' quality through which an object or event becomes more powerful than the sum of its parts through its ontological convergence within and with a given spatial environment. Sources of agency might include individual and group subjectivities or actions, political institutions, juridical

¹ See section 2.4 for a more detailed explanation and exemplification of the concept of duominging.

regimes, other competing or supporting technologies, and endemic geophysical properties and processes. Attention must be given to the processes that variably produce, operationalise, or counteract a specific technology within its environment, rather than ossifying technological agency as a fixed and symmetrical relation to all other forms of agency.

A helpful way to think more fluidly about the extents of the agencies of particular military technologies is to analyse them in terms of their capacities (or interchangeably capabilities), and conversely their limitations. The concept of a technology's capacities as it is used here refers to a technological object's intrinsic properties that allow it to act in a specific way at a particular time and in a particular environment. It is important to clarify that these capacities sometimes exceed the instrumental utility of a technology through the affective potential that emerges through the object's imbrication in its environment. Likewise, the limitations of a technology as discussed in the present research can be defined quite simply as what a technology cannot do based on its intrinsic properties. These limitations are both inherent to a given technology's design and purpose, as well as the inertia that occurs when that technology comes into relation with the complex spatiality and temporality of its environment, the agencies of other technologies and competing human agencies and desires. These corollary concepts of capacities and limitations will be referred to regularly throughout the analytical chapters to evaluate how the technologies being examined exist in the world, and what they can or cannot do materially and politically.

1.2 Space, place and geopolitics

To bring into clearer focus the thesis' primary concern with the geopolitical co-constitution of technologies and the state, attention will now turn to how the broader theories of material agency mentioned above can be applied to several recent thematic interventions in political geography as a programme for spatial analysis. The division of the thesis' empirical discussion of the Gaza-Israel conflict² into surficial, subterranean and aerial aspects is a mode of thinking about political space directly influenced by Elden's (Elden, 2013a) article "Secure the volume: vertical geopolitics and the depth of power." This volumetric geopolitical perspective on the spatialisation of military technologies in war calls for a shift from a flat two-dimensional reading of territory as a cartographic representation onto which state power is delineated and projected, to a fuller, three-dimensional consideration of the space of territory as a materialised volume through which geopolitical power is generated. Gordillo's (2018) work on terrain as a complex and ambivalent source of agency in conflict adds a rich topological dimension when combined with Elden's volumetric consideration of territory. This synthesis is useful to evince how the variegated constitution of the Earth's topology has a profound role in shaping the spatial and temporal

² A note on terminology — Whether the conflict between Israel and Palestine are written when describing the conflict, e.g. 'Israel-Palestine' or 'Palestine-Israel' (often with a slash instead of a hyphen) is often a shibboleth of the author's position about the conflict in favour of either national group. In order to unsettle this binary, this thesis will order the parties alphabetically using 'Israel-Palestine' when referring to the broader historical conflict between Israel and the Palestinians, and 'Gaza-Israel' when referring to the contemporary conflict between Israel and Hamas and its allies in Gaza. Likewise, a hyphen is used to separate the spatial entities instead of a slash in order to highlight the spatial, social and political continuities and elisions between them rather than assuming their binary separation.

dynamics of conflict when considered as a factor that counteracts territorial control together with spatial depth and reach.

Another source of influence for this thesis is the body of literature that emphasises the importance of elemental geographies (Squire, 2016; Steinberg and Peters, 2015) for enriching a spatialised understanding of politics. It calls for putting the 'geo' back in geopolitics by being attentive to the ways in which the geophysical elements that compose the Earth's spatial density such as rock, soil, water and air are politically salient. Whilst the primary theoretical contribution of this research is concerned with the political nature and extent of technological agencies, the thesis draws conceptually from the elemental geographies literature in order to demonstrate how a detailed consideration of the relationship between political desires, technologies and the geophysical properties and processes endemic to a particular place can reveal new and productive insights about the roles of technologies in producing geopolitical phenomena and influencing geopolitical processes. This is especially valuable for understanding situations of war and violent conflict, which come about and are perpetuated through technologies' ontological imbrication in particular spatial configurations.

Finally, being attuned to how technologies have affective potentials to influence atmospheres of security (Adey, 2014) and insecurity contributes to a critical understanding of the biopolitical dimension to the statist project of the spatial management of security. The concept of affective atmospheres convincingly explains the chemistry through which the interaction of subjects' experience with technologies and space becomes politically significant (Fregonese, 2017). However, caution must be exercised to avoid falsely ascribing

to technologies the hegemonic power to produce reified dispositions of security. Rather, technologies sometimes have precarious affective relations in producing atmospheres, which can shift from a sense of security to insecurity, and can vary depending on a particular individual or social group's disposition and positionality.

1.3 The Gaza-Israel conflict as an example of technological agency

This research uses the State of Israel's activities in the ongoing Gaza-Israel conflict – and in particular the events, practices and security infrastructures surrounding the 2014 Gaza War in both Gaza and the Israeli home front³ – as an empirical resource to assess the extent to which military technologies influence the state. This particular geopolitical imbroglio makes an ideal case for elucidating the research aim the thesis sets out to address because of its profound complexity, and its widespread and varied application of military technologies. Both the Israel Defence Forces (IDF) and the dominant narrative from the state's political echelon emphasise Israel's technological superiority as a strategic asset. Furthermore, in public and academic discourses about the Israel-Palestine conflict there are some pronounced, and sometimes problematic, logics and discourses regarding the state's use of technology, both from within the Israeli establishment and from its external proponents and critics. In addition to making a broader contribution of advancing a more precise rendering of technological agency in political geography, this thesis also works to

³ The spatiality of Gaza and the Israeli home front is contiguous and enmeshed, and must be treated as such. Hence, throughout the thesis this “territorial volume” will be referred to as the Gaza-Western Negev region or envelope, or Gaza-Israel, whilst reference to Gaza, Israel, Palestine, the West Bank denotes them as non-contiguous and bounded territorialised political arrangements, although these should be understood as produced through practices, events, materialities and discourses, rather than *a priori* natural divisions of space.

add some degree of critical and nuanced insight to the often hyperbolic discourse about the role of Israel's military technologies in the Gaza-Israel conflict.

Somewhat predictably, the internal debates within Israeli political discourse regarding the capabilities of technologies to produce security echoes the broader polarisation over technologies' political agency outlined earlier. On one hand, some Israeli politicians and influential advisors, as well as Israel's formidable homegrown defence industry and their backers in the state's Ministry of Defence (MoD)⁴, frequently evoke a naïve faith in the innovation and resourcefulness of Israeli engineers to invent complete solutions that can indefinitely manage complex geopolitical problems. This way of thinking is typified in a recent op-ed piece from the left-leaning Israeli news outlet *Haaretz* written by Peter Lerner, a former high-ranking spokesperson for the IDF turned communications consultant advising the peace process. He writes that "technology and safety measures must be devised to safeguard the strategic depth that a two state solution would require for Israel's security" (Lerner, 2018). In this view, technology can be applied as a limitless bureaucratic resource to enact spatial control instead of seeking other more challenging and indeterminate kinds of political solutions.

A contradictory trope admonishes this technocentrism, instead suggesting that Israel's reliance on technology is a fundamental weakness and that leaders have become oblivious to "the danger entailed in over-reliance on technology at the expense of the human factor" in conflict (Kober, 2011: 724). This neo-traditionalist approach calls for a

⁴ Not to be confused with the British MoD.

return to an imagined past in which the IDF's culture of command supposedly reaped long-term rewards by focusing on the "non-material components of military build-up, such as professional education, training or doctrines" over the more instantly gratifying but superficial allure of technological dominance (Kober, 2016: 10). However, this revisionist interpretation underplays the IDF's historical self-narrative of technological superiority as a determining factor of its success (Adamsky, 2010: 114) from the time of the 1967 Arab-Israeli War onwards as a qualitative strategy for overcoming its quantitative weaknesses in force size and territorial depth relative to what Israeli security doctrine considers the hostile Arab states surrounding it (Cohen et al., 1998: 24; Handel, 1994: 550).

Another way in which military technology is politically significant in the Israeli case is the application of a neoliberal logic by political leaders, business interests and supporters that transforms the state's technological management approach to the Israel-Palestine conflict into an economic resource, which allows the country to punch above its weight in the global economy relative to its small size. One example of this is how Israel's defence industry cultivates a reputation for innovation by highlighting how it has gained a unique level of experience and expertise through creating technological solutions out of necessity due to Israel's persistent regional conflicts. It also touts the reliability and effectiveness of its products through its distinctive ability to assure clients that its products have been "combat proven" through field-testing by actual use in these conflicts, including Gaza (Machold, 2015: 817). A second example is the "start-up nation" phenomenon (Senor and

Singer, 2009: 20).⁵ This refers to the proliferation of small-scale 'start-up' ventures, typically based in Israel's creative and business hub of Tel Aviv, that develop innovative software applications, then sell them on to large technology corporations at a vast profit after the company's market value has increased exponentially over a relatively short time. The improbably frequent success of these small enterprises has been partly attributed by press commentators, economists and Israeli political and business figures to the technical, computing and problem solving skills gained by young entrepreneurs through training and vocational experience in the conditions of active conflict during their period of the mandatory conscription in the IDF, particularly for those who served in the 8200 intelligence unit (Senor and Singer, 2009).

The diametric discourses about technology within Israeli society resemble the dichotomy presented by the theoretical critique of dualism. The commonality shared by each of these seemingly opposing positions is an instrumental treatment of technological agency as a governable force that can be easily tamed to serve desired goals and interests. The advocates of technological solutions evince an obvious technological determinism that regards innovation and the power of objects as a panacea to ensure Israel's geopolitical security. Alongside this position sits the enthusiastic cheerleading of military technologies, and their outgrowths, as a wellspring of economic stimulus to produce social good through increased national prosperity. Both of these attitudes are well-attuned to the powerful

⁵ It should be noted that although the 'start-up nation' idea has been advanced by its supporters as a unique product of the Israel's economy, society and culture, similar arguments have also been made for a particular convergence of factors spawning entrepreneurial technological innovation hubs in other geographical locales (Das, 2015; Foord, 2013; Anon, 2010; Chacko, 2007; Roper and Grimes, 2005).

potentials that technologies have to bring about change in the world. However, they betray a hubristic disregard for the limitations, fallibilities, excessive capacities or unpredictable and emergent consequences that will inevitably become apparent over time when a technology is spatially deployed.

Oppositely, the emphasisers of human factors are acutely aware of the limitations of technological agency. However, they subordinate technological agency to a function of human agency by suggesting that technologies are a tool to achieve an objective, and that the planning of their use is the decisive factor in creating change. This attitude is equally short-sighted because it ignores the ways in which technologies can and do act in ways that exceed the internationalities of planners and decision-makers. What both the technocentrists and anthropocentrists do though, despite their apparent antagonism to one another, is duomine the agencies of technological objects. Both camps undermine the tractability of military technologies to follow a simplistic chain of causation towards an anticipated end, whilst simultaneously undermining their powerfully destructive and injurious capacities.

To present an alternative model of technological agency, this research will develop and work through several in-depth case studies that evaluate Israel's technological management of conflict within the specific environmental arrangement of the Gaza-Western Negev area. In keeping with the unifying argument of this thesis, evaluating how military technologies exist and act to reshape and recondition the spatial processes and configurations of security and violence within geopolitical conflict can stimulate novel

conclusions that transcend didactic polarisations about the extent that, and means by which, technologies can secure against danger.

Equally, this thesis undertakes to unsettle the dualistic reification of state power that appears frequently in radical critiques of Israel's use of military technologies against Gaza. These positions are entrenched in a post-colonial worldview that constructs a Manichean dynamic of Israel perpetuating conditions of neo-imperialist domination and "exploitation" (Roy, 2012: 86-87) in a pre-meditated way against a victimised and passive Palestinian population. Israel is undoubtedly a more powerful object relative to Palestinian political groupings, and its techniques for securing its own population and territory in the Israel-Palestine conflict most certainly violate Palestinians' human rights, and in some cases injures or kills them. However, these radical arguments demonstrate a calculated obliviousness to how the reciprocal entanglement of violence in the conflict reproduces and reinvigorates its dynamics. Rather, radical scholars attribute to Israel an *a priori* oppressive nature based on hypotheses of underlying logics or pre-meditated causality, which vary from callous indifference to wanton malice. According to Gregory (2004: 249), Israel's oppression of the Palestinians comes from a distant "imaginative geography" of the Other that makes acceptable its use of military technologies. Gregory's argument, however, does not adequately consider the actual geography of claustrophobic proximity and incursion that condition the violence of the conflict, and informs the application of technologies by the Israeli state. In contrast, Khalidi (2014: 7) accuses Israel of intentionally perpetrating a "sinister strategy" that applies extreme violence as a political tool. Even starker accusations imply a sadistic malevolence to Israel's motives, claiming that Israel uses Gaza as a

“laboratory” for the experimental “maiming” of Palestinians with lethal and injurious weaponry (Puar, 2015: 17) and testing techniques of biopolitical and spatial control (Li, 2006: 38-39) that can be exported elsewhere by Israel and its arch-imperialist ally the United States (Graham, 2010b: 39). What is arguably the most extreme position about Israel’s intentions in its handling of the conflict accuses Israel of conducting a calculated programme of genocidal eradication of the Palestinian people (Rashed and Short, 2012: 1160; Pilger, 2009: 10).

Several recent radical critiques of Israel, particularly with regard to the Gaza conflict, cast technologies and infrastructures as the primary instrumental means by which the Israeli state exercises its total spatial, economic and biopolitical control over Palestinian lives and land (Tawil-Souri, 2012; Jabary Salamanca, 2011; Weizman, 2007). These subordinations of technological agencies to the state’s supposed absolute control ignore the capricious and disorderly power of these agencies to exceed bureaucratic intentionalities. These radical positions also fail to produce a paradigm that can account for the actual temporal and spatial dynamism of political geography in the world by ascribing an excessive degree of power to the state that ignores the ways in which social, political, economic, and material forces impinge on state power. Ultimately, these arguments fall into the trap of duoming technological agency. They undermine the power of Israel’s military technologies by claiming that they enable total biopolitical control over Palestinians in the Occupied Territories, whilst simultaneously undermine their agencies by subordinating the same technologies’ agencies to the anthropocentric political motivations and will of the Israeli state.

The reason for Israel's intensive, and often extremely repressive, use of military technologies instead becomes clearer when a theoretical approach of the state as an object is applied in accordance with Harman's definition of the object described in the first part of this introduction. The heterogeneous internal agencies encapsulated by the state must do constant work to maintain its equilibrium and coherency as a holistic entity. Working against this object are countervailing agencies, including both materialities that lack teleological goals but are a source of inertia, and other objects, whose struggles for viability bring them into conflict with the first object. In the Gaza-Israel case, there are a range of competing objects, as well as some allied objects, due to the geographical and political situation of the state. It would be too lengthy and complicated to comprehensively list all of these factors. However, the chief adversary against the Israeli state is the Palestinian territory of Gaza, and its symbiotically connected object of Hamas, the Islamist political party-cum-militant group that exercises *de facto* political control within the territory, as well as other Palestinian political and militant organisations such as Palestinian Islamic Jihad (PIJ). Hamas' existence as an object is bound up with Gaza's existence, and the organisation quite literally defines its *raison d'être* as resistance to the Israeli state.⁶ This reflects in its own technological and military practices in relation to the geophysical environment.

In addition to the scope for making targeted interventions in area-specific debates on the role of technologies in the Gaza-Israel conflict, there are other significant

⁶ Hamas is an Arabic acronym for *Harakat al-Muqawwma al-Islamiyya*, which translates into English as the Islamic Resistance Movement (Caridi, 2012: 36).

methodological and epistemological reasons for choosing this conflict in particular as the focus of this research. One of the prime methodological considerations for a study of the state is how and what information will be obtained from an organisation that is both disproportionately powerful and deliberately secretive, especially when the topic of enquiry is as sensitive as military technologies. The Gaza-Israel conflict has been extensively documented in the news media, academic literature, and Inter-Governmental Organisation (IGO), Non-Governmental Organisation (NGO) and think tank reports, and also by the belligerent parties themselves. This means that there is a rich resource of source material to draw from in the public domain, which makes obtaining useable data more practical, considering the often clandestine natures of both military technologies and state security practices.

Finally, but crucially, the Gaza-Israel conflict powerfully situates the question of technological agency in war within political geography's epistemological concern with the ways in which politics and space are coproduced. As Chapter 4 will illustrate, this conflict has a complex and specific spatiality due to the historical processes that have led to both polities' present territorial arrangement, the close proximity of the two territories, and the spatial dynamism of warfare and security practices that have taken place in the conflict. These spatial dimensions, along with the particular conditions of the terrain in the Gaza-Western Negev area, are a catalysing font of agency through which military technologies come to matter politically in the conflict. Because of this fundamental significance, space is the underlying analytical concept through which political phenomena will be understood in this

thesis. The unifying theme of spatiality that runs through all of the chapters will be emphasised in the overview of the thesis structure that follows.

1.4 Chapter outline

Following this introduction (Chapter 1), the first part of the thesis establishes the groundwork and context for the present research. Chapter 2 provides a literature review which aims to outline the disciplinary and cross-disciplinary thinking that influences this research. In doing so, it will work to relate several theoretical strands of more-than-human theory that advance the case for how nonhuman agencies coproduce the world with perspectives on the dimensions of state power in geography, anthropology, sociology, history, international relations and war studies, and more specific scholarly debates about the significance of military technologies in political affairs. Chapter 3 gives a discussion of the methodological approach underpinning the research, with an emphasis on addressing the problematique of how to research the complex and challenging object of the state in relation to violent conflict. Chapter 4 shifts focus to the empirical theme of the contemporary Gaza-Israel conflict. It outlines the historical and contemporary factors that have produced Gaza's present territorial arrangement and circumstances, as well as evolution of the geopolitical, juridical, security and strategic logics adopted by the Israeli state to manage its troubled relations with the territory.

The crux of the thesis is three empirical case studies that work through the application of technologies to secure the territorial volume of Gaza-Israel in and around the 2014 Gaza War. These case studies use particular events or technological practices to

illustrate how the imbrication of humans, technologies and territory produces an excessive power dynamic through their amalgamation that becomes more volatile and complex than the sum of the individual parts. These empirical chapters are sequenced in a way that may appear counter-intuitive: *Surficial*, *Subterranean*, *Aerial*. Whilst this does not correspond to a sequential cross-section of the territorial volume, the messiness of the chapter order is in itself epistemologically productive because it reflects the messy actuality of territory., Furthermore, aspects of each case study build on the groundwork laid by the chapters that precede it. This layered approach to the volume is a heuristic device to make the narrative adhere around the unifying analytical framework of the heterogenous, topologically variegated and multi-dimensional spatial arrangement of territory. Reconceptualising the Gaza case through the complex interplay between technological objects and the aerial, surficial and subterranean aspects of the earth gives the depth and holistic scope necessary to further an enhanced theoretical understanding of the profound imbrication of technological agency and space.

The first case study *Surficial* (Chapter 5) examines the implications of the Israeli state's use of technological capacities to spatially manage the convoluted terrain of urban warfare in Gaza in the context of formal geopolitics. The empirical discussion presented in this chapter demonstrates how technological agencies can affect the political legitimacy of the state through their action or inaction, and presence or absence in relation to the complex topology of the built environment. Next comes *Subterranean* (Chapter 6), which relates how an amalgamation of environmental factors affected the underground conditions of the Gaza-Western Negev area in a way that undermines the IDF's attempts to locate

Hamas' cross-border tunnels. This case considers the practical geopolitics of how techno-scientific expertise is applied to manage geopolitical concerns. In doing so, it explores where the limitations to technological agency lies in relation to other forms of geopolitical agency. The third case study, *Aerial* (Chapter 7), looks at the Iron Dome missile defence system deployed in the atmosphere above the Western Negev as a solution against Palestinian militant rocket attacks. This example demonstrates how technological objects are both imbricated in, and mediate, the everyday geopolitics of security in ways that can be ambivalent and unpredictable.

Following on from this empirical core, Chapter 8 draws from these case studies to formulate analytical conclusions regarding how technological agencies exist and act in conflict, and what light this sheds on the nature of the state. It will respond to the need argued here for a more precise theoretical conceptualization of technological agency in political geography by suggesting an analytical paradigm that offers a more nuanced explanation for their power. Put succinctly, this model proposes that political objects work to stabilise their ontological coherency by variably exercising their capacities as agencies in relation to counteracting limitations and the dynamic *interplay* of technological, socio-political, and geophysical factors that affect them.

CHAPTER 2. THE TECHNOLOGICAL MANAGEMENT OF GEOPOLITICAL INSECURITY: A REVIEW OF THE LITERATURE

2.1 Introduction

This chapter will review the areas of literature that are essential to establishing and comprehending the main arguments of this thesis. As outlined in the introduction, it seeks to redress the paradoxical rendering of military technologies in studies of violent conflict and war across the social sciences, in which technologies diametrically either exercise hegemonic powers, are instrumental to human agency, or improbably both. This problematique is elucidated through the conceptual tool of “duomining” borrowed from OOO (2016: 11). A hybrid theoretical approach derived from this tool will be applied in the chapter to construct an epistemological foundation for the thesis as a whole. This will draw from a comparative evaluation of OOO’s ontological claim in response to the paradox of duomining, which states that an object’s existence in the world is more meaningful than its agency and precedes its action. Assessing the strengths and weaknesses of OOO alongside the different but related more-than-human ontologies of ANT and assemblage theory will allow for the most valuable aspects of each theory to be selectively applied, and the productive tensions between them to be exploited, in order to produce an empirically-grounded and enriched geopolitics that is better able to account for technologies’ political agency in a realistic and cogent way.

One of the central arguments of this chapter – and in the thesis as a whole – is that in order for such a geopolitically relevant version of “techno-politics” (Mitchell, 2002: 42-

43) to make sense as an empirical programme, technological agencies must be understood contextually through their imbrication in space and place. As such, technologies will be examined here through several conceptual framings of geopolitical space in the literature, including territorial, elemental, imagined, and visualised framings.

Moving from an emphasis on space as a generality to discussions within political geography about the role of place specificity in geopolitics, a call is made here for an approach that comparatively explores the commensurabilities and differences in the technological co-constitution of place in a given conflict in relation to other conflicts elsewhere as an impetus to develop more sophisticated theorisations about the dynamics and conditions of geopolitical violence. It will also begin to link these broader discussions from the literature to the research's place-specific empirical focus on Israel's use of technologies to spatially manage security in its conflict with Gaza. The Israeli case is particularly appropriate here since these events are closely tied to repeated shifts in practices and technological solutions through which the state has attempted to manage the exigencies of asymmetrical warfare taking place in spatially complex environments such as confined urban areas and underground labyrinths.

Such an approach must include a consideration of how the concept of security and the anticipatory logics of risk and resilience are applied by the state through the heterogenous material volume of the Earth in a way that exceeds the flat conceptualisation of territory as a political instrument. Security is treated here as a materialisation of people, technologies, practices and knowledges that coalesces in response to "some form of dangerous supplement to the present that threatens to bring disappearance, damage or loss

to a valued life” (Anderson, 2010a: 229). The section that follows will attend to several theorisations of security that are foundational to the thesis’ analytical discussion, and discuss how states’ security logics operate through the “social technology” of risk “by means of which the uncertain future, be it of a catastrophic nature, is rendered knowable and actionable” (Aradau et al., 2008: 150).

2.2 Security, technology and risk

A key question asked by this research is how does the Israeli state use technologies to manage the danger presented by the political violence that emerges from geopolitical instability, and reciprocally to what extent do these technologies influence the political decision-making processes and practices of the state? Interrogating the relationship between technology and insecurity through a materialist geographical framework reappraises the extent to which the state’s “monopoly on violence” – which Weber (1946: 83) asserts is the source of the state’s authority to exercise territorial sovereignty – can in fact protect its citizens from existential threats by delegating to technologies the power to distinguish and reinforce the spatial and biopolitical boundaries of threat. The state’s monopoly on violence both within its borders, and ostensibly beyond during the exceptional circumstances of war, produces power from sovereign control over what Agamben (1998: 6) would later call “bare life,” that is the biological existence and right to life or death of the individual. This coercive potential is exercised through the apparatuses of the state including, but not limited to, the military and the police.

This concern over the nature of the social contract is an implicit element of the corollary concepts of security and danger, which are spatially derived from statist conceptions of exteriority and interiority that can be traced to the political theory of Carl Schmitt (Minca and Rowan, 2016; Sparke, 2006). This inflects the dialogic relationship between militarised security and geopolitics that derives from the Structural Realist school of international relations, which is entrenched as the normative position on security for state foreign policy and military practitioners. It depicts the international political system as “decentralised and anarchic” (Waltz, 1979: 88), and thus privileges the agency of the nation-state to act rationally to secure its territory and global interests through the exercise of statecraft primarily in the form of military power, diplomacy and trade (Mearsheimer, 1990, 1994; Walt, 1991; Waltz, 1979). According to Mearsheimer (1990:6), a prominent structural realist, nation-states produce security through their coercive power and “the distribution and character of military power are the root causes of war and peace.” This necessitates a state to have a large and capable military force in order to create a balance of power in which no state will have a clear military dominance. According to this logic, a *status quo* of deterrence is the desirable outcome of this concentration of military power, since it is in the mutual interests of competing states not to attack each other due to the uncertainty and bloody consequences of the outcome of a violent conflagration. The apotheosis of this worldview is the Mutually Assured Destruction (MAD) doctrine brought about by the Cold War nuclear arms race between the USA and the USSR. This normative and state-centric conceptualisation of deterrence will be contrasted in section 4.5 against the idiosyncratic interpretation of deterrence that is prevalent in Israeli security doctrine, which relies on the

active application of overwhelming violence in order to produce the nominal condition of peace against both state and non-state/quasi-state opponents (Rid, 2012).

Structural realism's tendency towards myopic emphasis on the state as both the source and the basic unit of security and violence ignores how states' growing concerns about the governance of terrorism (Amoore and de Goede, 2008), non-state and quasi-state insurgencies and trans-national criminal networks (Kaldor 2012) influence how security is objectified, rationalised and operationalised. In contrast, Post-structuralist security theory, while not a unified body of work, is heavily influenced by Michel Foucault's (2009: 108) concept of "governmentality." It describes a shift in the locus of the state's power away from the Westphalian spatial order, in which the territorial integrity of the nation-state is a container for sovereignty, to a sovereign regime that directs political control both at and through the population. In this way, territory becomes a calculable variable instead of a static foundation for governing the population (Elden, 2007: 563, 578). Post-structuralism also perceives security as being produced by political and economic elites to consolidate their interests through the state, rather than as a benevolent form of protection by the state. Technologies in this Foucauldian vein of post-structuralism are functions through which the mechanistic processes of security are maintained (Bigo, 2002).

While post-structuralist security theory does offer a rich "technography" (Woolgar, 1998: 441) that embeds technological practices in its reading of security, it still treats technologies as shaped by human goals rather than as active makers of security processes in their own right. At the heart of both the purpose and function of the state is the notion of biopolitics, which Rose (2001: 1) defines as "the politics of life itself." This alludes to

Agamben's discussion of "bare life" and the sovereignty of the state. While biopolitics has been more often applied to studies of non-volatile forms of governance such as the biomedical practices of the state and the regulation of liberalised borders, it is also a useful concept for studying the governance of war. The securing and preservation of life is one of the core expectations of the state, and war is fundamentally an existential threat to the individual. Deudney (2007: 31; author's italics) writes from a liberal international relations point of view that "*security from violence is a basic human interest*" and that "humans are perishable corporeal beings means that they must be concerned with the avoidance of lethal and incapacitating violence or harm."

However, this structural depiction of security's ends in relation to biopolitical governmentality does not clarify *how* the concept of security is embodied, experienced, internalised, negotiated or contested by its subjects/objects. This is a question to which a non-representational security studies is more attuned. In the present research's empirical case of Israel, where the threat from both terrorist attacks and sporadic aerial barrages is always imminent, the governmental regimes of both securing life through the IDF Home Front Command's network of information, bomb shelters and warning sirens (Azaryahu 2000), and a hyper-vigilant police and private security regime are a dominant feature of public space. These techniques produce what Adey (2014: 836; Adey et al., 2013) calls the "atmospheres of security" through which individuals deeply internalise "affect[s]," which Anderson (2009: 78) defines as "the transpersonal or prepersonal intensities that emerge as bodies affect one another." This should be expanded to also include the affective potentials of nonhuman materialities. However, the atmospheric production of security must also be

interrogated further to consider how human and nonhuman agencies interactively modulate and alter security atmospheres rather than considering human agents as passive receptacles that merely absorb a prescribed atmosphere. Attention will now turn from the regimes of governing security as a present to the logics and practical orientations of risk prediction, risk management and resilience through which the state makes the uncertain yet inevitable futurity of insecurity comprehensible and manageable.

In the post-9/11 era, liberal nation-states have increasingly attempted to manage the insecurity of geopolitical violence through the calculative epistemology of risk, and increasingly the ontological project of resilience. In *Risk and Culture*, one of the earliest social scientific investigations of risk, Douglas and Wildavsky (1982: 29) argue that the technological relationship between modernity and risk is a convoluted and paradoxical “wicked problem” since “the same science and technology that make us modern also produce our risks and because advanced statistics enable us to calculate them.” Beck (1992) furthers this understanding of risk by calling for a “reflexive modernity” in which an awareness of humankind’s limited ability to control its environment, in light of the ecological hazards produced through industrialisation, leads to a more cautious, technocratic form of politics based around public debate and consensus informed by scientific expertise in which risks are constantly monitored, redefined and their management renegotiated. More recently, Beck (2006) has critiqued the relationship between risk forecasting and the security practices of the state, pointing out the irony of states’ claims to provide comprehensive

security and control, when in fact they themselves do not fully know the risks from which they are meant to be protecting the public.

Several authors in geography and critical security studies focus more specifically on the material dimensions of risk. Anderson (2010b: 784) writes that the calculation of potential dangers and hazards by contemporary militaries and security apparatuses “occurs through a huge range of techniques: including threat-prints, data mining, impact assessments, trend analysis, and complexity modelling of various forms” Coaffee et. al. (2009) approach the physical management of risk from a slightly different angle by attending to how planners and architects design material interventions as an integral part of the urban infrastructure to defend space against the risk of terrorism. This suggests a deeper movement towards managing the insurmountable problem of risk by shifting the onus of protection from people to things. Likewise, Aradau (2010: 493) argues that a predominant “discursive” reading of “risk, security, disaster and war” has failed to adequately account for “the role of ‘things’ in security constructions” taking aim in particular at Foucauldian and constructivist security studies’ fixation on security as a linguistic and abstract process. She critiques a false dichotomy that is made between securing “people” and “infrastructure,” and calls for an understanding of security that is inclusive of “critical infrastructure” as an object of protection and the “intra-actions between humans and nonhumans” (Aradau, 2010: 500, 509).

This reflexivity between infrastructures as both the means of enacting security through risk prediction and management, and that which must be secured in order to perpetuate the statist project of security, can be furthered by locating infrastructure within

the “interdependent” and “planetary-scale” computational “megastructure” of “the Stack” (Bratton, 2016: 4-5). This “physical” yet spatially diffuse arrangement of infrastructure, information and territorial logics in the Stack (Amoore, 2018: 8) facilitates the complex analytic technologies of algorithmic calculation which form the basis of sovereign decisions at a range of scales (Amoore, 2013: 2). Algorithmic security works through an iterative logic to identify threats “beyond probability” based on the “statistical calculation” of past data to the “arraying of possibilities” by modelling the correlations between diverse factors that *could* influence a future reality (Amoore, 2013: 157). This is exemplified in Chapter 7’s investigation of Israel’s Iron Dome missile defence system. However, security planning has also begun to incorporate the precautionary approach of resilience, which concerns how crises are managed at the inevitable point when risk either fails to predict impending danger or can no longer guarantee security from it.

Within the geography and security studies literatures, perspectives on the governance of risk have been supplemented by a growing attention to the concept of resilience (Zebrowski, 2016; Brassett and Vaughan-Williams, 2015; Chandler, 2014; Evans and Reid, 2014; Grove, 2014; Pugh, 2014; Coaffee, 2013; O’Malley, 2010). Resilience is concerned with ensuring that individuals can adapt to stress or calamity when techniques aimed to forecast and prevent such threats are no longer adequate. Amin (2013: 140, 144) states that with the increasing unpredictability of geopolitical events, ecological disasters and social unrest, the modernist state-centric manageable calculus of risk is supplanted by an awareness by “governments and experts that the future” is “ungovernable” and requires new kinds of capacities to cope with disaster. This leads to a regime of governance in which

the state must mitigate danger through the routine and constant preparation for any possible imminent emergency. Adey and Anderson (2012: 104) point to the role of “anticipatory techniques” in developing resilient capacities to manage inevitable emergencies. Such regimes include emergency preparedness exercises and drills that generate “their own affects... through the materiality of practice” (Adey and Anderson, 2012: 104) to bodily and emotionally imbue subjects with the self-reliant capacity to cope with disaster. Whilst resilience is only briefly addressed in Chapter 7, it is a crucial theoretical concept that must be contrasted with risk in order to elucidate the politics that come about through Western Negev residents’ everyday experiences of dealing with danger.

The problematique of how and to what extent the state’s apparatuses can secure its population by anticipating emergency is a useful theoretical lens for understanding the Israeli case. The pattern of Israel’s recent conflicts, particularly the Gaza Wars, suggest that outbreaks of violence seem to occur in inevitable cycles. However, forecasting exactly when these conflicts will erupt, what chain of events will set them off, and how quickly, is virtually impossible. This tension places politicians and technocrats’ ability to manage war in a liminal position between the inadequacy of the preventative paradigm of risk management and the admission of the state’s fallibility implied by the normalisation of resilience, which undermines sovereign power. Attention will now turn to a problematisation of how bureaucratic actors attempt to manage the precarity that emerges through violent conflict, which has the threatening potential to unsettle the state’s political authority, by enrolling technologies to manage geopolitical risk.

2.3 Rethinking the agency of military technologies in war

This section will relate the state's evolving governmental logics of security and risk management to its identifications of the changing loci of violence and the practices and operations through which security practitioners attempt to modulate, and supposedly ameliorate, the forms of geopolitical danger specific to war. This linkage is especially relevant to the thesis' examination of the Israeli state vis-à-vis Gaza because it highlights the unique contingencies of violent conflict as a technique of geopolitical management, which must be addressed in distinct way to other forms of security governance, risk forecasting and mitigation, or resilience.

War by its very nature is a chaotic and violent enterprise in which actors must balance their offensive goals with the ever-present risk of being killed or maimed. Nearly two centuries prior to the advent of the contemporary literature on risk in war, Clausewitz (1976: 101) was concerned with the problem of improving action in the "fog" of war, the intrinsic confusion of battle that prevents a totalising perspective of the unfolding events and counteracts rational decision-making in the heat of the moment. The first two elements of his "remarkable trinity" of "primordial violence, hatred and enmity... the play of chance... [and] subordination as an instrument of policy" (Clausewitz, 1976: 89) outline the centrality of the chaotic unpredictability of human emotions and the threat posed by the unknowable in shaping the outcome of battle, which a commander must be acutely aware of and factor into decision-making. Likewise, his concept of "friction" accounts for the inertia faced by a commander in war from both the complexity of the logistics of coordinating a large military

force comprised of individuals and things, as well as factors beyond the commander's control such as the weather or the terrain (Clausewitz, 1976: 119-121).

Contemporary strategic studies has sought to create a praxis for the conduct of war by distilling Clausewitz' extensive and frequently dense writings into an actionable rubric for decision-making by political elites and military practitioners. Following on from Clausewitz' famous dictum that "war is merely a continuation of policy by other means" (1976: 87), formal strategy facilitates a scalar arrangement in how military violence is applied towards political goals by the state which can be represented as an inverted pyramid (Jordan, 2008: 10). Policy objectives are dictated by government decision-makers and must be achieved through strategic means. At the top of the strategic hierarchy is *political strategy*, which can be defined as the way in which the state will deploy military and diplomatic means to meet its goals. Beneath this is *military strategy*, which is the overarching plan that the military will execute to meet the state's goals and the doctrine that it will employ to achieve its objectives. *Tactics* can be defined as the low-level techniques used to ensure success in combat, such as troop formation and manoeuvre, ways in which certain weapons are used and practices of subterfuge. Gray (2006: 58) notes that the "relationship" between the levels are "interactive" and their interaction can influence the success of the political ends defined by state elites. It is important for understanding the thesis' empirical discussion of Israel's strategic doctrines and practices to account for formal strategy as an influential system of thought that guides how military elites interpret their role in the state, and in turn the logics through which the state exercises military violence. Having a grasp of strategy's basic

concepts also makes legible the ways in which technologies' agencies confound the conceptual rigidity of its framework, and in doing so exceed the power of the state.

Several historians and military theorists trace histories of warfare through what they identify as key technological Revolutions in Military Affairs (RMAs) that have reshaped the strategy and conduct of war (Black, 2013; Boot, 2006; van Creveld, 1989), several of which presage the current information technology RMA by centuries. They liken these RMAs to a Kuhnian "paradigm shift," in which a steady course of military innovation is "seismically" and profoundly disrupted and replaced by a new mode of warfare (Bousquet, 2009: 21; Boot, 2006: 9-10). Bousquet (2009: 11) emphasises as a unifying theme between different historical periods of warfare the interrelation of military technologies with political and bureaucratic orders in an attempt to bring a scientific order and predictability to the chaos of the Clausewitzian "fog" of war. To explain the defining characteristics of contemporary warfare, he juxtaposes the Cold War milieu of "cybernetic warfare" in contrast to the present regime of "chaoplexic warfare." Cybernetic warfare came about with the invention of nuclear weapons and the electronic computer, alongside the development of game theory during the Cold War. This led to a hyper-rational worldview in which a complex system of risk calculation could comprehensively model strategic outcomes, paralleled by a "metaphorical understanding of world politics as a sort of system subject to technological management" (Bousquet 2009: 124). This approach treated the world as a closed system in which all variables could be known and accounted for. Comparatively, the present regime of chaoplexic warfare sees the world as an open system in which all risks can no longer be

confidently predicted. It has come about through globalised telecommunications networks, chaos theory and Taylorist scientific management strategies. Military success requires a reflexive and heuristic feedback process to improve resilient capacity in acceptance of the inevitability of Clausewitzian friction during war. This is exemplified by John Boyd's OODA loop, in which military practitioners must Observe-Orient-Act-Decide (and repeat the loop) whilst incorporating and responding to any new data that occurs in each step of the decision-making cycle. It is also present in the network-centric warfare doctrine and command-control-communications-intelligence infrastructure in which information and tactical decisions from teams in the field simultaneously feed into a central command system to coordinate a more fluid, mobile and reactive control of the battlespace.

With regard to the current RMA doctrine, military scholars have disagreed over the significance, effectiveness and long-term salience of the changes in warfare brought about by the coordination of networked telecommunications with precision-guided munitions in the 1990s and 2000s. Military strategists are optimistic that the RMA can create an ideal form of "clean war" in which omniscient command through technological means and surgical strike capability will drastically reduce uncertainty and undesired casualties characterised by Beck's risk society thesis. Heng (2006: 13) argues that contemporary warfare by Western states has shifted from a linear application of coercive force to a policy-driven process of "risk management" predicated on "active anticipation" and "reflexive" consideration of possible adverse consequences that have yet to occur." Rasmussen (2006: 63, 101), however, questions this notion that the RMA will "let the light of reason shine on to the battlefield," arguing that the use of RMA technologies will lead to a "boomerang

effect,” or what Coker (Coker, 2009) calls “blowback,” in which actions have unintended and unforeseeable consequences that will come back to haunt actors at a later time. Coker (2009: 70) even goes as far as to suggest that these accidental “side-effects” of blowback are in fact “the motor of war.”

Another vector of risk that is specific to the small wars fought between standing armies and guerrillas, including the Gaza-Israel conflict, is the ‘wicked problem’ of asymmetry between state and non-state belligerents. Military historian van Creveld (1989: 304) notes that the sophisticated modern weaponry of state militaries “act as parasols” that shield the actions of irregular forces that work below the former’s “sophistication threshold” meaning that “the ‘elusive’ targets... are not hit at all, or hitting them inflicts such tremendous damage on the environment and the civilian population as to render the entire exercise counterproductive.” If the state’s forces were to strategically eschew this issue by avoiding the use of such advanced weaponry and fighting on equal footing, then they meet the political and strategic pitfall of high casualty rates that produces risk-transfer war in the first place. Kilcullen (2011: 29-33) identifies four key tactics of “provocation,” “intimidation,” “protraction” and “exhaustion” that insurgent groups and guerrilla militias use to unsettle the superior power of state actors. How the state responds to these four tactics, and to what measure of success, are pertinent questions that this research will examine. The dynamics of asymmetric warfare – in which an imbalance of potential force exists between powerful state militaries and conventionally weaker state or non-state violent actors – work in ways that insidiously disrupt conventional power relations.

In addition to the risks faced in the field, political actors are also faced with the volatility of public opinion and the affective ties between the military and the population (Shaw, 2005: 2) of the state. Martin Shaw's (2005: 71) *The New Western Way of War* looks at how the relationship between political and military strategies seeks to manage this tension through what he calls "risk-transfer war" by showing a shift in America's conduct of war from Vietnam to the Iraq War. "Risk-transfer war" displaces the risks of war from the military to a target population perceived as aligned to an enemy state or militant organisation, largely through a reliance on air power and advanced technologies such as drones and robots, to minimise risk to Western troops as high casualty rates could cause a "risk rebound" leading to dissent, anger and political fallout at home. This problem of military risk is especially significant for the present research considering that Israel has mandatory conscription for all citizens, which results in a discourse of care for the lives and well-being of young conscript soldiers by the state.

The unpredictable social, political and military aspects of asymmetric warfare means that militaries must be especially circumspect about "the utility of force" (Smith, 2007: 7-8) in applying military solutions to geopolitical problems, and need to rethink both the technologies and operational methods that they deploy in the course of such actions. This suggests the need for a more sophisticated conceptual toolkit that can give a nuanced interpretation of how technological objects in geopolitical conflicts are depicted, "held accountable and interrogated" (cf. Squire, 2016: 9). Such an understanding of technological agency must carefully account for how technologies' political creativity results from their ontological siting within their social, temporal and spatial environment.

2.4. The danger of “duomining”

Harman’s OOO (2016: 11) explains the propensity for technological agency to be treated in naïve and contradictory ways through the concept of “duomining,” which is a two-part reduction whereby technological power is both overmined and undermined. On one hand, “overmining” imbues an object with an unrealistic agency that exceeds its actual capacities. On the other hand, “undermining” an object reduces it to its constituent parts in a way that fails to consider the agentive potentials that arise from its coherence as a holistic entity (Harman, 2016: 7-10). Harman takes particular aim at the recent materialist social sciences literature, suggests that “overmining” and “undermining” tend to appear in tandem, hence the term “duomining.”

An obvious example of the duomining of military technologies by political geographers in the recent literature appears in a 2017 article by Shaw from the journal *Security Dialogue*. This paper is singled out for critique both because of its contemporaneity and since it deals with issues close to the theoretical purview of the present research. This should not negate this work’s value in emphasising the relationship between technologies and geopolitics. Shaw sets out an assemblage approach to examining “a more-than-human geopolitics” that “incorporates the dynamic agency of humans and nonhumans, as well as the assemblages by which state power is transformed” (2017b: 4). This approach is sensitive to the complex and excessive interplay between human and material agencies that make the geopolitical world, and is in fact fairly closely aligned to the ontological basis of the present research. However, Shaw’s (2017b: 16) polemical conclusions about how robotic

technologies are products and enablers of US Empire ends up at odds with the ontological premise of assemblage he sets out:

The possibility of materializing this kind of geopolitical future depends upon the US military's ability (and resources) to install a Roboworld of artificial topologies across the planet. Contrary to the civilizing missions of 19th-century empires, US empire projects a capital-intensive vision of the future, an empire of robots nourished by the pervasive techno-colonization of the lifeworld.

Here the proliferation of technological agencies are underplayed as instrumental to US imperialist ambitions to instil and enforce a neoliberal capitalist world order. Conversely, the agencies of these technologies to "techno-colonize" the "lifeworld" are overplayed as omnipotent and spatially totalising. This determinism ignores the complexities, contingencies and weaknesses of advanced military technologies, and fails to give a credible account of their actual capacities.

According to Harman (2016: 7) duomining is a symptom of failing to adequately account for an object's being in the world as a stable and "real" entity as the basis for its ability to act, rather than misreading an object as an inchoate series of performed actions. To take Harman's position a small step further, the argument of this thesis suggests that the paradox of duomining comes from a treatment of technologies as imaginaries that fails to consider the reality of their existence and their capacities as objects. This illusory representation comes from a tendency to subordinate technologies as means to serve a desired human end, either practical or ideological, as illustrated in the above quote from Shaw. The hyperbolic representation of a U.S. military controlled "RoboWorld" overmines a specific class of military technologies as a science-fiction spectre, rather than paying attention what the technologies in question are, how they work, and consequently what they can or cannot actually do in the world.

Conversely, a similar critique of duomining can be levelled at normative strategic and policy discourses about military technologies. One of the key debates within war studies is whether technological innovation or a military organisation's internal culture is responsible for a military's success in war (Adamsky, 2010). However, each of these positions respectively overmine and undermine the coproductive potentials of technologies by resorting to technological determinism, or conversely by relying on sociological assumptions. Military strategy guru Colin Gray (2010: 72) attempts to transcend this argument by privileging the primacy of strategy as a human endeavour, to which the technological context is subsidiary:

The general theory of strategy is content simply to note the vital permanent reality of a technological context to all forms of warfare. However, the theory does insist that strategy is primarily a human activity in a technological context, not vice versa. This is not to demean the role of technology, but it is to claim that in nearly all historical cases the uses made of technology, military and civilian, have had greater strategic impact than has the mere presence of new machines. Improved or even wholly novel weapons do not suffice to effect revolutionary change. Instead, ideas tailored to the potential in combined arms prowess of new technology have been the major engine of radical military and strategic development.

Whilst Gray gives a more credible scope for technological agency by acknowledging "a technological context" in war, he subordinates the power of technology to "the uses made" of it. This reduces technology to an instrumental function of human will that can be exercised through the "ideas" generated by strategic thought. Such a causal misreading of technological power misses the obstinate ways in which technologies possess the power to coproduce unforeseeable socio-political conditions. They often do so by exercising unintended capacities that astonishingly diverge from the instrumental goals of strategic planners through their dynamic relation to other agencies, both human and nonhuman. It also ignores the subtle ways in which the capabilities of technologies can influence human

decisions and actions to iteratively shape political outcomes when brought into relation with the contingencies of a particular environment.

A reasonable conjecture for where much of the current misunderstandings of technological agency in political geography and allied disciplines comes from is an overemphasis in the literature on military drones, or to use the correct terminology Unmanned Aerial Vehicles (UAVs). Common refrains in the critical geopolitics canon emphasise the “eye of God” (Chamayou, 2015: 37), or “God-trick” borrowing from Haraway (Wilcox, 2017: 3; Shaw and Akhter, 2012: 1495; Gregory, 2011b: 204) to describe the sense of omnipotence imbued by their powers of vertical perception and surveillance, and their perceived ability to project force over vast distances whilst mitigating risk to hegemonic forces (Kindervater, 2017: 208; Shaw, 2017b: 9; Neocleous, 2013: 588; Sauer and Schornig, 2012: 310). The possibilities for using other forms of military technologies alongside UAVs in scholarly analyses of war can allow for a more precise discussion of technological agency. As this research will illustrate, there are many other kinds of military technologies in existence that can each provide uniquely different stories of technological agency when understood within a specific spatial context.

Conflict is profoundly influenced by its relationship to the spaces through which it operates in terms of both geophysical topology and the built environment. Hirst (2005) examines how environmental and socio-political inertia limits the total domination of armies possessing supposed revolutionary military technologies to critique simplistic narratives of technological determinism. He also offers a prescient analysis of the present RMA that

critiques the naïve faith by its proponents in the American military and defence industry regarding the ability of networked information and communications technologies to “eliminate the ‘fog of war’ and thus reduce ‘friction’,” borrowing from Clausewitz’ lexicon (Hirst, 2005: 143).

In one of the few articles in the geography literature to examine the present RMA facilitated by recent innovations in networked telecommunications technologies from a more-than-human perspective, Ek (2000: 866) suggests that the materialist ontology of ANT can “clarif[y] in novel ways...how the interaction between humans and nonhumans, and among nonhumans” creates... geopolitical risks.” Highlighting specifically Ek’s connection between technology and geopolitical risk, this research will advocate an explicitly materialist theoretical approach, which explains the world as “more-than-human” (Whatmore, 2006: 603). The central tenet of this conceptualisation is that technologies are constituents of their environment, and their capacities and embeddedness coproduce ontology and agency together with humans and geophysical matter to make and refashion the world. The next section will work towards iterating a version of more-than-human theory that can better account for the interface between technology, the state and the geopolitics of conflict.

2.5 Producing a more-than-human geopolitics: ANT, Assemblage and OOO

A more-than-human approach is of particular value for the study of violent conflict and war because it can offer a more sophisticated rationale for how the production of power occurs through the alliance between socio-technical objects and governmental practices within the milieu of the state. This is in contrast to a taken-for-granted positioning of power

as directed at and through the population by political elites on one hand, or a fetishisation of an immanence that solely emerges from embodied experiences of everyday actors. This thesis will borrow agnostically from three related but different more-than-human approaches: Actor-Network-Theory (ANT), assemblage theory and Object-Oriented-Ontology (OOO). This section will set out and critically evaluate each of these theoretical paradigms in turn, before providing a comparative analysis of their strengths, weaknesses and value in relation to each other. In addition to applying these theories directly, this research aims to produce novel insights by utilising the differences and disagreements between them as a productive space for theoretical innovation.

ANT is a methodological approach that originated as a branch of Science and Technology Studies (STS) to analyse the process through which scientific and technological innovations are “socially shaped” and become viable through “a non-linear relationship between invention, development, dissemination, and appropriation” (Fregonese and Brand, 2009: 22). ANT offers an account of socio-technical innovation by positing a “material-semiotics” that operates through the heterogeneous association of interested people and things (Law, 2009: 141). In keeping with classic semiotics, ANT sees meaning and coherence based on the relations between parts that produce a network. Therefore an actor within the system has no power or influence beyond its relation to another actor. Put differently, the links connecting the network in ANT are of equal importance to the network itself.

Controversially, an “actor” in ANT can be defined as both a human and a nonhuman social agent. This means that nonhumans have agency within the network and can influence

the roles of human actors within the network. This concept is shared some extent by all three theories discussed in this section. A notable example of nonhuman agency from the ANT literature is Woolgar's (1991: 59) analysis of home computer product testing in the 1980s, in which he demonstrated how users were being "configured" by the computer, and by the socio-technical relations of the components, engineers and product designers that the computer encapsulates, when performing basic tasks such as installing a printer. This perspective challenges the common assumption that agency is a purely human affair, and that humans have an unlimited ability to shape and control their environment. An acknowledgement of the role of matter in coproducing agency has powerful implications for understanding how technologies are active constituents in political activities, an area that is only just starting to be explored in political scholarship.

ANT takes an alternative view of politics to the dominant post-structuralist narrative of a hegemonic exercise of power by the state and elite institutions, which is contested from the margins by less powerful actors. Instead, ANT suggests that power comes from the ability of actors to successfully align networks of humans and other humans, as well as humans and nonhumans. A larger network containing more aligned interests working together automatically equates to greater power. Latour (2005: 4) calls this notion of politics "*Dingpolitik*," which is based around "things" and "matters of concern" (the pun on "matter" being intentional) rather than "any other set of values, opinions, attitudes or principles." Repositioning politics from ideologies to material conditions creates a more pluralistic public sphere that allows for productive work towards common goals, in which politics is no longer

a zero-sum game, while creating a permissive space for disagreement, difference and heterogeneity.

According to Latour (1987: 131), once a socio-technical goal has been met and a new technology or scientific discovery accepted the technological process in question then becomes reified as a “black box.” This term relates that the elements and process of its construction become opaque and are no longer contested or questioned politically. In ANT, an actor-network is comprised of black boxes that have already been closed, e.g. the sequencing equipment used in a genetics lab for DNA testing for congenital cancer risks. One of the tools a social scientist can use to unpack socio-technical problems is reopening and unpacking black boxes in order to question their stability and the reason of their unchallenged acceptance within a project.

ANT’s unorthodox definition of politics as the non-binary configuration of human-nonhuman has invited criticism from some leftist academics because of its flattening of scales of inequality and its theorisation of social change through the gradual formation and reconfiguration of networks rather than the explosive revolutionary impetus of Marxist dialectal materialism (Harman, 2014: Chapter 5; Noys, 2010: 93; Jones et al., 2007: 271; Smith, 2005: 9). For its critics, this suggests that ANT is an apolitical and ethically void approach. Marston et. al. (2007: 271) accuse Latour’s politics of being “lame bourgeois” and state that his work cannot “be held up as the exemplar of radical theorizing.” This critique is rooted in the notion that ANT privileges nonhuman agency over the inertia of social structures that could inhibit human agency and fails to render how “power differentials” such as “race, gender or class, impact on who or what is able or unable to form

associations in the first place” (Müller, 2015: 8). This means that ANT cannot separate the fundamental differences between people and things, namely that humans have consciousness, “intention and the ability to pursue interests” that non-living materials do not possess (Müller, 2015: 8).

This concern is dubious as it is precisely ANT’s concern with materiality, rather than ideological positions that make it a salient approach to politics since it moves issues away from essentialised battles between diametrically opposed ways of seeing the world to a negotiation based on shared material goals and interests that leaves space for conflicting values and beliefs to remain ignored or unanswered. Such an approach to politics is particularly useful for the purpose of this research because the Israel-Palestine conflict is a highly contentious and emotive issue that tends to divide stakeholders and observers into entrenched camps with little room for negotiation or finding common ground.

Assemblage theory is a related but distinct materialist approach to ANT that has been embraced primarily by urban geographers (McFarlane, 2011; Farias and Bender, 2010), but is starting to catch on with political geographers, as part of the broader “materialist return” in human geography (Whatmore, 2006: 601). Although it borrows theoretically from ANT in some ways, it is a more conventionally and explicitly political project relevant to leftist and activist geographies. According to McFarlane (2011: 211-212) assemblage theory is based around “a latent possibility of new politics and movements based on desire and becoming that can both emerge through and exceed capitalism.” The underlying concept can be traced back to Deleuze’s (Deleuze and Parnet, 2007: 69) definition of assemblage as “a multiplicity

constituted by heterogeneous terms and which establishes liaisons, relations between them.” The heterogeneity of the assemblage is its constitution as a “socio-material network” of human and nonhuman things through which agency is “distributed” (Müller, 2012). Therefore, like ANT, the agential capacity of the assemblage does not come from its individual components, but rather through the connections and relations between these heterogeneous elements (De Landa, 2006). De Landa (1991: 3-4) situates military technologies within assemblage theory by considering their agency in terms of Deleuze and Guattari’s formulation of the war machine as a heterogeneous more-than-human system that “integrates men, tools and weapons as if they were no more than machine components.” This characterisation accounts for technologies’ spatialisation within a relational context, but its mechanical reductionism flattens difference, and de-emphasises the complexities and tensions that must be negotiated both within the system and externally relative to other objects.

While ANT and Assemblage theory share a premise of social action based on networks of humans and nonhumans, assemblage differs from ANT in several ways. The first is that ANT comes from a different intellectual position and initially worked in a more specific way than the generality of Deleuzian theory as ANT specifically addressed issues of how techno-scientific advancements come about and become socially stable. Second, there is a spark of immanence implicit in assemblage that is missing from ANT’s more rigid network structure and slower process of network formation and stabilisation. According to Dittmer (2013: 4) the “dynamism of assemblages means that a range of contingent futures is always

possible.” In other words the capacity of assemblages to reorganise, rearrange and incorporate new elements gives them limitless possibility to enact new forms of social action. The difference between the two theories can be summarised as follows: assemblage is a theoretical tool for understanding and coordinating social action, whilst ANT offers a more concrete empirical methodology for analysing socio-technical processes.

Recent scholarship in political geography has started to apply both ANT and assemblage theory to geopolitical concerns. However, assemblage theory is a very general and ambiguous paradigm that can be applied to a range of social scientific topics, and ANT was initially developed within the specific context of STS. Therefore some adaptation is required to transform these theories into a workable methodology for analysing geopolitics. Barry’s (2001: 2-3) work on “government as a technological society” suggests that technology reconfigures the “space of government” beyond “territorial boundaries” to include the management of “zones formed through the circulation of technical practices and devices.” According to Barry, politics can be defined as the space of contestation and dissensus. Here technology is often applied as a governance strategy to avoid the messiness of political conflict by offering “a way of avoiding the noise and irrationality of political conflict” (Barry, 2001: 7). In this way technical experts become mediators. Barry argues that this binary separation of technology and politics is illusory and that constructive debate and consensus building through civil society and the public sphere that treats technology as a bound-up part of politics can offer a more holistic solution to managing divisive issues than a blind reliance on technology to circumvent contestation.

This approach is particularly useful for this thesis as it questions the extent to which technologies can solve conflict symptomatically whilst avoiding a deeper engagement with the underlying causes that technological interventions attempt to remedy, and the consequences of their use. In the context of the present research, this relates questioning the extent to which Israel's advanced military technologies can successfully prevent casualties resulting from political violence, without engaging in deeper problem-solving to address the state's spatial, social, economic and geopolitical contingencies affecting its security. Barry's (2013) more recent writing has focused on how the concept of translation from ANT can be applied to geopolitics. He argues that the researcher of international relations should be able to engage with the specificities of techno-scientific knowledges and material processes that combine with diverse forms of political expertise in order to produce multifaceted narratives to explain the workings of geopolitical "matter[s] of concern" (Barry, 2013: 420). The methodological implications of this will be discussed in greater detail in Chapter 3.

Müller (Müller, 2012) argues that "critical geopolitics all too often just assumes organizations as given actors without looking at what exactly fashions them with agency" while in actuality "organisations are precarious agencies" which require constant work through bureaucratic processes and the enrolment of technologies to maintain their assertive agency. In this sense the power and agentive capacity of organizations, and by extension the geopolitical processes and doctrines they sustain, are a Latourian black box that must be disassembled, and both the human and nonhuman components reengineered in new configurations to produce meaningful social change. In order to make obvious the

power of institutions to allow for their reconfiguration, Müller attempts to combine ANT and assemblage theory with the Foucauldian concept of governmentality in which the discursive elements of “language and meaning” are more prominent in analyses (Müller, 2015: 36). While governmentality is certainly a useful approach for unpacking the workings of the state, there are several concerns that should be raised about combining ANT with Foucault’s construct of discourse. The first is that it is problematic to conflate “dispositifs” (Müller, 2015: 36) with the nonhuman elements of the actor-network. Treating technologies as dispositifs makes them functions of discourses concerned with the implicit goals and philosophical attitudes of powerful actors behind an institution’s practices that allow the “realization of rationalities” towards “problems to be solved,” (Aradau and van Munster, 2007: 97). This abstraction negates the material focus of ANT by making agency contingent on values, rather than accounting for material agency as an intrinsic element in how power is produced and enacted.

The third, and most evident, theoretical influence on this research’s more-than-human framework is OOO. Its concept of *duoming* has already been introduced earlier in this chapter, but its theoretical significance will now be elucidated through a discussion of how OOO perceives objects’ ontology and agency in comparison to ANT. Harman’s book *Immaterialism* (2016) sets out to transform OOO into a practical theory of objects for application in the social sciences. It argues that objects should be understood as being “immaterial” as a whole entity rather than being merely reducible to a set of constituent components. In other words, it is the object’s totality and coherence that makes it greater

than the sum of its parts (Harman, 2016: 9). Harman also suggests that objects need to be understood in terms of what they are, and not just what they do, which is an accusation that Harman points at ANT. He takes particular aim at Mol's concept of an object being "multiple." In Mol's (2002) ethnographic study of atherosclerosis in a Dutch hospital, she encountered the disease, which she considers an object, as a different sort of object depending on the positionality and context in which it is encountered. What a patient, family member, consultant or lab pathologist understood atherosclerosis to be was contingent on the aspects of the disease and relations that they emphasised, and how they interpreted it through their own subjectivities. According to Mol (2002: 151):

It has presented a patchwork image of atherosclerosis of the leg arteries: a single disease that in practice appears to be more than one — without being fragmented into many. Thus, a body may be multiple without shifting into pluralism. So instead of tracing paradigmatic gaps, this ethnography-of-a-disease became a study into the coexistence of multiple entities that go by the same name. In its turn coexistence comes in varieties and takes different shapes. Here we have explored addition, translation, distribution (over different sites in the hospital, different layers of the body, and different moments in time), and inclusion. And if one begins to study the interferences between the enactments of two or three multiple objects (such as atherosclerosis and sex difference), then the complexities start to grow exponentially — though these are complexities to be investigated elsewhere, for this is the point where this study stops. It has done what it set out to do. A single/multiple disease has been described as a part of the practices in which it is enacted.

Mol sees an object as a both singular and multiple depending on what it does or how it is "translated" by its interlocutors. Harman contends that this supposed fragmentation of the object undermines what it is and what makes it viable in the world. Rather, it is the object's wholeness and ontological stability that gives it coherence as an entity, and its power to act is a result of its being in the world.

Harman's counter-argument accounts for how objects retain their unity as a singular entity whilst acting socially in complex and various ways by positing that objects "are sleeping giants holding their forces in reserve, and do not unleash all their energies at once"

(2016: 7). This means that objects must be considered in terms of their withheld capacities to act, rather than doing multiple things for different actors at different times. Objects' powers become emergent through *symbioses*, relatively infrequent but key junctures in which an object pairs with another object, that "mark discrete changes in the life of one and the same object" (Harman, 2016: 50). This concept is meant as a counterpoint to ANT's "gradualist" ontology in which the parity in agency between all actors in a network implies that "every moment is just as important as every other" in the life of an object (Harman, 2016: 45). Furthermore there is not always a reciprocal equality between the objects in a "symbiosis" (Harman, 2016: 46) — one object can have a significant influence on another object without the inverse relationship having the same level of influence.

For Harman, objects need to be understood not just in terms of what they do in a given moment. Instead, theorisation needs to consider what an object is capable of doing at a given time across a range of timescales and events, and in relation to different actors, as well as how an object remains itself at the frequent moments when it is not exercising its agency. However, it does seem that Harman's depiction of Mol's argument turns her concept of the "multiple object" into a strawman of fragmentary incoherence to some extent in order to further his ontological position of objects as stable actors. A more careful reading of *The Body Multiple* might suggest that "the multiple object" is not necessarily multiple objects being referred to as the same thing, but rather a singular object that is understood and worked with in different ways by different actors depending on their positionality and the factors that condition their relations to an object.

The tension between these two positions and Harman's qualms with ANT merit further discussion. Harman takes aim at ANT for considering objects in a relativist way as actors whose power comes solely from their relations to other human and nonhuman actors. Rather he considers objects through a realist ontology that sees them as viable-in-themselves and inscrutable to what intentions and values humans ascribe to them (Harman, 2011: 171). Harman (2016: 7) asserts that "to treat objects solely as actors forgets that a thing acts because it exists rather than existing because it acts." The weakness of this position is that it underplays the processual role of relations and intentionalities in producing many classes of objects as things that exist in the world. Instead, an attentiveness to the power of material objects should not necessarily negate human agencies and intentionalities in, but rather decentre their primacy in political phenomena. Bennett (2005: 457) clarifies that "to focus on the cascade of becomings is not to deny intentionality or its force but to see intentionality as less definitive of outcomes. It is to loosen the connection between efficacy and the moral subject and bring efficacy closer to the idea of the power to make a difference." Whilst some objects pre-exist their uses, their translation into uses – e.g. gold into a standard of currency – and other objects – e.g. a tree into wood into a house – is a temporal process that is contingent on the connection between an object's material properties, its basic existence and what it can do.

As objects both exist as entities in their own right and do things relationally to each other and people in the world, albeit not necessarily in a static causal order, it becomes a pointless exercise in sophistry to privilege one aspect over the other, despite the deeper stakes over relativism versus absolutism underlying these debates. Therefore, rather than

emphasising the epistemological antagonisms between ANT, OOO and assemblage theory, it is more productive to borrow aspects loosely and agnostically from each respective philosophical system, as well as the discordances between them, to inform thinking about how objects exist and act in the social world.

ANT, assemblage and OOO all make valid contributions to enriching a social scientific understanding of the world. Likewise, they each have their idiosyncrasies and weaknesses relative to other theoretical models. These will now be addressed through a brief comparative synopsis. ANT gives an explanatory model for how technologies become socio-politically viable. It was also the first theory in the social sciences to account for the crucial importance of nonhuman agency (Mol, 2002; Latour, 1991). However, ANT is only concerned with how an object acts relationally to other human and nonhuman actors, rather than what gives it intrinsic coherence. It also gives an implausible account of agency in which all forms of human and nonhuman agency are symmetrical and social difference is enacted through their connectivity in a network. OOO critiques these flaws by correctly suggesting that objects are not just bundles of action, but are coherent entities that exist independently in the world (Harman, 2016).

OOO's weakness is that reifies an object's stability by creating a false antagonism that privileges an object's being in-the-world over its actions. In comparison with the other two positions, assemblage theory gives a more plastic conceptualisation of the world that allows for social change through object relations (De Landa, 2006). It does so by treating

	KEY POINTS	STRENGTHS	WEAKNESSES
Object Oriented Ontology (OOO)	<ul style="list-style-type: none"> • Objects are coherent and stable entities that can variably unleash or withhold capacities • Stability enhanced or diminished through key symbioses 	<ul style="list-style-type: none"> • Accounts for how objects' materiality is real in the world • Agency comes from being, not just action 	<ul style="list-style-type: none"> • False antagonism between being and action • Overstates strength of objects and oversimplifies their unity
Actor-Network-Theory (ANT)	<ul style="list-style-type: none"> • Nonhuman agencies equal to human power • Agency forms through networked relations (Latour, 1991) • Object as multiple (Mol, 2002) 	<ul style="list-style-type: none"> • Explains process through which technologies come into the world • Considers how objects can act in different ways to different actors that extend beyond function 	<ul style="list-style-type: none"> • Gives unrealistic power to nonhuman agencies • Reduces objects to their actions
Assemblage Theory	<ul style="list-style-type: none"> • Assemblage is a mutating configuration of human-nonhuman components that can be manipulated or modified (De Landa, 2006) 	<ul style="list-style-type: none"> • Gives a more credible account of power between human and nonhuman agencies • Allows for social change through intervention in an assemblage's workings 	<ul style="list-style-type: none"> • Reduces objects to a set of interchangeable components • Does not account for how power of whole object exceeds the sum of its parts

Table 2.1. Comparative synopsis of more-than-human theoretical framings used in this thesis.

entities of social and political organisation as a heterogenous composition of parts that can be manipulated, modified, replaced, added or subtracted to produce a desired outcome.

The shortcoming of assemblage theory though is that it reduces objects to a set of inert and interchangeable components, which fails to account for how the agency of a whole object exceeds the sum of its parts or the specificities that make particular objects unique.

By themselves, each of these theories gives a partial truth, however considering them in relation to one another can give a more coherent materialisation of the geopolitical phenomena that this thesis works to explain. Therefore, the theoretical approach this research takes is to apply aspects from each of these theories in a limited way, and to use the differences and tensions between them as a productive space for thinking through the complexities presented by the empirical evidence being evaluated. Table 2.1 provides a comparative evaluation of each of the theoretical positions discussed above, highlighting how they can be applied relationally to one another.

The exceptionally ruptured, unstable and dramatic realities of war addressed in this thesis require the development of a more malleable framework to account for the disordering and violently disruptive beings and doings of objects in these extreme circumstances. ANT considers the complementarity which extends beyond the distinctions of human-human, human-object and object-object relations to the relational networks that position both human and nonhuman actors in war, which in combination with war's crucible-like power of intensity, create an extreme range of possible translations, enrolments and alliances (Callon, 1986), as well as ruptures, enmities and destructions. Assemblage theory adds to this a greater emphasis on the potent adaptability of materialities in reconfiguring the possibilities of social and political conditions and power relations. OOO contributes a more nuanced explanation of difference to these two theories. This comes from its understanding that objects' intrinsic capacities to be able to do certain things at certain times emanates from what they are and how they are constituted as an antecedent to their

relations to other humans and objects in the world. Acknowledging the complementarity of being and action allows for a more credible explanation of the jarring variability between the implicit and eruptive powers of objects in war and the ongoing and unpredictable consequences of their presence or absence. This requires a flexible mode of navigating between matters of concern, the politics of alterity, organisational and strategic logics, and ideological dogmas in order to pragmatically negotiate social, technical and spatial politics. This facilitates towards workable, albeit most likely incremental, conciliations between vying antagonists and the introduction of other heterogeneous positions that can mitigate the harmful conditions of violence.

Thinking through the comparative strengths and weaknesses of ANT, assemblage and OOO, as well as the ontological and epistemological differences between them, allows for a calibration of the theoretical models for nonhuman agencies that can produce a more plausible and nuanced account of their vital role to geopolitical processes. While each of these theories counters the shortcomings of the other, they all fall short in different ways at accurately conveying the nature of objects. Therefore considering their differences and working between the gaps allows for a fuller and more realistic concept of the object to emerge that neither overstates nor understates the nature of an object, its capacity to act or its existence in the world.

What comes about as a result is a shift from a conceptual abstraction of material agency to a specificity and ontological realness in how objects are rendered and analysed. However, in order for this realness to come into focus it is necessary to have an embedded understanding of objects' existence within their milieu. This is where space and place come

into play as catalysts through which objects' agencies in the world become both materially and temporally salient in relation to one another, and analytically legible. The next section will work through some key geopolitical conceptions of space within recent political geography and critical international relations in order to elucidate the relationship between technologies, space and place in war, and to establish the present research's theoretical position regarding this nexus.

2.6 Space and place in violent conflict

War as a phenomenon is of particular concern to political geography because it raises difficult questions about the relationship between violence, political power and space. This section will examine some of the ways in which political geographers have interrogated these imbrications in terms of a) volumetric and vertical spatialisations of power; b) the relationship between military technologies, practices and space; c) the role of discursive geographical imaginations in shaping geopolitical attitudes. It will also contrast such discursive framings of spatial violence with recent calls in political geography to add depth and scope to its analyses by rematerialising territory as both a multi-dimensional volume and as tangible and dynamic geophysical space. This thesis works to take this reading of space further by relating it to the specific contingencies of place as a way of unsettling the didactic moral certainties that exacerbate polarisation in conflict.

Elden (2013b) calls for a shift towards a volumetric conception of territory in political geography. This offers a powerful means to theorise the dynamic relationship of state-space

with the physicality of the Earth, which negates the supposedly inviolate border of the sovereign state. Territory is not a flat surface with demarcated and fixed boundaries. Rather, geopolitical processes are in constant flux through the three dimensions of space, i.e. above ground, at the surface and below ground, as well as horizontally and diagonally. This raises significant questions about how territory operates within a state's borders as well as the implications of the air, the sea and the underground on the territorial sovereignty of states and their boundaries vis-à-vis each other.

A precedent for Elden's volumetric reading of territory is the spatial geopolitics evoked by the literature on "military urbanism" (Graham, 2011a: 60), the vertical control of urban space (Graham and Hewitt, 2013; Adey et al., 2012; Adey, 2010a; Weizman, 2007) and the fixation of military forces on "urbicide" (Coward, 2010: 35), which is the destruction of urban infrastructure and the built environment in pursuit of political goals (Graham and Hewitt, 2013; Graham, 2007, 2011a, 2011b; Fregonese, 2009). Graham's work is especially notable in this area of research because he attends to the material and technological dimensions of geopolitics in a detailed and comprehensive way. He also makes substantial links to how urban planning and management are intertwined with the increasing militarisation of the quotidian space of the city in a way that detrimentally affects the practices and human rights of its inhabitants. However, in some instances his work lacks a plausible account of agency, which links back to the core problematisation of this thesis.

Graham (2004) overemphasises cities' material infrastructure while ignoring their human dimensions. He does this by describing cities as passive vessels to be bombed rather than dynamic lived-in places in which the technologies and practices of warfare take place

and innovatively develop. This undermines urban geopolitics' professed tenet of attending to cities' lively and co-constitutive significance in urban conflicts rather than treating them as backdrops of war (Fregonese, 2018). Graham is particularly critical of the use of RMA technologies to control urban space as an oppressive and total regime of violence directed against subaltern civilian populations in the Global South, of which he considers the Middle East to be a part (which is notable for the current research). While asymmetries clearly exist between state security force and the militants and populations they encounter, this does not mean that meaningful strategies of violent insurgency, civic defiance, negotiation and resilience do not take place.

Graham also tends to aestheticise technologies as omnipotent machines almost exclusively controlled by states and corporations. Thus he characterises novel battlefield technologies as:

“new surveillance and targeting systems in state militaries and paramilitarizing security forces: new micro-drones, swarms of half-manufactured, half-organic cyborgian insects; myriads of robotic devices spread generously through the “urban battlespace” which use computer code linked to vast databases to automatically define and even destroy “targets” (Graham and Hewitt, 2013: 86).

This oracular catalogue reifies technological powers in a hyperbolic and fantastical way that conflates present capabilities with an imagined futurity that resembles science-fiction. Portraying technological agencies as spatially totalising and possessing unmitigated capacities for control overmines the power of military technologies, whilst undermining their technical limitations in relation to their operating environment. This technological determinism underscores the present research's assertion that military technologies (and other forms of technology) need to be evaluated more soberly, with careful consideration being given to both their capacities and limitations to act in the world.

Weizman's *Hollow Land* (2007) is another seminal work in the urban geopolitics literature that reifies technological agency. Focussing on the Israeli occupation of the West Bank, it provides a detailed analysis of the architectural aspects of the military regime and the settlement programme in the territory. One of Weizman's (2007: 4) key arguments, and the genesis of the concept of vertical geopolitics, is that the architects of the Israeli occupation strategically used the topographical domination of high ground to create a panopticon of control over both the territory and population of the West Bank, in the spirit of Ariel Sharon's exhortation for settlers to "grab as many hilltops as they can." This emphasis on the materiality of architectural practices draws attention to the often ignored "elements [of] war" that are "much less spectacular, less photogenic, and harder to detect, measure, and communicate" than weapons systems and the events of combat (Brand, 2009: 170). However, several reviewers have noted that Weizman's detailed, rigorous and incisive focus on the techniques of Israel's occupation of the West Bank places Palestinians "exclusively on the receiving end" of political violence (Brand, 2009: 171) and ignores the dialectical role of "Palestinian resistance and violence" that has produced the "mutual (though clearly asymmetric) dynamics of violence that [has] caused and legitimised" the Israeli occupation (Yiftachel 2009: 146).

A reframing of this discussion away from the ideological implications of hegemony, resistance and counter-resistance to how the production and management of technologies of violence can mitigate or amplify geopolitical risk gives both a more lucid geopolitics and makes space for a creative intervention that can improve social conditions for both Palestinians and Israelis. Harris (2015) critiques both Elden and Graham's work for being

heavily indebted to Weizman's Foucauldian examination of relationship between architecture, space and power in Israel's control of the West Bank as their almost sole empirical basis for theorising vertical geopolitics, even to the extent of copying evidence such as photographs and case studies verbatim from Weitzman's text. Harris also takes Elden and Graham to task for portraying Palestinians one-dimensionally and homogenously as victims, ignoring both their agency in the conflict and the tactics of resistance they utilise. This dualism underplays the dynamic processes through which political violence and military activities processually alter topologies and landscapes (Woodward, 2005, 2013). Within Israel the extensive proliferation of bases, communications towers, fortified border zones, check points and off-shore warships, as well as the frequent movement of soldiers (often armed) and heavy armoured vehicles across the country shape military space in a profound and pervasive way.

The volumetric dimensions of space also play an active role in reforming space, particularly in the aerial register. A body of work is developing on the geographies of the air, with an emphasis on the military appropriation of aerial space. Adey's (2010b: 21, 2) book *Aerial Life* works through the ambivalences of aerial mobilities' negation of the terrestrial territorial order through a discussion of the performativity of "airspace," as well as dynamics of the asymmetrical dominant relation of the "above" of the air over the "below" of land in military practices of surveillance and bombing.

Visuality is a privileged and significant sensory mode in the spatial exercise and circulation of power (Dean, 2009: 41; cf. Campbell, 2007). For Foucault (1977), Bentham's Panopticon prison design is an exemplary technology for the projection of state power

through the subject's acute awareness of the ever-present authoritarian gaze. In the geopolitical context, visual power is incompletely accumulated and projected through the "God trick" of satellite imagery and aerial photography. Saint-Amour's (2011: 262) historical perspective on the aesthetics of pre-World War II aerial photomosaics has shaped both the reading and production of surficial space from the air in accordance with an objectivising epistemology of "applied Modernism." In recent conflicts has been gathered and utilised through drones and the computer screens of command and control centres, in which the horizontal view of terrain from above produces the illusion of domination over space from which it is impossible to escape or hide secrets (Graham and Hewitt, 2013: 73; Williams, 2013: 229-230). However, Forsyth (2013) illustrates in her research on the innovation of desert camouflage in World War II that aerial distance allows for tactical subterfuge on the ground that can confound the power of scopic regimes. Likewise, Elden's (Elden, 2013a) work on volumetric space highlights the imperviousness of underground spaces such as caves, tunnels and bunkers to aerial surveillance and, as Chapter 6 of this thesis will show, to other surface-bound forms of visual rendering and knowing. Considering the scopic interface of many RMA technologies as a system of ordering and orienting the battlespace (Bousquet, 2018) – for example satellite imagery, night vision, thermal imaging, aerial photography – it is imperative to pay attention to the risks and limitations of the visual domain in war, in addition to its power. An awareness of the volumetric and processual features of territory highlights the vital political significance of complex spaces that elude the scopic domain in military contests, such as dense urban areas and underground bunkers.

Williams' work on aerial geopolitics deals explicitly with the assemblage of military airpower as both a socio-technical and performative political agent. Her research on UAVs shows that the more-than-human collective of machine and operator produces an ambivalence in which "the humans-in-the-loop" both benefit from the enhanced visualisation capabilities of the UAV's sensors and cameras that extend beyond the capability of human vision, and limit the potential capacities of the aircraft due to their mortal propensities for fatigue, inattention, less than instantaneous decision-making and error (Williams, 2011: 386). Williams, and also Holmqvist (2013), look to evidence of UAV pilots' experiences of trauma in the course of duty to effectively critique the 'video gamification' of war discourse (Valiaho, 2012) that has been applied to UAV piloting (Gregory, 2011b; Graham, 2011a). This "homogenises the combatant" and detaches their subjective engagement and affect from the events in which they play a central part (Williams 2011: 388).

It is easy to fall into the trap of over-privileging, and thus reinforcing, the omniscience and omnipotence of power from the air in a way that excludes both alternative and resistant vectors that travel within volumetric space. MacDonald's (2010) writing about popular imaginations of Britain's early Intercontinental Ballistic Missile (ICBM) tests in the 1950s points out the need to pay attention to the below-to-above or surface-to-surface perspectivalisms of the aerial in addition to the more obvious power relations of the view from above. MacDonald (2010: 270), borrowing from Nye (1996), also calls attention to how the "technological sublime" of military aerospace seduces members of the public to support narratives of nationalism, security and geopolitics that are sympathetic to the state. This

affective element of how non-elite individuals perceive and trust in the efficacy of military technologies is one of many factors that nuances the co-constitutive role of technologies in geopolitics.

The significance of the interface between technology and the ocular in how dominant institutions, foremost of which is the state, (attempt to) govern space is not limited to the panoptic gaze. It also informs the diffuse ways in which geopolitical knowledges are assembled, disseminated, internalised and reproduced. As addressed in Chapter 5's discussion on the political aftermaths of the Battle of Shuja'iya, the totalising vision of reality from above, or the mesmeric "eye of God," is present in the contemporary usage of satellite imagery and geographical information systems to produce political truths (Kurgan, 2013). Both Baudrillard's (1995: 61) paradoxical assertion that "the Gulf War did not take place" and Virilio's (Virilio, 2010) theorisation of "the logistics of perception" highlight how media representation influences the production of geopolitical knowledges through the transmission of war as a spectacle.

The steady stream of reportage and images made possible through the "tele-presence" of globalised media corporations, which are in many cases either the surreptitious or explicit propaganda arms of governments (Virilio, 2000: 9) plays a crucial role in shaping what Dittmer and Dodds (2008: 441) call "popular geopolitics." These are the formations of geopolitical attitudes and influences which come from the circulation and interpretation of mass media and popular culture texts by ordinary individuals, rather than from the "formal" actions of political elites or the "practical" geopolitics through which elites inculcate geopolitical ideas to everyday actors. Pinkerton (2013: 450, 455) highlights the complex and

nodal role of journalists as “geopolitical agents” who facilitate the mediated “interaction between journalism and foreign policy formation” in ways that obfuscate a neat compartmentalisation between “(i) practical and popular geopolitical discourses, (ii) elites and the ‘everyday’ [and] (iii) “geopolitical ‘frontline’ events.”

Der Derian (2009: xvii) highlights the significance of mass media as a set of materialities and practices by suggesting that an omnipotent “*military-industrial-media-entertainment network*” is behind what he alternately calls “virtuous war” and “War 2.0” (Der Derian, 2009: xvii, 2013: 574). The latter alludes to both the virtuality of contemporary war and the morally superior justifications for it that are touted by governments and their allied hegemonic forces. While Der Derian makes interesting and profound connections between virtuality and contemporary war, he crafts a conspiratorial coherence to what he perceives as the elite nexus of power between states, the military-industrial complex, and media corporations that shape the geopolitical representations and ideologies contained in news and entertainment platforms and content. This elides the tensions and rifts that can occur between these organisations, and grossly underestimates and reifies the fluidity, heterogeneity, nuance and volatility of popular geopolitical media texts and attitudes. Calling out this simplification, Woon (2014) demonstrates that audiences of geopolitical texts are far more adept at evaluating and critiquing elite representations than they are given credit for by academics. In keeping with Woon’s (2014: 660) appeal “to understand audiences and their consumption of such geopolitical content” this research will work at the interface between the elite production and dissemination of geopolitical knowledge and the everyday vectors of production, interpretation, recasting and active resistance of such

discourses, in order to disrupt the binary of a geopolitical elite and the “anti-geopolitical” subjectivities of everyday geopolitics that seems pervasive in the discipline (Routledge, 2003; Ó Tuathail, 1996: 173). In order to complicate this elite/everyday dyad, attention will be paid in this research to the *practical* bureaucratic and technological knowledges, practices and mechanisms that mediate between these two registers.

The anti-geopolitical proclivity in political geography interprets geopolitics primarily as a militaristic enterprise that reproduces global inequalities. Derek Gregory’s (2004) influential “polemic” (Toal, 2008: 342; Driver, 2005: 353) *The Colonial Present* is perhaps the archetypal specimen of this tendency, which has in turn reinvigorated anti-geopolitics as a dominant paradigm in the discipline. It views geopolitics as a function of cultural attitudes, imaginaries and perceptions in the Western world that are naturalised by the geopolitical *Weltanschauung* of Western imperialism. Gregory (2004: 17-18) argues that exercise of security practices and military applications of technology are products of colonialist “imaginative geographies” that justify the occupation of ‘Eastern’ lands, using the post-9/11 conflicts of Iraq, Afghanistan and Israel-Palestine as evidence. He bases this thesis on Said’s Orientalism by suggesting that difference is “constructed and calibrated” by a Manichean psychological production of space predicated on difference to an alien Other who inhabits “an unfamiliar space beyond ‘ours’ which is ‘theirs’” (Gregory 2004: 17). Central to this view is a topological warping in which imagined distance trumps physical distance in deciding geopolitical actions. This thesis critiques the discursive subordination of military

technologies to geopolitical imaginations in Gregory's argument, as well as the way it narrates and interprets the Israel-Palestine conflict.

The Colonial Present's premise of the power of Western spatial imaginaries to dictate and supersede the topologies of actual space is problematic with regard to the case of the Israel-Palestine conflict for several reasons. The first is that Gregory conflates the US and Israel together under a geographically imagined category of Western imperialism. Whilst there is clearly a wide physical distance between the US and its Iraqi and Afghani antagonists, the claustrophobic physical proximity of Israel to its political and military antagonists in the West Bank, Gaza and Lebanon, and the complexity of the multi-layered volumetric spaces in which these actors combat each other, plays an integral and complex role in influencing both the forms of these conflicts and the practices through which they are enacted. Furthermore, as Yiftachel (2008: 367) points out, Gregory treats the socio-political constitution of Israel as homogenous and "monolithic," which washes over the "highly controversial" nature of the West Bank settlements within Israeli society that divides the mainly religious ethno-nationalists from typically secular left-leaning Israelis as evidenced by "repeated political crises" over the issue. Gregory's representation of the geopolitical relies exclusively on the documentary analysis of 'high politics' through the lens of post-colonial theory. This gives an unnuanced and "homogenized" view of diverse "geopolitical cultures" and the "alternative geopolitical storylines which contest those held by the administration in power" (Toal, 2008: 341-342). Paying greater attention to "the mundane and dispersed practices of... 'popular geopolitics'" (Toal, 2008: 341), or an "ethnographic" engagement with the "day-to-day"

experiences and perspectives of “ordinary people” (Jeffrey, 2006: 474) can provide a more complex and realistic conceptualisation of geopolitics that *The Colonial Present* sorely lacks.

Departing from the Saidian mode of treating the Other in war in “monolith[ic]” terms determined by “an imagined geography,” a consideration of alterity as a “plural and shifting set of epistemological ideas, attitudes and practices” (Porter, 2009: 14) can better characterise the endemic factors and the roles of technology that influence the complexity of contemporary “small wars” (Barkawi, 2016: 199-200). Porter (2009) suggests that military strategists often take an essentialist view of culture that ignores its dynamism, as well the impacts of the hybridity and exchange caused by globalisation on technological practices. Whilst a clear historical precedent exists for the trans-global transfer of military technologies and knowledges, the recent acceleration of globalisation has had an acute impact on how both tactics and technologies shift between theatres of war and cultural groups. Rather than particular a style of fighting or a type of weapon being bounded to a specific geographical location, global telecommunications, media and economic networks allow combatants to borrow tactics and techniques from fighters in other geographically disparate conflicts, and to share training and expertise. Likewise, the reach of the global arms trade gives small-scale insurgents access to highly sophisticated weaponry that had previously been only available to major powers, often with the assistance of the state actors supporting them (Kaldor, 2012; Hourani, 2010). The increased global flow of tactics and technologies mean that experts must be cautious not to overdetermine or oversimplify the role of culture on strategic *modi operandi* when analysing opponents’ utilisation of technology. This requires a more sophisticated geopolitical analysis that attends to the interdependent flows between

place and the regional and global geopolitical dynamics of a conflict in which a particular technology or tactic is applied.

A greater focus on the peculiarities that constitute the state's voluminous spatialisation in a particular place can allow for more sophisticated accounts of geopolitical situations that avoid the reification of "suppress[ing]... the complex geopolitical reality of places in favour of controllable geopolitical abstractions" (Ó Tuathail and Agnew, 1992: 195). The "responsibility to empirics" that a place-centred geographical analysis invites can be a counterbalance to the emotive and essentialist "geo-graphing" of geopolitical situations that are both the motivation for and response to "indiscriminate violence" (Ó Tuathail, 2009a: 5). For Ó Tuathail attending to place specificity is a means for deconstructing and destabilising the sweeping geopolitical narratives through which "actors explain themselves and make sense of the world and their actions within it" (Ó Tuathail, 2009b: 28). This emphasis on empirical detail is certainly helpful for unsettling normative assumptions about conflict that inhibit profound understanding or productive interventions. However, the actual complexity of place becomes instrumental to its discursive value in shaping or deconstructing narratives, rather than building on the complexity of place as an explanatory mechanism for geopolitical processes in their own right.

A didactic morality, which sides with the oppressed as victims of violence, is emblematic of the prevailing discourse about violence in political geography that fixates almost solely on the hegemonic state as the perpetrator of violence (See the following synthetic review articles as evidence of this point: Dalby, 2014; Agnew, 2009; Kobayashi,

2009). Nicley (2009: 20, 22) argues for “a commitment to thick description” as a form of witnessing to produce “a normative moral geography of right and wrong” within critical geopolitics “that is responsive to the needs of [the world’s] most vulnerable victims.” However, it largely overlooks questioning violence as a subaltern strategy of ‘resistance.’

Ó Tuathail (2009b: 30) quite rightly expresses scepticism about such an “uncritical celebration of the ethnographic” that fetishises the subaltern and everyday as a binary opposition to the elite political sphere. Such a worldview is predicated on a simple dualism between oppressor and oppressed. However, violence transcends and contorts the moral dualism of evil oppressor and noble oppressed, a disordering that becomes acutely evident in the Israel-Palestine conflict (Caprotti, 2005: 635-636), and the trauma it causes is a universal equaliser. Also, the political legitimacy of violence as a technique of redressing power asymmetries is never clear-cut, since weakness does not necessarily confer moral superiority. Likewise, the strength and authority of the liberal state is not intrinsically bad, but instead carries a vulnerability to corruption and abuse, which political geographers must be vigilant to call out. A moralistic reading of violence fails to adequately engage with the actual complexity of violence that emerges through place, in which violence is a dialectical exchange for overcoming perceived vulnerability or inferiority by both the state and subaltern actors.

Place is both an object of violence, and the “medium and a means and a momentum” through which violence is directed (Thrift, 2007: 274). The spatial complexities of geopolitical conflicts that emerge through the unique conditions of place is evidenced by the highly precarious distinction between “civilian” and “military” that comes about through

the convergence of practices, infrastructures, topology and technology within the state (Perugini and Gordon, 2017: 1388), and against it. This ambivalence is acute in relation to the violence implicit in the military origins and continuities of the logistical techniques that enable the “‘pipelines’” of flow” through which goods and bodies can elide the boundaries of the nation-state (Cowen, 2014: 4). The proliferation of weaponry beyond state actors, and the growing elisions between military and civilian technological domains (Coaffee, Wood, et al., 2009: 160), mean that the parameters of violent conflict extend beyond the eventful intensity of war, and violence becomes an ever-present danger. Therefore instead of being a form of witnessing, or a discursive device for deconstruction, a more-than-human “thick description” (Geertz, 1973: 10) of place ought to convey the complex, dynamic, and material nature of geopolitical processes and events that produce it (Massey, 2005). This truly empiricist treatment of place specificity can transcend the overly anthropocentric notions of narrative and embodiment that are oblivious to the nonhuman endemic factors in violent conflicts.

Arguments from the developing elemental geographies literature can provide such an empirically-grounded conception of place in geopolitical conflict. These approaches extend the concept of volumetric geopolitics as a dynamic and full physical environment by drawing attention to how the elemental richness and affective capacities of volumetric space can exceed political rationality, rather than treating the maintenance of territory as an instrumental political process. In other words, politics do not just operate through the volume, they are “immersed” in the volume (Adey, 2015: 57). This literature documents how

categories of earthly elements, such as rock, air and water have influenced sites and processes of geopolitical significance in a way that exceeds the abstraction of a juridical notion of territory (Squire, 2016; Adey, 2010b, 2015; Steinberg and Peters, 2015; Peters, 2012).

In keeping with Boyce's (2016: 246) recent work on the pitfalls of the SBInet surveillance sensor network at the US/Mexico border, an elemental perspective can further "a post-humanist theory of 'terrain'" that attends to "the ways that the quality of certain forces, spaces, and conditions may impede or disrupt" the technological co-constitution of the "state's vision, navigation, or administrative practice." These desired operations of volumetric control rely on the hybrid delegation of the practical work of governance to technological proxies that are tasked by human actors to do things which exceed human capacities. For example, in the case of the Gaza tunnels which will be presented in Chapter 6, the Israeli state's approach to detecting cross-border tunnels using a variety of geosensing technologies to 'see' underground has been significantly undermined by the Gaza-Western Negev region's historical trajectory alongside the particular patterns of bordering, fortification and surveillance which have coalesced with the endemic soil conditions there. The dynamics of geopolitical power that become apparent at this magnified level of empirical detail would not be as noticeable, or even detectable at all, from an epistemology that foregrounds the discursive construction of geopolitical narratives.

2.7 Conclusion

This chapter has presented a theoretical context for the thesis within the existing literature, and has denoted the nature and scope of its theoretical contribution to rethinking the role of military technologies as agents of state power in violent geopolitical conflict. It demonstrated that a crisis in how technologies are currently represented in political geography impedes the subdiscipline's ability to render geopolitical conflicts in a sophisticated and realistic way. The concept of duoming borrowed from OOO elucidates how technologies are either characterised as instruments to fulfil human goals and interests, oppressive forces that paralyse human agency, or bizarrely in some instances a combination of both. This paradox suggests the need to contextualise technological agency more carefully as part of a more-than-human geopolitics that is attentive to objects' imbrication in both space and place.

In order to develop a viable more-than-human geopolitics, this chapter has drawn from several theoretical literatures. An analytically curated synthesis of the several associated social theories of ANT, assemblage, and OOO – which all share an engagement with the ontological significance of nonhuman agencies – provides an epistemological basis for understanding the power of materialities in relation to human agencies. Building upon this foundation, a materialist geopolitics is teased out that conceptualises the state volumetrically and elementally in terms of its geospatial, geophysical and technological constitution. This approach leads to a call for a better accounting of place specificity in how geopolitics is reproduced and analysed in political geography. Whilst many accounts of geopolitics in the literature pay attention to the geopolitical significance of technologies,

they inadequately convey in at least some way the complex actuality of place and the interplay of materialities' beings and actions in producing and reproducing geopolitical processes. It is argued here that this deficiency results from an anti-geopolitical worldview, and an overemphasis on geopolitics as an abstracted and hegemonic discourse. This is juxtaposed with a more-than-human explanation of how – through the rationale of security – state apparatuses translate technologies, practices and logics into a (variably successful) programme for maintaining the state's ontological stability in response to geopolitical volatility, and how material agencies complicate these instrumental techniques for maintaining power.

It is by understanding how these techniques are spatialised in relation to the exigencies and specificities of their situation in a particular place that a more sophisticated understanding of the constitution of geopolitical conflict becomes apparent. The next chapter will evaluate how such a place-grounded theoretical conception of state geopolitics can be realised through the collection, analysis and representation of empirically engaged and detail-oriented case study research, as well as the challenges and limitations of this sort of approach. It will also address the methodological considerations, practical techniques, and ethical dilemmas of conducting such qualitative political research in the troubling and disturbed space-time of violent conflict.

CHAPTER 3. RESEARCHING A MORE-THAN-HUMAN GEOPOLITICS OF CONFLICT IN ISRAEL

3.1 Introduction

Within the contemporary social sciences there is a debate between a post-structuralist perspective that sees experience of the world as subjectively constructed through context, relations and representations and a broadly positivist approach that sees an objective world that can be quantified and analysed through formalised research techniques (see the following for a discussion of this as it relates to political geography: O'Loughlin, 2018; Secor, 2018). This research adopts an epistemological approach that remains committed to critically evaluating the normative assumptions about the nature of the state that are reinforced by most positivist theorisations of political, economic and social phenomena. At the same time it profoundly questions post-structuralist theory's rejection of the actuality of an empirically verifiable materiality that exists beyond the medium of the self. Due to critical geopolitics' role as a dominant paradigm within political geography, the present research is more closely aligned with its conceptual and methodological approaches in comparison to other theoretical traditions, and borrows conceptually from it in many ways. However, an argument is made here for a more nuanced and empirically rich accounting of geopolitics that transcends the Manichean ideological assumption of oppressor/oppressed that inflects radical scholarship in geography.

To transcend the subjective/objective epistemological dichotomy, this present research borrows from Latour's (2004) critique of the limitations of deconstructionist

critique. Rather than a division existing between the empirically observable world and its representation and negotiation by humans, this approach understands socio-technical phenomena as coproduced by human agents and the physical world. In other words, there is an empirically verifiable world that exists beyond the individual's perception, but subjectivities need to be accounted for in the production of social phenomena. This middle ground between subjectivism and positivism is permitted by the synthetic more-than-human epistemology outlined in the previous chapter.

This thesis is centred around a core of three case studies (Chapters 5, 6 and 7) that work through the territorial volume of Gaza-Israel to address how the material "assemblages" (Barry, 2013: 428) of the conflict contour its politics. As a deliberate response to the often contentious discourse about the Israel-Palestine conflict, care has been taken in these empirical studies to moderate against a strongly moralistic characterization of the Gaza conflict, and instead focus on its value as a medium to think through theoretical concerns about the political significance of materialities. However, it is important to acknowledge the deeply entangled and mutually reinforcing "dialectics of space/violence" (Yiftachel, 2009: 146) in the conflict between multiple sets of actors that goes beyond a simple binary of Israeli/Palestinian. The narration of the conflict in this research conscientiously avoids fetishising the subalternity of Hamas and other Palestinian militant factions to excuse their violence, nor uncritically accept the legitimacy of the frequently draconian violence of Israeli military action in Gaza.

That said, this thesis does not pretend to provide a comprehensive account of the Gaza-Israel conflict. The present account focuses almost exclusively on the Israeli state's

experience of attempting to spatially manage the Gaza-Israel conflict. Due to the current territorial and political conditions between Gaza and Israel it is profoundly difficult to “interact across the significant social” and spatial “boundaries” between them (Lee, 1995: 27). In order to obtain access to elite participants in Israel, I made a deliberate choice to eschew contact with potential participants in Gaza. This was in large part to avoid conflicts of interest and accusations of espionage or partisan affiliation to Palestinian militant groups, that had a very real possibility of endangering both my research and my personal safety. Another factor is the extreme difficulty of entering Gaza to conduct fieldwork there, due to both the strict border regime that prevents most entry or exit to/from Gaza, and the strongly worded security advice from the UK Foreign and Commonwealth Office (FCO) to “avoid all travel” to Gaza which would make the proposition a major institutional and insurance liability. These factors had a clear influence on the design, conduct and outcomes of my research. The research question was set out to specifically examine the relationship between technology and the state, in this case Israel, rather than the question of how technology is used by combating sides in asymmetric conflict, or by Hamas and its allies in the Gaza-Israel conflict. Likewise, the fact that my research predominantly makes use of Israeli participants and secondary sources for its data is bound to have an influence on the findings that come from the research, regardless of the extent of any degree of critical acuity or scepticism in my part.

Applying a more-than-human approach to the state requires dealing with the paradoxical situation of having to negotiate the deliberately opaque nature of the state in order to apply an approach that relies on empirical depth and detail in order to produce

nuanced narratives of socio-technical relations. However, the state as an object is able to exercise and extend its authority by maintaining secrecy and its representatives are highly sensitive about security, particularly in relation to the affairs of its military and statecraft (Aradau, 2017; Paglen, 2010). Managing this contradiction necessitates a balanced and careful approach to research that is both reflexive about the political implications and context of the research topic, and adheres to ethical and legal boundaries. On a practical level, heuristic approaches must be applied to negotiate impediments to access. Exacerbating these considerations is the problem of working in an active conflict zone, which has practical, ethical and epistemological pitfalls for empirical research (Nordstrom, 1995). Each of these will be discussed in turn in this chapter.

3.2 How to research an object

The amalgamation of the related, but different, approaches from ANT, OOO and assemblage theory treat politics as a web of socio-technical relations in which agency is distributed between humans, objects and the physical environment. The capacities and relations of these heterogenous actors coproduce ontology in a way that exceeds a purely human capacity for agency. By tracing how the interaction between humans and nonhumans, and among nonhumans creates “geopolitical risks” (Ek, 2000: 866), a materialist approach can lead to novel insights about how political conflicts occur. Such an epistemology requires the production of empirical case studies that illustrate the more-than-human constitution of the state. This demands a methodological approach that can “attend to the ways that empirical research can itself be theoretically generative” by paying

attention to “details and fragments of evidence” that can “reveal something that was perhaps unexpected or unanticipated” (Barry, 2013: 418). Rather than a rigidly deductive process of applying a normative theoretical paradigm to a particular case, this requires the researcher to simultaneously treat case studies both inductively and deductively. The researcher must critically evaluate case studies deductively in light of existing theoretical models to identify and address the problems and inconsistencies that demand refinement or a different approach. At the same time, the empirically rich details of a well-crafted case study demand inductive creative enquiry by the researcher to potentially discover novel, anomalous or thought-provoking elements or dynamics that invite theoretical innovation.

Applying Barry’s epistemological approach to the hybrid more-than-human ontology that this thesis advances requires an agile, adaptive and broad-spectrum methodological strategy. Setting out with a determined objective of immediately and categorically identifying technological or otherwise material capacities, agencies, and symbioses is likely to fail. The method utilised in this thesis for elucidating an object-oriented techno-politics was often iterative and intuitive, but it can be broken down generally into a three-stage process. The first step is to gather evidence concerning a given technology from a wide range of sources, aspects and perspectives. Second is the reflective process of collating, organising and piecing together these partial fragments of evidence concerning the object under scrutiny. This gives shape to that object as a coherent and situated entity. Both through and resulting from this process of constructing and preparing a case study, an object’s nature, attributes and contextualised positionality can be represented and made intelligible. This crucial stage of defining *what an object is* makes possible an analysis of that object’s agencies

and capacities, i.e. *what it does*. It is in this final stage of retrospectively analysing an object in terms of the qualities and events that are significant to its biography that its relations to other objects and latent potentialities become evident (cf. Harman, 2016).

To exemplify this approach, an especially rich analytical vein for this thesis' argument was discovered through an engagement with scientific and engineering experts. This was particularly valuable for understanding the elemental agency of the subsurface in the empirical analysis made in Chapter 6 of Israeli scientists' and engineers' attempts to find cross-border tunnels from Gaza. During my fieldwork in Israel, I interviewed several specialists, who provided an explanation of the technical specificities, capabilities and problems of geophysical detection. I then triangulated this information with evidence gathered from research participants, off-the-record interviews, news sources, satellite images, reports and specialist literature on geosensing. Grappling with the physics and mathematics of frequency ranges, magnetic fields, electrical conductivity and reflection coefficients, alongside the technical details of tunnelling, photographs and soil cross-sections meant that I was able to better understand the material properties of the Gaza-Western Negev region's soil as an object. It is only by analysing how the soil's properties interact with the tunnelling practises of Hamas engineers and the forms of expertise deployed by Israeli scientists to render the subterranean density knowable that the soil's agency in relation to other relevant geopolitical factors became apparent. It also became evident from this case study that Harman's (2016) theoretical toolkit emphasises the symbioses through which objects become more powerful but does not give much consideration for the sources of inertia that counteract an object's prerogatives. This led me

contribute as a supplement to Harman's ontological schema the concepts of *limitations* and *detachments*. The former features periodically in the thesis' empirical discussion, but is probably most evident in Chapter 6's evaluation of the dynamics that occur between technological and elemental agencies. The latter is introduced in section 4.4 to explain the IDF's moratorium on using white phosphorous shells following the 2008 Gaza War.

The next section will address in greater detail the methodological conundrums posed when conducting research on the uniquely large, distributed and multi-faceted object of the state. This includes a discussion of how to manage the challenge of researching an object which thrives on secrecy to maintain its power, and how the heuristic strategy of a mixed-method approach was adopted to make this research feasible.

3.3 Interrogating the state: a mixed-methods approach

One of the biggest problems facing research about the state, particularly matters involving security, is the barrier of secrecy (Belcher and Martin, 2013; Perkins and Dodge, 2009). Political geographers dealing with state security need use the boundaries of what information is available or given to gain both a big-picture sense of their research topic, as well as much detail as possible. However, discovering the boundaries of obtainable knowledge can also be productive in order to gain a sense of what sorts of knowledges powerful state actors consider imperative to protect with secrecy.

It is virtually impossible for the researcher to obtain the 'full picture' of the state as an object. This is inevitable due to its size, complexity and diffuse nature, in addition to its apparatuses' application of secrecy to protect their hegemony. That said, it is still possible

to uncover enough information to gain a useable understanding of the state. This also requires an acceptance that there will be times when access is denied, or that there will often be restrictions in the nature of access to desired information that is made available to the researcher. However, these blockages can be equally critically productive in uncovering the apparatuses of the state as the instances in which access is permitted. Pinkerton and Leshem (2018: 11-13) give a poignant example of this in their evaluation of the oblique way in which they were refused permission to enter the “no-man’s land” of Bir Tawil by Egyptian officials due to the peculiar situation of Egypt and Sudan’s mutual disavowal of sovereignty over the “unclaimed [border] territory.”

From the outset of this research, there was a planned strategy of taking an *ad hoc* approach that attacks the topic from as many angles as possible in order to obtain a useable bulk of data. In order to do so, this research has relied on a qualitative mixed-method approach that combines primary field research with documentary analysis. This allows for a triangulation of information from a range of sources. In some instances, I had conducted elite interviews on an off-the-record basis, in which I was ethically bound to not use the information obtained in the research outputs. This meant that I had to corroborate information from other sources if I wanted to make use of it. On the other hand it provided valuable contextual information that I could then critically evaluate or use to fill in gaps in my understanding. Rather than being limited by a methodology that is allied to a narrow set of techniques sanctioned by a particular epistemological position, taking a resourceful approach to obtain information from a range of research methods allows for a greater

amount of data to be obtained in a context of scarcity. However, the drawback of taking what is admittedly a purposefully undisciplined approach is that the data obtained could arguably lack the depth, focus and substantiating repetition that would likely be obtained from the rigorous application of a single method, for example conducting several years of ethnography, or a detailed archival analysis.

At a practical level the problem of access to data had to be addressed and negotiated. This issue is especially acute due to the contemporaneity of the conflict being studied, in which secrecy is paramount for political and operational reasons, and archival material will remain classified for a considerable time. Furthermore, it is illegal in Israel for serving military personnel to speak to the press or researchers without permission. To circumvent this restriction I spoke to military personnel who were either active reservists or retired, or in some cases non-military experts who could provide the information that I needed. I also attended events in which serving personnel were allowed to speak publicly. This highlights the need for the researcher to be resourceful and agile in formulating and applying approaches to obtaining access when facing inertia from manifestations of state power.

How political ethnography confronts the challenge of state secrecy requires formal methodological articulation. Jones and Clark (2015: 4) advocate studying the practices of elite state actors to penetrate the “opacity” of state processes. In their research on European diplomacy such an approach was made possible by “sustained engagement” over a number of years that “enable[d] the construction and sustenance of networks and interpersonal trust” (Jones and Clark, 2015: 4). This foundation was not available at the present doctoral researcher’s early career stage, therefore I had to do as much advance

planning as possible to anticipate the ethical and practical effects of secrecy, as well as relying on spontaneous and heuristic approaches in the field that involved thinking on my feet. Such techniques cannot be taught for any given situation, but anecdotal knowledge gained through practice can model potential pathways for the successful negotiation of access. For example, in September 2015, I attended the DSEI convention at the ExCeL centre in London, which is a major defence industry trade show. I went to the stand of Rafael Advanced Defence Systems, a major state-owned Israeli defence company. When I explained that I was a PhD researcher and wanted to ask some questions, a Rafael public relations official indignantly exclaimed “you can’t just come up and talk to us, we’re a defence company!” Eventually I was able to negotiate with them by explaining that I was ‘just’ interested in learning more about their technologies and was able to convince them to talk me through their product display. This anecdote illustrates the sensitivities surrounding political ethnography on elite security actors, and proves that these can in fact be negotiated and managed to a reasonable extent in order to allow such important research to be conducted. While in many instances I was able to negotiate access in some form, I also had to accept that there would be times when access was denied to me, or there would be limitations in my access to the information I desired. This required me to shift my methodological approach in order to accommodate these lacunae, such as making use of documentary methods, which will be discussed later in this section.

Semi-structured interviews formed a key component of the field research that I conducted in Israel in the first half of 2016. Prior to going into the field, I attended a two-day training workshop on semi-structured interviews at NatCen Social Research in London.

This taught techniques for planning semi-structured interviews, the practical and ethical modalities of conducting them, and included sessions on interviewing elites and vulnerable participants. Semi-structured interviews strike a balance between topical consistency and purposeful coverage of areas of research interest, and flexibility in modifying the pace, content or line of questioning responsively and dialogically to each individual participant (Stump and Dixit, 2013: 85-86). This allows for greater insight to be gained from the unique positionalities of participants, and allows the researcher to adapt their interview technique to respond to the rapport, or lack thereof, between them and the participant. In order to plan these interviews, I would create a topic guide prior to the interview. Instead of a list of questions, it would have an outline of areas to cover worded as statements, organised into stages of the interview (Arthur et al., 2014: 149-159). I could either use a similar guide for a group of participants, e.g. everyday participants from Gaza border region, or modify to fit the purpose of a particular interview or the specialism of a particular interviewee, e.g. an elite interview with an IDF general.

As shown in Table 3.1, 21 semi-structured interviews were conducted in total. These included six everyday interviews with community workers, activists and ordinary citizens living in the Western Negev, and 15 elite interviews with retired or reserve high-ranking military figures, strategic and military analysts, retired defence industry executives and civil servants, and scientific and engineering experts. Three of these elite interviews were conducted on an off-the-record basis at the participants' request, and two elite interviews are not referenced in the thesis, one of which was due to the deliberate evasiveness and brevity of the participant's responses. Reasons for this relatively small sample size include the challenge of finding elite participants willing to speak with me, and the practical barriers of access due to not having a car

available and the relatively poor public transport available to rural sites in the Western Negev. However, these limitations were offset by the breadth of participants' backgrounds that allows the range of actors in the socio-material networks of the case studies to be more clearly accounted for. There was also a considerable depth to the interviews that was theoretically and empirically generative. The ten interviews that were recorded generated 15 hours 24 minutes of audio recording that was transcribed and analysed.¹ The four recorded everyday interviews had an average and median length of 1 hour 11 minutes, and the six recorded elite interviews had an average length of 1 hour 45 minutes and a median length of 49 minutes. Five of the elite interviews, three of which were recorded, were over 2 hours long and in two cases took place over multiple sessions on different dates. Furthermore, two of the everyday interviews included half to full-day ethnographic site visits to multiple relevant locations.²

¹ Some interviews could not be recorded for a variety of reasons. In the case of several everyday interviews it was impractical due to the fact that I was conducting an ethnographic site visit with the participant that involved a high degree of mobility. In several elite interviews, this was due to considerations of access. See discussion of this issue that follows in this section.

² These interviews were supplemented by several ethnographic site visits listed in the "List of Interviews and Research Sites" at the end of the thesis.

	Category	Pseudonym	Role	Location	Recording	Interview date	Interview length
1	expert	Expert interview 1	geosensing scientist	anonymised	notes	31 March 2016	approx. 30 minutes
2	expert	Expert interview 2	think tank expert on strategy/senior IDF officer (reserve)	Tel Aviv metro area	audio recorded	28 March 2016	0:48:50
3	expert	Expert interview 3	geosensing engineer	anonymised	notes	10 March 2016	approx. 1 hour
4	expert	Expert interview 4	geosensing engineer	anonymised	notes	13 March 2016	approx. 1 hour
5	expert	Expert interview 5	geosensing engineer	anonymised	notes	13 March 2016	approx. 30 minutes
6	expert	Expert interview 6	retired defence industry executive	anonymised	audio recorded	25 January and 14 March 2016	4:25:18 (2:12:15 and 2:13:03)
7	expert	Expert interview 7	former government advisor/senior IDF officer (retired)	Tel Aviv metro area	audio recorded	02 February 2016	0:36:53
8	expert	Expert interview 8	retired MoD civil servant/think tank expert	Tel Aviv	audio recorded	31 January 2016	2:08:37
9	expert	Expert interview 9	think tank strategy expert /academic	Tel Aviv metro area	audio recorded	14 March and 22 June 2016	3:08:28 (1:34:30 and 1:33:58)
10	expert	Expert interview 10	defence journalist	Tel Aviv	audio recorded	26 January 2016	0:42:52
11	expert	not used	think tank expert on strategy	Tel Aviv	audio recorded	01 February 2016	0:24:12
12	expert	not used	executive for Israeli defence company	telephone	notes	23 March 2016	approx. 20 minutes
13	expert	off-the-record	think tank strategy expert	Tel Aviv	notes	01 February 2016	approx. 45 minutes
14	expert	off-the-record	defence analyst/academic	Tel Aviv	notes	16 June 2016	approx. 2 hours
15	expert	off-the-record	strategic expert/defence consultant	Tel Aviv	notes	19 June 2016	approx. 2 hours
16	everyday	Ari	political activist/Western Negev resident	Sderot	notes	29 March 2016	approx. 30 minutes
17	everyday	David	Western Negev resident	telephone	audio recorded	29 June 2016	0:45:45
18	everyday	Noa	Western Negev resident	Sderot and Netivot	notes	29 March 2016	half-day site visit
19	everyday	Noam	Western Negev resident	telephone	audio recorded	28 June 2016	1:09:33
20	everyday	Shira	community activist/Western Negev resident	Sderot	audio recorded	27 June 2016	1:13:36
21	everyday	Yael	community worker	Ofakim	audio recorded	28 February 2016	1:37:13 and full-day site visit

Table 3.1. Breakdown of semi-structured interviews and data collection.

Conducting semi-structured interviews with elites in particular — such as reserve or retired military personnel, academic experts, earth scientists and engineers — required a targeted methodological approach and interpersonal tactics to navigate the asymmetrical power relations frequently implicit in interrogating individuals accustomed to a position of authority or expertise. In order to build rapport and gain access in some elite interviews, I would e-mail the topic guide in advance of the interview. This helped to build trust with these participants by making clear what my intentions and objectives were, and in some cases this was requested by participants as a condition of access. This also gave them an opportunity to anticipate topics and request clarifications in advance. It also gave them the scope to set the boundaries of our discussion, including topics that were off-limits, in order to avoid violating state secrecy requirements or addressing areas they felt uncomfortable discussing. Another technique I used in several instances was to act deliberately naïve about the extent of my knowledge about a particular aspect when asking questions about it, so as to defer to the authority of the elite participant, and allow them to ‘take me under their wing’ as a mentor. This tactic encouraged them to be more open, as they did not feel the need to be defensive or that their expertise was being challenged. However, with other elite participants, an opposite tactic was called for. For example — since I do not come from a military or defence sector professional background — demonstrating a knowledge of military concepts, terminology and acronyms such as C⁴ISR, or COIN,³ was helpful in gaining trust

³ I deliberately have not spelled out these acronyms in the main text here in order to emphasise their esoteric nature. C⁴ISR, which also appears elsewhere in this thesis, stands for Command Control Communications, Intelligence Surveillance Reconnaissance, and is a category of platforms used by commanders to manage combat operations. COIN is shorthand for COunter-INTelligence.

with some military and defence industry figures, as it showed that I was aware of military and strategic concepts, and therefore was able to understand their positionality and worldview. Knowing when to apply each of these approaches was a matter of intuition, and was a skill that I was able to cultivate through experience in successive interviews.

Another consideration in elite interviews was the use of digital audio recorders (Stump and Dixit, 2013: 86-87). Whilst it is clearly better for me as a researcher to have a detailed transcript in order to retain details for analysis and to quote from, I needed to make calculated decisions regarding whether to use them as I felt it would upset the delicate balance that I achieved in negotiating access and would lead to a refusal to participate in my research. In some cases participants stipulated as a condition of participation that I not record the interview. Participants were concerned that recorded quotes could be quoted out of context by the researcher who would be in a position of authority by having an 'objective' recording. Also having a record of information could lead to concerns about the data being leaked or used for espionage, or clandestine information being retained in a durable format if it were to be accidentally revealed.

Alongside these elite interviews were semi-structured interviews and ethnographic site visits with residents and activists in the Western Negev region bordering Gaza. Evidence gathered from these sources appear prominently in Chapter 7. The purpose of carrying out a portion of research that focuses on the everyday geopolitics of people living in the periphery (Slesinger, 2016) affected by violence from Gaza is to emphasise the dynamic interplay that disrupts the hierarchal stratification of the elite from the everyday and material elements of geopolitical processes. Nordstrom (1995: 137) articulates the need to

pay attention to the “individuals” involved in violent conflict, who “do not make up a generic group of ‘combatants,’ ‘civilians,’ and ‘casualties’ but an endlessly complex set of people and personalities, each of whom has a unique relationship to the war and a unique story to tell.” Listening to the stories and requires a sensitivity to the fact that their experiences of conflict are a trauma that they cannot easily escape, unlike myself as the researcher. This had to be reflected in the empathetic demeanor with which I engaged with them. I also deliberately couched these interviews as an opportunity for everyday participants to make their voices heard. At the end of each interview I would ask the participant (including the elite interviewees) if there was anything they would like to add or something they wished to say, for inclusion in my research. In one instance, the interviewee stated that he wished to make clear that he was compulsorily evicted from a Jewish settlement in Gaza during the 2005 withdrawal, and that he felt he had been displaced from his home and his community. This was an uncomfortable articulation of subaltern politics that unsettled the state-level discursive framing of the Gaza withdrawal in terms of its necessity and justness as a step towards Palestinian statehood in accordance with the two-state solution, the strategic cost-benefits of its unilateral nature, the territorial implications for Palestinian statehood and the humanitarian implications of Israel and Egypt’s subsequent blockade. Regardless of the rightfulness or political necessity of the withdrawal, the participant’s statement powerfully gave voice to the suffering and sense of injustice experienced by Israeli citizens who were involuntarily removed from their homes and dispersed, in some cases forcibly by the police and IDF. This forced me as a researcher to acknowledge the state violence perpetrated on Israelis who formerly lived in Gaza, something that has been often been either overlooked

in the discourse, or dismissively ignored in relation to the more severe, but no more real, suffering of Palestinians in Gaza. This situation raised difficult questions about the ethical and political nature of how researchers identify with parties in conflict, and the potential to exploit participants' trauma when conducting research (Mitchell, 2013). These concerns will be explicated further in the following section.

In addition to data gathered in the field, documentary research was an invaluable source of data for this research. It is of course important to note that documents are not politically neutral artefacts, but are "inscribed text[s]" (Scott, 1990: 5) laden with values and potentials that are relational to their authors' positionality, the context of their production, intended purpose, ideological messages, other documents, and so forth. Documents are one kind of what Latour (1987: 227) calls "immutable mobiles" that are "combinable at will," and are meaningful and analysable through their relationality to other actors, including humans, nonhumans and objects or assemblages. In addition to producing new forms of meaning and knowledges through their circulation and synthesis with other documents, they "create associations that extend socio-material arrangements and allow projecting power across space" (Müller, 2012). Documents are able to have such an agency through their abilities to create symbioses between, and reinvigorate, objects such as organisations or states, or conversely to combat other objects.

In practical terms, an active consideration of the political potency of documents has influenced the varied methodological approaches that I have used to select and apply documents in this thesis. Documentary sources used in this research include both Israeli and foreign newspapers, reports and media outputs generated by both the Israeli government

and state agencies such as the IDF, defence industry advertising materials, as well as reports by IGOs, NGOs and think tanks. These source have been circulated through a variety of media, including printed reports, printed or CD-ROM brochures, photographs, maps, satellite imagery, magazine adverts, reports and news articles accessed or downloaded from the internet, organisations' and companies' websites, and illustrated 'info-graphics' posted on social media. The medium used, distribution venue, creator and their affiliation, and intended audience all influenced my decisions about which information to use in the first place, the purpose for which it was used, and how I contextualised and interpreted it.

As noted already, different documents from different sources were conscientiously selected and deliberately applied in specific ways that were suited to their particular purpose within the research. Documents have been used in both the research process and its outputs various contexts to demonstrate certain discursive framings and positions; to triangulate the veracity or verifiability of information obtained from interviewees; as a resource for obtaining targeted information or clues about a matter or event obfuscated by state secrecy; to provide contextual information; and to collate facts and analyses pertaining to specific events in order to use as evidence to think through a theoretical point, to support a facet of my argument, or to put together a chronological sequence.

In some circumstances documents were deliberately chosen in order to highlight a certain bias or political positionality. The two extracts juxtaposed in Table 5.1 were selected from reports on the legality of Israel's actions in the 2014 Gaza War produced by the United Nations Human Rights Council (UNHRC) commission of enquiry and Israel's Ministry of Foreign Affairs (MoFA), respectively. These reports were not chosen to provide factual

evidence in support of my own claims, nor were they selected for the reason of upholding or refuting their factual veracity. Rather, they were selected because they archetypally exemplified how the contending outlooks of practitioners of international law in war, based on their respective positionalities from military or humanitarian organisations, influenced discussions of technology in the conflict. In other contexts in which I was collating factual evidence for illustrative purposes, I was deliberately cautious to use sources that were relatively mainstream and would be perceived as broadly credible, whilst remaining aware of the nature and extent of a source or outlet's political bias. This is designed to make my research plausible to non-polarised readers and to moderate against accusations of strong bias from those who align themselves with either the 'pro-Israel' or 'pro-Palestine' camp.⁴ To this effect, in contrast to the recommendations for "further reading and information" on the Gaza-Israel conflict (Gidwany and Gildersleeve, 2014; capitalisation edited for continuity) compiled on the website of the well-respected human geography journal *Antipode*, I have assiduously avoided using the Electronic Intifada⁵ and Mondoweiss⁶ websites as sources of information about the conflict because of their polemical and divisive anti-Israel discursive tone. Likewise, for the corollary reason I have avoided using demagogic

⁴ I am using the terms 'pro-Israel' and 'pro-Palestine' as a shorthand for the polarised political positions in which the Israel-Palestine conflict is typically understood and discussed. Whilst such terms are frequently used by laypeople and activists to characterise their own, and others', positions, these terms have even been used several times by academic colleagues in discussions with me to describe their own political views or how they perceive the positionality of my research. However, I wish to make clear that in my view the binary characterisation of the conflict represented by these terms negates the complexity of the conflict, and is deeply unhelpful to reaching more productive understandings of it or workable solutions. Therefore, I do not adopt these terms uncritically, and my use of them should not suggest that I view the actuality of the conflict in such a dualistic manner.

⁵ <http://electronicintifada.net>

⁶ <http://mondoweiss.net>

'pro-Israel' websites as factual sources such as NGO Monitor⁷, UN Watch⁸, CAMERA⁹, or BBC Watch¹⁰, which militate against perceived anti-Israel bias in NGOs, IGOs and the media. Excluding such sources is roughly analogous to the technique in statistical analysis of removing the first- and fourth-quartile outliers in order to mitigate against distorted or misleading findings, as well as concerns over the credibility and veracity of these outlets' portrayals of facts and their sources of information.

Because of this thesis' methodological requirement for rich empirical detail to produce materialist case studies, my use of news sources was largely for the purpose of obtaining specific details, be they facts or an actor's stated position, rather than a comparative discourse analysis of their coverage (cf. Megoran, 2005). Appendix A gives a tally of the number of citations from each media source used in the thesis, alongside an overview of political bias and other information relevant to their credibility and political stance. It is notable that Israeli sources tend to appear more frequently than any other nationality, which makes sense since they were more likely have coverage of detailed aspects of Israeli political affairs than global news outlets. The other conspicuous statistic is that *Haaretz* is used significantly more often than other news sources. This is due in large part to *Haaretz*' dedicated coverage of Israeli defence and diplomacy matters, and the quality and depth of this reporting.

⁷ <http://www.ngo-monitor.org>

⁸ <http://www.unwatch.org/en>

⁹ CAMERA is an acronym for Committee for Accuracy in Middle East Reporting in America; <http://www.camera.org>

¹⁰ <http://bbcwatch.org>



Figure 3.1. Untitled photographs from Ruben Salvadori's series "Photojournalism Behind the Scenes."
 (Source: Salvadori, 2012; used with the kind permission of Ruben Salvadori)

Another documentary category in which selectivity and critical acuity became paramount was the use of photographs and other images in presenting my research. As with the news sources, various types and genres of images were used for drastically different analytical purposes including to invite consideration of the ethical quandaries of researching and representing political violence (Figure 3.1), demonstrating scientific modes of representing subsurface density (Figure 6.2), providing ethnographic detail (Figure 7.2) and to illustrate the seductive imaginaries of technologies in the conflict (Figure 7.4). Furthermore, the fact that these images are being used in such politically powerful ways in order to comprehend the mechanisms of violent conflict suggests that methodological attention must be paid to how and why they are valuable in the study of conflict, and what are the implications of their use in conflict research.

Visual images have the power to present to the viewer an immediate and vivid impression of reality. However this impression “offer[s] only a partial view of a situation — its borders perhaps concealing as much as it reveals” (Davies, 2013: 135). As Rose astutely reminds us in her discussion of photography, instead of being an “unproblematic picture of how that place appears,” as “descriptive illustrations” images are “active players in the construction of a range of different kinds of geographical knowledge” (Rose, 1996: 283). This becomes acutely noticeable in photographs from Italian photojournalist Reuben Salvadori’s (2012) project “Photojournalism Behind the Scenes” (see Figure 3.1), which draws attention to the production of geopolitical images by presenting archetypal and emotionally gripping images of the ‘resistance’ of Palestinian protesters in East Jerusalem alongside incongruous meta-textual photographs of the photojournalists photographing them. This series highlights the often “scripted” (Faulkner, 2013: 6) coproduction of geopolitical knowledges that occurs between photographers, their subjects and the material, and raises poignant questions about the connections between political contestations, visual and journalistic tropes and market forces. In a critical evaluation of this work, Faulkner (2013: 6) suggests that in contrast to Salvadori’s notion that an inauthentic ‘Hollywood style’ artificiality *lies* (pun intended) behind the production of journalistic images in conflict, the performative nature of their production “are not distortions of political reality, but the very embodiment of a reality of which the media is part.” This demonstrates that in using images to represent and analyse geopolitical conflict, including the ones that are produced by the researcher during the course of their fieldwork, one must be reflexive about how the images they use do political work in certain ways that might exacerbate or reproduce forms of geopolitical

violence, and exclude other political expressions at the same time. This burden necessitates that the researcher think critically about the images they select by considering the process through which they are created, the ideological underpinnings they work to convey, and the possibility of a disconnect between the intended message and their reception by a given audience.

The discussion about the politics of images above highlights how the sources we use, both documentary and ethnographic, to evidence our analyses of a given conflict are embedded products of that conflict, and must be given methodological scrutiny as such. The process of gathering source material, how and why it is chosen, how it is used, and the work that goes into piecing these fragments together to selectively represent a geopolitical conflict as an empirical case all iteratively reproduce the conflict in ways that can serve particular interests within it. This concern also extends to what happens to that material and how it is used once we have finished our research project. The answers to some of these concerns can be related to both how we positionally relate to the conflict, and how we are imbricated into certain networks of relations within it. These factors influence both the nature and modes of our enquiry, and the content and conclusions of the outcomes we present from the research. The next section will confront from a theoretical standpoint some of the ethical, political and practical implications of positionality that arise when conducting research in areas of violent conflict.

3.4 The ethical, political and practical implications of researching conflict in Israel

Doing fieldwork in an area of active violent geopolitical conflict raises a range of issues that must be addressed, both theoretical and practical. Some of these will resonate with the politics of fieldwork that deals with the negotiation of conflict in non-violent contexts, but other aspects will be exceptional to this uniquely volatile and dangerous set of circumstances. One of the chief theoretical concerns that has a tangible impact on the conduct, analysis and writing of social scientific research is the positionality of the research in relation to the subjects/objects of their study. This manifests in how the researcher balances their empathy with a participant's positionality — either out of generating rapport or ideological commitment to the participant's worldview or circumstances, or both — with the “reflective detachment” that is conducive to the dispassionate rationality of critical enquiry (Robben, 1995: 84). Robben (1995: 85) draws attention to how the “seduction” of the emotional and knowledge claims of informants in a conflict draws the researcher into an uncritical identification with their worldview at odds with the academic responsibility to evaluate and interrogate truth claims. Conducting a “partisan” ethnography entails dangers to both the researcher's claims of objectivity and their personal safety. Sluka (1995: 287) addresses the dilemma of objectivity by suggesting that the peculiar intensity of “political conflicts” is inimical to “neutrality” for the researcher, but this “does not necessarily mean that you have to become partisan.” He negotiates this paradox by making a somewhat unconvincing distinction between sympathy to a position and partisanship. This is problematic because it negates the way in which the researcher's sympathy is likely to be mobilised and the purposes that their sympathy might serve. Sluka (1995: 287) also suggests

a “situational ethics” in which a claim of academic neutrality can be used as a strategy to negotiate the vicissitudes and dangers of conflict. Lee (1995: 23) objects to the inherent deceptiveness of this approach, but is hesitant to condemn researchers who have intentionally feigned a role of supposed academic neutrality to deceive powerful actors in order to assist a subaltern actor or group with whom they sympathised as a victim of social injustice. However, I contend that this approach is risky because it undermines the researcher’s credibility, integrity and potential for future access in the field for both themselves and other researchers in the future.

My own approach in relation to the related concerns of neutrality, sympathy and the acceptability of dishonesty has been to be open with participants about my academic approach. I did this by identifying as a critical academic researcher who is there to listen and give voice to participants’ perspectives, which is a form of empathy rather than sympathy. Obviously, I would also have to engage differently depending on the context, topical focus, register and analytical depth of an interview. When approaching participants who were experts from academic and think tank backgrounds – typically from fields related to defence, strategic studies and realist international relations – I would be clear with them that my research is related to a critical disciplinary perspective. More often than not they were appreciative of this, and it led to productive engagements. In one case, the participant expressed enthusiasm for the challenge of presenting a strategic perspective that justifies Israel’s use of force to aversely-minded researchers to modify their thinking. In another instance, a participant expressed solidarity with me as a former doctoral student above other considerations, despite being aware of the substantial epistemological differences

between our academic views, and helped to arrange several valuable interviews, for which I was incredibly grateful.

However, I also learned to be deliberately careful to moderate the tone and vigour of how I approached my own academic and personal views on the Israel-Palestine conflict. During my first interview in Israel with an Israeli journalist I mentioned that my PhD topic arose from my fascination with Weizman's (2007: Chapter 7) work on former IDF strategist Shimon Naveh's lateral approach to space in urban warfare and the controversy that arose from it which led to Naveh becoming a pariah amongst Israel's defence elites. Although I did not mention it at the time, this is despite the fact that my own work is critical of Weizman's polarised anti-Israel approach to the conflict. The participant helpfully admonished me to avoid mentioning Weizman in future conversations with establishment figures, as it would likely alienate them. Also, it is possible to asking challenging questions to elite participants using the discursive role of the academic researcher's responsibility to be critically probing, rather than sympathising with a position at face value. This both enables the researcher to maintain rapport with the participant, and to receive analytically valuable answers rather than curt or defensive ones that are less informative.

Ethnographic researchers must also be sensitive to how their "reception by a host society is a cultural contextualisation of the fieldworker's characteristics" such as race, class, religion, gender and ethnicity (Warren, 1988: 13), which will often be used to classify the researcher into "designations such as insider outsider, spy, victim, neutral, ally, or friend" (Lee, 1995: 73). Upon meeting me, participants would try to discover whether I was Jewish or not, whether I spoke Hebrew, my political views towards Israel and my level of familiarity

with the country in order to orient how they related to me. As a result, my Anglo-American *Ashkenazi* Jewish cultural and ethnic background, and family and community ties to Israel, likely had a considerable influence on my access to, and interactions with, my research participants.

This background put me in what could be best characterised as a liminal position in relation to my Jewish-Israeli subjects, which I was able to modulate as a resource to further my field research. I was clearly not an insider, as I did not share their collective experiences of being Israeli, cultural attitudes and dispositions or senses of national belonging. Also, whilst I studied some Hebrew as a child, and more recently in evening language classes, private tuition and an intensive *ulpan* course in Israel in preparation for my fieldwork, I was not fluent in their native language. This meant that most of my interviews were conducted predominantly in English with some sporadically interjected Hebrew, although one extensive interview was conducted entirely in Hebrew with some assistance from interlocutors in parts. At the same time I was not quite an outsider since my Jewishness created some sense of disposition towards me and I shared with them the cultural and outwardly religious experience of being Jewish, albeit there were also many differences in this regard as well, particularly with participants from *Mizrahi* Jewish origins.¹¹

¹¹ One of the major socio-economic, ethnic and cultural divisions in Israel society is between *Mizrahi* Jews, who have Middle-Eastern and North African ethnic origins, and *Ashkenazi* Jews from Northern and Eastern European descent. The *Ashkenazim* have traditionally been the elite class in Israel since the formative years of the state, and the *Mizrahim* have been predominantly blue-collar, poorer, achieved lower educational attainment and were discriminated against by the *Ashkenazi* elite due to perceptions that they were culturally and intellectually backward. This ethnic hierarchy has become somewhat less pronounced in recent years because of an increase in mixed marriages by the most recent generations, and because of public advocacy and greater democratic political representation by *Mizrahi* Jewish groups, but it does still persist and has some influence on contemporary social conditions.

I was able to emphasise my Jewishness, and my family ties in Israel, in certain instances to build rapport with some participants who were, or would have been, reticent to engage with me otherwise. I was also able to utilise the social networks of family and friends in Israel as a resource for obtaining access to sources in several instances. However, my 'outsiderness' also allowed me to have both an etic perspective to analysing my participants' narratives, and to engage with them from a position of unfamiliarity. This allowed me to ask certain questions that an Israeli 'insider' would not put forth, and for participants to spell out their attitudes and experiences to me in a way that would not have been possible if they had assumed a sense of shared experience.

An aspect of the tense political atmosphere that was pervasive during my fieldwork was a noticeably suspicious attitude from many Israelis to Europeans and academics. As a UK-based PhD candidate, some participants chose to identify me *a priori* as belonging to both of these categories. It is notable that in some instances these politically-inflected considerations seemed to be more important criteria in participants' taxonomic schema than whether or not I was Jewish. This was in large part due to inflated political rhetoric from the Prime Minister and several other prominent politicians about widespread anti-Israel sentiment in Europe, particularly on university campuses, and the proliferation of the Palestinian Boycott, Divestment and Sanctions (BDS) movement. I found myself in a situation in which a miscommunication between an everyday participant in an Israeli Development

Town (DT)¹² and an intermediary had made her distrustful. This was due to the third-party who facilitated our interview accidentally misrepresenting the topic of my research to the participant as primarily about resilience, ignoring the aspect of Iron Dome and military technologies. This was an awkward situation that I did not anticipate, since I had been completely transparent about my research topic in my initial contact with the intermediary. However, in order to salvage the visit, which I had travelled a long distance to attend and made considerable effort to arrange, I explained that I was empathetic to the suffering of the local population from Palestinian rocket attacks due to some of my own extended family's experiences of similar trauma in the northern Israel during the 2006 Second Lebanon War. When she then asked if I was only going to write positive things about "us," i.e. Israelis, I carefully but honestly explained that I am not looking at the conflict in terms of positive or negative, and that I do not have an anti-Israel agenda, however my primary responsibility as an academic is to accurately and critically explain what findings I reach based on my data. She accepted this answer and allowed me to proceed with what turned out to be an enlightening interview and tour of the town. This happened both because of my deployment of empathy to build rapport, and my frankness with her regarding my role as a researcher.

I also had to variably hide or emphasise aspects of my positionality in relation to different settings and individuals in some situations. In the same location as the instance

¹² See explanation of this term on page 247.

above, I was asked in an accusatory manner by another participant whether I had been sent by the BDS movement, presumably as a political agent. In order to ameliorate her anxiety, which could have shut down my access to the interview, I pointed out that I had an affiliation with an Israeli university, but deliberately omitted the name of the university department¹³ because of their publicised reputation in the Israeli press for left-wing activism and criticism of Zionism and the state. This put me in an awkward position in which I had to downplay my ostensible identity as a critical researcher in some situations in the field, but emphasise that role in academic settings with other political geographers, despite my own ambivalences about several aspects of this identity.

Another more pragmatic concern relevant to how researchers are imbedded in violent conflict is the challenge of learning how to cope with and understand danger in such an environment (Lee, 1995: 28). It must be recognised that there is an inherent and rather obvious degree of risk to conducting fieldwork in areas of violent conflict, including adverse emotional and professional consequences. This required a sensitivity both practically, and from an institutional risk-avoidance perspective, to the kinds of danger that threaten the health, safety and life of the researcher or participants. This necessitates the application of risk logic by the research practitioner to mitigate quantifiable or anticipated risks of danger through “foresight, planning and skilful manoeuvre” (Sluka, 1995: 277). In terms of foresight and planning, the university-mandated institutional risk assessment exercise was an especially valuable tool for considering risks and hazards for fieldwork in a conflict area in a

¹³ I had an academic internship to support my fieldwork at the Department of Politics and Government at Ben Gurion University of the Negev.

disciplined way. It was also helpful in negotiating the University's institutional concerns over liability or negligence of the researcher's welfare that could inhibit research access. However, as it is a formalised rubric, it cannot anticipate all categories of contingency that might arise, or even come close to anticipating what pathways of mitigation or escape would be available to the researcher in the actual circumstances of the realisation of an acutely dangerous hazard. Also, the evidentiary standard for danger in these institutional risk assessments is most often the travel advice disseminated by the FCO. The FCO advice is skewed towards operating according to a precautionary principle, which means it sometimes relies on intelligence that is poorly attuned to the actual intensity or probability of an identified danger, and is sometimes slow in revising or retracting prohibitive advice once given.

Manoeuvring to navigate potential danger requires a considerable degree of reflexivity and re-evaluation of research practice on an ongoing and self-reflexive basis. In my risk assessment form I stated that I would avoid using local buses in Tel Aviv by using taxis instead. This became prohibitively expensive on a regular basis despite the allocation for taxi fares that I had been provided as part of my research council fieldwork grant. For a while, I started taking shared minibus service taxis when possible, or the local bus when this was not possible. However, during my stay there was a rise in tensions in the West Bank, as well as a stabbing attack carried out by a West Bank Palestinian in Tel Aviv close to where I was at the time. Following these developments, I became very assiduous about taking taxis when I needed to travel beyond walking distance. This small example highlights how even small-scale everyday research practices require careful awareness and practical agility in sites of dangerous conflict.

One particular danger that must be addressed is the possibility of facing accusations of espionage, either by participants or by state security apparatuses (Lee, 1995: 31). This danger can be influenced by domestic or international political currents, or even tactically employed to achieve political objectives by certain actors. The profound seriousness of these concerns is underscored by several high-profile incidents that occurred in the Middle East North Africa (MENA) region during my doctorate in which doctoral students suffered harm in the course of their fieldwork due to suspicions and allegations of espionage. One incident was the 2016 murder of Cambridge University doctoral candidate Giulio Regeni that is suspected to have been perpetrated by the Egyptian National Security Agency (BBC News, 2018a), and the other was 2018 conviction and incarceration of Durham University security researcher Matthew Hedges on spying charges in the United Arab Emirates (BBC News, 2018b).¹⁴

The potential for facing accusations or being detained for espionage was addressed in my risk assessment, however it is uncertain how well these measures would have actually protected my welfare considering the extraordinary and secret powers opaque to public scrutiny that are granted to intelligence and security agencies in most states, and the ability of the secrecy under which they operate to obfuscate or provide impunity for their actions. As previously mentioned, for the ethnographic part of my research I conducted semi-structured interviews and site visits with military elites, the defence industry, think tanks, engineers, geophysicists, activists, community organisers and everyday actors. In keeping

¹⁴ Hedges was eventually pardoned and released by the Emirati authorities following diplomatic pressure from the UK and a concerted effort by his wife to raise awareness of his predicament.

with fundamental ethical guidelines for research, the safety and livelihood of participants and the researcher were of paramount importance. I needed to be acutely aware of the serious legal consequences of violating state secrecy laws that could lead to loss of employment or incarceration for a research participant who accidentally revealed classified information to me. This responsibility was impressed on me by one ethnographic moment in which I was trying to arrange an interview with a senior consultant to the MoD, who declined to speak with me because he is given random polygraph tests, and could risk losing his position if it came out in a test that he spoke with an outside person about his work, even if no secret information was given.

Another way in which I anticipated and mitigated the risk I faced as a researcher against accusations of unethical conduct or even espionage was to make use of the ethical consent form as an active tool to combat the potential for such accusations, which happily never occurred. I used the consent form as an opportunity to be open about my university affiliation, funding source and the purpose of my research. I also made the following clear in bold font in the consent form: **“Please be careful not to share any confidential, secret or proprietary information with me.”** I would also verbally repeat this reminder to reiterate its importance at the start of each interview in which this was a potential concern, especially in the case of elite interviews. In order to retain trust with these elite participants, and to protect myself, it was also important to always respect the boundaries set out by them. Oftentimes participants made clear what they would or would not be willing to discuss. In one case, I was trying to arrange an interview with a representative from a start-up defence company called RoboTeam that another participant had told me about. I had received an e-

mail from a representative of the company that they would not be willing to speak to me. However, a week later, a vice-president from the company agreed to speak with me, but set out boundaries in advance. He would only be able to speak about the technical aspects of their product, a multi-function unmanned robotic vehicle, in general terms and would not be able to discuss the specifics of its use in operations. While I did not get the level of detail about challenges and negotiation in the technology's development and actual use that would be ideal for a more-than-human analysis, I did get some interesting information, such as the fact that there is an active feedback between the vehicles' use in Gaza and iterative improvement of their engineering. This situation of being able to talk about technologies or issues in general terms, but not address specifics, was a frequent pattern during my field work.

Another concern of which the researcher in a conflict environment must be aware is how their research is mobilised after completion. Koopman (2016: 530) draws attention to how geographical research can be "weaponized" in conflict, which she defines as "being used by armed actors to do harm," particularly by state militaries. This is a concern that merits serious methodological consideration, therefore I will engage with Koopman in greater detail. Koopman is correct in addressing how research can be weaponised by actors in a conflict. During the course of my fieldwork I became aware of how my own acts of information gathering and knowledge production could make me an active agent in the geopolitical conflict I was investigating as a source of intelligence. In one instance, I was interviewing a scientific expert about tunnel detection and asked a question about whether different materials used by Hamas to reinforce the tunnels made them harder to detect. At

this point, the participant said he did not want to answer that question because if I published that information it could “help the enemy” (Expert Interview 1).¹⁵

As part of this concern for the weaponization of research, Koopman focuses on the interest of state militaries in social science research, particularly human geography and anthropology, following the much-derided “Human Terrain Systems” (Koopman, 2016: 533) experiment of embedding social scientists within military units during the US military’s invasions and occupations of Afghanistan and Iraq. Indeed, I have encountered such interest during the course of my doctoral studies. Following a presentation on the Gaza tunnels that I gave at the 2016 Royal Geographical Society conference, I was approached by a casually dressed man who identified himself as part of the German military’s geopolitical research unit. He expressed interest in my presentation and extended a tentative invitation for me to present my tunnels research at a conference of high-ranking officers in the German military. We exchanged business cards and he added me as a contact on the LinkedIn networking website. Unfortunately, his offer never came to fruition, as it would have been an intriguing opportunity both in terms of seeing how my research might be practically applied, and to engage critically in a participatory way with the politics of research in the discipline.

Koopman also raises certain qualms about the political and practical implications of collaborating with military geographies. These include the use of research for nefarious aims by state actors that violate human rights, democratic participation and even the safety or life of individuals, including research participants. This could either be linked to targeted

¹⁵ Unless introduced in the text, all interviews from field research will be cited parenthetically. Please refer to the List of Interviews at the end of the thesis for a brief summary of each interview.

surveillance that makes use of particular research, or from the more general application of social science research in the service of strategic or political goals. Another more practical concern for conducting research is that both make it unethical to engage with some participant and that potential participants will become reluctant to participate in research and will be suspicious of researchers.

As a result of her misgivings about the very real possibility of the misuse of research by militaries, she takes an unequivocal position of opposing any cooperation or engagement with military users of geographical research, and even recommends taking active steps to foil such use. She asks geographers “not only to be wary of and teach and speak out against the growing military use of geography but to work for a growing but careful use of the tools and insights of geography in struggles for peace and justice” (Koopman, 2016: 534). Particular reasons for why she adopts this uncompromising view could be linked to the context and her experiences of researching activism in Columbia, a country with a notable history of extra-judicial killings by the state security services and government-sanctioned paramilitary groups (Human Rights Watch, 2018). Regardless of the factors that have influenced Koopman’s stance, it is important to acknowledge that the issue of social scientists’ involvement with the military is extremely sensitive and complex in terms of ethics, politics and practical risks, and as such requires careful debate and management.

However, as a provocation to Koopman’s position, I would raise the question of whether the military making use of our research is intrinsically and unequivocally a bad thing? Security, defence and the military are all salient aspects of both society and the state that have existed in one form or another throughout human history alongside political

violence. As the discussion of the literature review suggests, the philosophy, practices and technologies of these areas have certainly been “calibrated” (Shah, 2017: 4), refined and altered over time. However, it is extremely unlikely that these facets of political life will disappear in the foreseeable future, and to suggest such a thing would be utopian fantasy. Therefore, rather than didactically opposing these institutions, perhaps it would be more sensible to show willingness to engage with them in a meaningful, yet still critical, way. Once our research enters the public domain, its use becomes largely out of our control. Recognising this, it is more likely that engaging with the military will give us some degree of agency in how our research is interpreted, applied and deployed, rather than shunning any interaction. Although it might be morally unsavoury to some scholars, an application of our research to the calibration of lethal force in the conduct of war has the potential to mitigate the extent of violence by suggesting to military actors the need for humility and caution in the use of weaponry or other military technologies.

3.5 Conclusion

This chapter has addressed the methodological contingencies of applying a more-than-human epistemology to researching the conditions of violent geopolitical conflict, in contrast to other forms of political research. At the heart of this is the problem of secrecy, which is inimical to the empirical richness and detail on which case study analysis thrives. Compounding this is the volatile and eruptive nature of political violence and war, which makes both the researcher and participants vulnerable in terms of both physical and emotional safety. Researching violent conflict also requires a particular reflexivity to the

researcher's own political biases, positionality and, as well as the potential for participants in a conflict to manipulate or mobilise the researcher to their advantage. Additionally, the researcher must be aware of how their research might be used in a conflict both during and after its production, which leads to a host of ethical responsibilities and quandaries. The researcher must give due care to balancing the need to show sensitivity and empathy towards research participants, many of whom have suffered trauma, with a commitment to critical acuity and the degree of academic detachment required to produce credible findings. It also requires a more careful evaluation and selection of documentary sources than would be necessary in other contexts in anticipation of perceived biases and agendas, and in consideration of how these should be represented, if at all.

These distinctive methodological concerns become especially acute when conducting research on the Israel-Palestine conflict due to its seeming intractability, enmeshed relations of violence, byzantine complexity, intense polarisation and factionalism, as well as its ubiquity and powerful emotional resonance to the involved parties, their respective supporters and external observers. These factors combine to make careful empirical study of this particular conflict challenging since knowledge of the conflict gets produced and scrutinised through the rubrics of judgement and bias, and is often characterised by bombastic rhetoric or shrill accusations. Therefore, the empirically faithful researcher must be diligent to record and convey their evidence in precise and granular detail, and when necessary and possible, describe the contours of a given debate about the conflict's features with as much awareness of contending positions and the details of their respective arguments as can be reasonably achieved. The next chapter will attempt to model

this deep approach by contextualising the Gaza-Israel conflict in terms of the complex amalgamation of historical, geospatial, political, legal and technological processes that have formed the contemporary territory of Gaza as an object in relation to the competing territorial object of the State of Israel.

CHAPTER 4. THE HISTORICAL, TERRITORIAL AND STRATEGIC DIMENSIONS OF THE GAZA-ISRAEL CONFLICT

4.1 Introduction

This chapter will set the scene for the empirical case studies in the three chapters that follow. It will do so by providing a context for understanding the interplay between the Israeli state's constitution as an object and the actions of its security apparatuses in the Gaza-Israel conflict. The State of Israel has increased its stability as an object vis-à-vis its conflict with Gaza by applying a malleable application of the Westphalian conception of the state's absolute territorial sovereignty as a means of asserting its claim to existential security within and without its borders.

This use of territory as a strategic instrument has historically metamorphosed over a series of spatial shifts throughout Israel's history starting from the 1948 Arab-Israeli War in which The State of Israel was founded. According to Filiu (2014a: xii), "neither Israel nor Egypt wanted the 'Strip' to exist: it is a territorial entity 'by default.'"¹ Despite its prime Mediterranean location and its proximity for trade to both Europe and Africa, Gaza has failed to thrive as a territory, either as an independent city-state or as part of a Palestinian state. While its territorial non-contiguity to the West Bank plays some part in the latter non-formation, the main reason for Gaza's stunted conditions is because its viability has been

¹ This section makes extensive use of French historian Jean-Pierre Filiu's 2014 book *Gaza: A History*. Whilst an effort has been made to supplement this text with other sources where possible, it is particularly valuable as it is the only recent scholarly work to trace the specific historical trajectory of the production of Gaza as a territory in meaningful depth.

repeatedly compromised by injurious pressure, interference and violence from both external state actors including Israel, Egypt, Iran and the Ramallah-based Palestinian Authority, as well as the bellicose actions of Hamas and competition between internecine Palestinian factions within Gaza itself.

In order to understand the factors that define the violence of the Gaza-Israel conflict it is necessary to unpack the convoluted territorial arrangement that has produced Gaza as a geopolitical space. This chapter will provide a chronology of the historical and contemporary circumstances and events that have led to Gaza's atypical geopolitical position and troubling humanitarian situation, and have dialogically shaped the territory as a vexing and volatile spatial problem for Israel. This chapter will also explicate some of the logics and practices that Israeli security actors use to manage Gaza as a geostrategic problem. Outlining the historical and contemporary political strategic factors influencing the conflict will give a better understanding of how Israel's applications of military technologies used to pacify or mitigate danger in the conflict relate to the political goals and attitudes of the diverse human actors that co-constitute the state, from security practitioners to political elites to citizens.

4.2 The making of Gaza 1947-2007

Gaza city and the surrounding area has been populated since at least the early biblical era, and has been controlled at various stages of its history by the Canaanites, Philistines, Seleucids, Romans, Byzantines, early Islamic caliphates, Ottomans, and finally the

British prior to the formation of the modern State of Israel.² However, the formation of a distinct and bounded territorial entity that is the present-day Gaza Strip becomes apparent in the mid-twentieth century processes of boundary-making that was precipitated by the dissolution of the British Mandate of Palestine. The 1947 UN Partition plan proposed to divide Mandatory Palestine into separate independent Jewish and Arab states following the withdrawal of the British caretaker government, with the present Gaza Strip was earmarked as part of the Arab portion of the partition.

In practical terms, the territorial basis for a working Arab Palestinian state was nullified in the 1948 Arab-Israeli War³ by two factors. The first was the territorial gains made by the Jewish forces. The IDF launched Operation Yoav on October 15, 1948 with the stated operational goal of “the routing [*migur*] of the Egyptian army” by driving “wedges between Egyptian forward positions” in order to “‘open a corridor’ to the [besieged] Negev [enclave]”

² This deserves a brief note regarding the relationship between Gaza and the Zionist project of *Eretz Israel* [the Land of Israel]. Whilst there has been a small Jewish community living in Gaza from the early first millennium to the 1920s, it was never considered part of the biblical “Land of Israel,” as it was home to the Canaanite and Philistine rivals of the Ancient Jewish kingdoms (Filiu, 2014a: 13). Likewise, the Yishuv-period Zionist movement was ambivalent about colonising Gaza, in part due to the resistance of Gazan landowners to selling land to the Jewish activists (Filiu, 2014a). The contemporary national-religious Zionist movement does not attach the same significance to Gaza as the West Bank in its ideology (which they refer to in biblical terms as Judea and Samaria), since the latter is seen as the ancient Jewish heartland and contains contested sites of religious significance such as the Tomb of the Patriarchs in Hebron and the Tomb of Joseph outside Nablus.

³ The 1948 war is referred to as the War of Independence by Israel, who were the victors. The nascent State of Israel made territorial gains that far exceeded the land allocated by the 1947 partition plan, despite its failure to capture the symbolically significant Jewish Quarter of the Old City of Jerusalem from the Transjordanian forces. However, Palestinians and much of the Arab world refer to the war as the *Naqba*, [the Catastrophe] due to widespread dispossession of Palestinians from their land in large areas of former Mandatory Palestine. I have deliberately chosen to use the term 1948 Arab-Israeli War to describe the conflict as it is a more neutral formulation that avoids uncritically reifying either side’s ideological position in what is arguably the most historically loaded war of the Arab-Israeli conflict.

(Morris, 2009: 321; brackets in original, italics added to indicate Hebrew word).⁴ According to the Israeli New Historian Benny Morris, the eventual final objective of this manoeuvre was “to conquer... Gaza” (Morris, 2009: 321). However, whilst the Israeli forces did capture many towns and villages in the Western Negev that were previously defended by Egyptian and Palestinian forces, they were unable to achieve their goal of capturing Gaza city and its coastal strip, having in fact lost the isolated Jewish settlement of Kfar Darom, situated on the road between Gaza and Rafah, due to sustained Egyptian attacks (Morris, 2009: 278).

The second factor was the ultimately unresolvable internal rivalries amongst the war’s Arab participants. In early 1948, a self-determining All-Palestine Government was formed under Egyptian auspices, with Gaza City as its seat (Filiu, 2014a: 64). However, it collapsed shortly thereafter due to competition and distrust between the governments of Egypt and Transjordan that enveloped Palestinian factions seeking patronage from the rival powers. The Transjordanian-backed rival Palestinian Congress rejected “the constitution of the All-Palestine Government... on the basis of a rhetorical claim that no government could represent Palestine before the complete liberation of its territory, and that until such time it was appropriate for Transjordan to advocate the Palestinian cause instead” (Filiu, 2014a: 66). Eventually, with the absence of either the territorial basis or political institutions for an independent Palestinian state, Gaza was absorbed into Egypt as part of the 1949 armistice agreement between Egypt and Israel. The armistice agreement stipulated clearly that the

⁴ This operation was also known as Operation Ten Plagues, an allusion to the event in the Old Testament book of Exodus in which God punishes the ancient Egyptians for keeping the Jews captive as slaves. This is part of an ongoing convention of giving military operations names with Jewish religious significance that continues to the present. A more contemporary example of this nomenclature from the 2012 Gaza conflagration is explained in Chapter 4, footnote 7.

boundary was “not... to prejudice the final borders delineated in any future political agreement” (Morris, 2009: 377). Following the war and its aftermath, Gaza had absorbed approximately 200,000 refugees. As Filiu (2014a: 71-72) puts it “up to the present day, the inhabitants of Gaza take the view that their ‘Strip’ has become an involuntary ‘Noah’s Ark’ for the former Palestine which disappeared in 1948.”

The Border Wars period (1949-1955) was characterised by low-intensity border skirmishes and cross-border incursions from Gaza by the Egyptian Army and Palestinian *fedayeen* raiders, to which the IDF began to respond to aggressively. Likely the most consequential incident in this period was the February 1955 Gaza Raid in which Israeli troops attacked an Egyptian army camp on the outskirts of Gaza city in retaliation for an Egyptian military intelligence gathering-operation near Tel Aviv that resulted in the killing of an Israeli civilian (Morris, 1993: 340-341). This led to an escalation in tensions between Egypt and Israel, which Morris (1993: 371) argues set the scene for the October-November 1956 Suez crisis and eventually the 1967 Arab-Israeli war. From November 1956 to March 1957 the IDF temporarily occupied the Gaza Strip. During this time there were a number of incidents in which Israeli soldiers carried out multiple executions and mass killings that included a number of Palestinian refugees in an attempt to purge *fedayeen* and non-uniform Egyptian soldiers (Filiu, 2014a: 99-100; Morris, 1993: 424). Israel reluctantly withdrew from Gaza in March 1957 due to strong American diplomatic pressure led by President Eisenhower to withdraw from Egyptian lands, in response to what it saw as Israel’s complicity with Anglo-French “gunboat diplomacy” against a recently decolonised sovereign nation-state with whom the US was trying to gain influence (Filiu, 2014a: 102; Shindler, 2013).

The Gaza Strip remained part of Egypt until the IDF captured the territory from Egypt, along with the Sinai Peninsula, during the 1967 Six Day War, or *Naksa* [the Setback] as it is known in the Arab world. Shlaim (2012) argues that the 1967 war was not a pre-meditated conquest of territorial expansion by Israel, but emerged as a reactive response to Egypt's provocation of blockading Israel's shipping access to the Red Sea through the straits of Tiran. Rather, the occupation of Gaza and the West Bank came about due to a lack of clear strategic objectives, "conflict and confusion at the heart of the government" and "an almost chronic inability to decide" (Shlaim, 2012: 23). Initial operational plans by the military echelon in preparation for the impending war included the capture of the Gaza Strip. However, the defence minister Moshe Dayan warned the general in command of the Egyptian front not to take Gaza, which he described as a "nest of wasps" (Bregman, 2016: 83), in part due to the large Palestinian refugee population living there. He instructed General Gavish "Let the Arabs stay there [in Gaza]. I don't want anything to do with them. We will be outside; they'll be cut off inside. Let them eat each other up. I don't want us inside there" (Bregman and Tahri, 1998: 88).

Dayan's treatment of Gaza as a morass of both intrinsic and extrinsic violence that must be bounded and contained is prototypical of Israel's approach to the territorial management of Gaza that continues to the present. However, in contradiction of Dayan's vehement opposition to occupying Gaza at the outset, during the second day of the war he changed his mind and ordered IDF Chief of Staff Yitzhak Rabin to complete "the conquest of Gaza" (Oren, 2002: 214). By the end of the war, despite Dayan and Prime Minister Levi Eshkol's assurances to their US allies that "their country had no territorial ambitions" (Shlaim,

2012: 53), Israel occupied triple the area of the post-1948 area of the State of Israel. It had captured Gaza and the Sinai from Egypt, the West Bank from Jordan and the Golan Heights from Syria.

Following the war, UN Security Council resolution 242 was passed, which required Israel to return “[the]” territories it captured during the conflict, and in exchange recognition of Israel by the Arab states and that “action should be taken to create a ‘just and lasting peace’ amongst all countries of the region” (Shapira, 2012: 304-305). However, a discrepancy in the wording between the “official” English version of the text and the French version over the definite article “the” preceding the word territories, has left room for ambiguity over whether Israel is obligated by the resolution to withdraw from all of the territories captured in the war (Shapira, 2012: 305). Israel has exploited this ambiguity to argue that it is in compliance with the resolution, while most of the international community disagrees. Schindler (2013: 137) suggests that whilst the Israeli political consensus showed an almost immediate willingness to relinquish its gains in the Sinai from the 1967 war back to Egypt, “Gaza was viewed as a security asset in order to prevent an Egyptian advance” and therefore Israel was less willing to cede it.

The Sinai was eventually returned to Egypt in 1982 as part of what the Israeli leadership had coined a ‘land for peace’ strategy in accordance with 1979 Begin-Sadat peace agreement, although Egypt conceded its claim to represent Palestinian interests in Gaza. By 1968, a rift had developed between the pragmatic socialist-Zionist Mapai movement, which had hitherto dominated Israeli politics, and a more ideologically driven nationalist-religious current of Zionism that supported the Jewish settlement of ‘Judea and Samaria’ [the West

Bank] and Gaza as a realisation of a greater Israel. This culminated in the watershed election of the pro-settler right-wing Likud party in 1977 under the Prime Ministership of Menachem Begin, bringing with it the expansion of Jewish settlements in Gaza. In the 1979 Camp David talks with Egyptian President Anwar Sadat, Begin refused to bring to the negotiating table any discussion of Israeli withdrawal from the West Bank and Gaza, or the formation of a Palestinian state (Filiu, 2014a: 168-169).

In the period following the Begin-Sadat agreement the spatial conditions within Gaza changed alongside the conditions of socio-economic stagnation and the development of an Islamist current within Palestinian civil society. These factors would lead to the emergence of the First Palestinian *Intifada* uprising in late 1987, and would have a profound influence on the ascendancy of Hamas in Gaza. Israel launched Operation Peace for Galilee in southern Lebanon in 1982 to uproot the Fatah-linked Palestinian Liberation Organisation (PLO) from its stronghold in southern Lebanon. Two significant developments for Gaza came about as a result of this conflagration. The first was a weakening of the standing of the PLO, creating an opening for the emergence of Islamist political organisations who were opposed to the PLO's left-wing politics and secularism (Mishal and Sela, 2006). Chief among these groups was Palestinian branch of the Muslim Brotherhood, which would officially become the organisation Hamas in 1987 under the leadership of Sheikh Ahmad Yasin, at the outbreak of the First *Intifada*. The second development was a shifting of the locus of the Palestinian fight against Israel from regional and global sites to the occupied territories themselves (Caridi, 2012).

The 1984 Israeli elections resulted in a unity government being established that incorporated the right-wing Likud Party and the centre-left Labour Party. During this time, the government advanced a programme of expanding the Jewish settlements in Gaza. Alongside the settlement expansion, then-Defence Minister Yitzhak Rabin promulgated an “iron fist” policy against expressions of Palestinian nationalism in a move intended to strengthen the status of the coalition government by appeasing right-wing security hardliners (Filiu, 2014a: 195; Morris, 2001). During this time living standards and the socio-economic conditions of Palestinians in the Strip were also comparatively much poorer than those experienced by Jewish Israelis, or even their counterparts in the West Bank (Morris, 2001). The spatial dynamics of Gaza also were also changing markedly at this time. A growing population meant that the Strip was rapidly urbanising, leading to greater population density, a lack of adequate living space, and the loss of agricultural land and open spaces. This pattern of urbanisation also led to an increased strain on Gaza’s limited public resources, which was exacerbated by the unequal amount of land and water being apportioned by the state to the settlement project (Filiu, 2014a; Morris, 2001). This combination of pressures led to increased tit-for-tat violence between Palestinians, Israeli settlers and the IDF that quickly escalated to a widespread violent rebellion amongst the Palestinian population in Gaza, which then spread to the West Bank.

The First *Intifada* [uprising] erupted in December 1987 with persistent rioting against Israeli security forces in Gaza. This resulted in harsh retaliation and repression against the Palestinian population of Gaza in the form of arrests, curfews and some forced deportations of key figures to Lebanon. However, little changed in practical terms of the territorial

situation of Gaza. This stasis continued even after the creation of the Palestinian National Authority (PNA), and the rezoning of the West Bank into areas of Palestinian, Israeli and joint control resulting from the 1993 Oslo Accords. In response to the violence of the Second *Intifada* that started in 2000, Israel began to tightly restrict the movements of Palestinians in and out of Gaza.

In 2004 the Israeli Knesset decided to support the controversial plan of right-wing prime minister Ariel Sharon to unilaterally 'disengage' from Gaza. Multiple reasons have been presented for Israel's decision to withdraw. These included the high costs in resources and blood to defend the Jewish settlements in Gaza; how disavowing the predominantly Palestinian territory would alter the state's demographic balance in favour of a Jewish majority to preserve Israel's "democratic character"; and to assuage Palestinian and international criticism of Israel's ongoing occupation of the future Palestinian state in contravention of the Oslo roadmap (Byman, 2011: 174-176). Following Israel's completion of the withdrawal in the autumn of 2005, Hamas won the majority of parliamentary seats in both the West Bank and Gaza in the 2006 Palestinian legislative elections. These results were not accepted by their rival, the secular Fatah party, leading to a violent internal struggle within Palestine. By the end of this conflict in 2007, the Palestinian Authority was spatially divided between the two factions, with Fatah controlling the PNA in the West Bank and Hamas gaining full control of Gaza.

Counter-intuitively, by withdrawing from Gaza, Israel actively excised part of the territory it *de facto* ruled in order to maintain the stability and cogency of the state's territorial sovereignty over the rest of its territory. Sharon's political decision to withdraw

was based on a territorial calculation that it was not worthwhile in the long run to justify the expense and energy to control a majority population that was hostile to the Israeli state, and that could eventually alter the demographic balance against a Jewish majority. The latter would undermine Israel's self-definition as 'a Jewish and democratic state.' At present, although the State of Israel no longer occupies Gaza in a conventional sense, it still exerts significant pressure on the territory's geopolitical circumstances and conditions of daily life. It does so through both routinised techniques of bureaucratic and technological management exercised by the IDF's office of Coordinator of Government Activities in the Territories (COGAT), and through the application of violent force in the form of *ad hoc* airstrikes, or in rare cases full-blown military operations.

4.3 The contemporary territorial situation of Gaza-Israel

Paradoxical to its application of the Westphalian concept of sovereignty as the underlying source of the state's political legitimacy, the State of Israel also extends its *de facto* partial sovereignty over Gaza's borders and atmosphere.⁵ The pre-existing movement restrictions continued following the 2005 withdrawal, against the backdrop of increasing Palestinian rocket attacks. Human Rights Watch (2007a: 31) reported that approximately 2,700 rockets were fired from Gaza into Israel between September 2005 and May 2007. Since the Hamas takeover in mid-2007, Israel and Egypt have intensified, and in some limited circumstances de-intensified, a blockade regime against Gaza. In doing so, Israel has

⁵ See map of Gaza in Appendix D.

maintained its application of control over Gaza's boundaries to counteract Hamas' political control within the Strip that Israel perceives as a threat to its own territorial security. This partial sovereignty is expressed in the multiple and convoluted logics that administrate the interior and exterior of Gaza's territory. Hamas governs inside the territory and is primarily responsible for aspects of routine governance like infrastructure, policing, social welfare, tax collection, broadcast media, hospitals and schools. Simultaneously, Israel and Egypt both control and limit the movement of people and goods outside of Gaza through their respective land borders to constrain Hamas' military capacity, and to produce stressful socio-economic conditions to stimulate popular antipathy against Hamas (Donnison, 2010). Likewise, Israel controls Gaza's maritime zone through a naval blockade (Steinberg, 2011) that has been in continuous operation from 2007 and maintains control of Gaza's airspace. Gaza is also heavily dependent on cross-border Israeli and Egyptian infrastructure for its telecommunications, and the importation of both generated electricity and the fuel needed to power the enclave's inadequate power plant, private generators and vehicles.

This grey area in sovereignty has led to heated debates in international law over whether Gaza is still an occupied territory by Israel following the 2005 withdrawal. These debates have centred around the legal test of "effective control" of an occupying power based on Regulation 42 of the 1907 Hague Convention on the laws of war, which states that a territory is occupied "when it is placed under the authority of the hostile army" and that the occupying force's authority "has been established and can be exercised" (Dinstein, 2009: 42-44). Some academics and human rights organisations contend that the Gaza is still occupied since Israel maintains "a broad scope of... control in the Gaza Strip" (B'tselem,

2017; Maurer, 2012). An opposing position argues that the IDF lacks the “potential” to maintain a stable military presence inside Gaza due to Hamas’ military control of the territory’s interior, nor does Israel control Gaza’s civil governance or legal regime, with the caveat of the Palestinian government’s responsibility under the Oslo Agreement to report updates to its population registry to Israel (Cuyckens, 2016: 285; Milanovic, 2009). In both practical and legal terms the Israeli state treats Gaza as a “*sui generis*” non-state territory that is external to Israel due to Hamas’ internal control of the enclave (State of Israel, 2009: 11). However, Cuyckens (2016) asserts that whatever the territorial status of Gaza may be, it does not negate Israel’s obligations to follow the rules of war set out by the Geneva Conventions and International Humanitarian Law (IHL).

In contrast to the malleability of spatial boundaries in the Israeli occupation in the West Bank and East Jerusalem, Gaza’s terrestrial territorial dimensions are now well-defined in map terms based on the borderline established in the 1949 armistice agreement between Egypt and Israel. Following the 2005 withdrawal, Israel disavowed any claim to inhabit Gaza. This is evidenced by the permanent moves to dismantle Jewish settlements during the withdrawal, including burying synagogues and relocating Jewish grave sites inside Israel. Furthermore, Israeli politicians have also sought to shift responsibility for maintaining Gaza’s infrastructure and trade flows to Egypt in order to abrogate Israeli responsibility for Gaza’s welfare and economic conditions (McCarthy, 2009).

Israel and Egypt have been able to assert their security interests by means of applying superior military force to override the norm of sovereign inviolability. This is in keeping with the phenomenon that Elden has termed “contingent sovereignty” (2009: 168-

169). Israel's use of political violence to maintain its security regime over Gaza has included pervasive UAV and electronic surveillance over Gaza's atmosphere, carrying out targeted assassinations by precision missile strikes on Palestinian militants, and shooting at Gazans who approach maritime boundaries and the border fence inside Gaza. Likewise, Gazan militant factions including the al-Qassam Brigades, Hamas' military wing, and PIJ have carried out frequent rocket and mortar attacks against Israeli towns and settlements in the Western Negev, and have made several infiltrations into Israel's pre-1967 borders by both sea and tunnels to carry out attacks.

Both sets of examples illustrate that while Gaza's territorial contents appear fixed in two dimensions, when expanded to a three-dimensional volumetric conception of territory, the ordering of space becomes far more permeable and precarious than the Westphalian model can allow for. This mutability becomes acutely apparent in the repeated cycles of build-up and release of geopolitical tensions through a trajectory of events in the run-up and course of the recent wars in Gaza.

4.4 The Gaza Wars 2008-2014

At present, due to their contemporaneity, there is a lack of enough canonical accounts of the three recent Gaza Wars of 2008, 2012 and 2014 to allow for a comprehensive synthetic or comparative overview of their history.⁶ There are also loaded

⁶ The most comprehensive version presently available is the chapter added to the fourth edition of Bregman's *Israel's Wars: A History Since 1947* (Bregman, 2016), which this section makes use of, but supplements where possible. Filiu's *Gaza: A History* (2014a) only briefly discusses 2008's Operation Cast Lead and his more recent article *The Twelve Wars on Gaza* (2014b) only gives a cursory summary of the recent wars with little discussion of their causality or what actually took place during their course.

political stakes to how causality and action is attributed to the conflict that give support to partisan positions, which this thesis is deliberately working to transcend. Therefore this section will focus little on establishing a linear chain of causality, which is a rather impoverished way of evaluating the conflict to begin with, as opposed to the complex imbrication of politics and material space which exceeds causal analysis. Instead, it will address the wars in terms of the symbioses (Harman, 2016) through which particular technological features became salient in relation to their geopolitical context. It will also attend to what happens when technological capacities become detrimental to the stability of the state by adding to Harman's theory a concept of *detachment*, which is the undoing of a symbiosis between objects.

The 2008 Gaza War, which Israel called Operation Cast Lead and Hamas called the Battle of al-Furqan, lasted from December 27, 2008 to January 21, 2009. It came about in the context of severe pressure on Gaza's economy and welfare standards caused by the 2007 Israeli Blockade and the frequent firing of unguided *Qassam* rockets by Hamas and PIJ against Israeli communities in the vicinity of Gaza. According to Bregman (2016), the stated outcomes of the operation launched by the IDF were two-fold: to stop the rocket and mortar attacks on Israeli settlements near the Gaza border, and to destroy the conduits for Hamas' weapons transfers, particularly the Sinai-Gaza tunnels which were also a conduit for essential food, medicine and civilian goods during the blockade. However, Cordesman (2009) suggests that there was a lack of certainty in defining the goals and desired outcomes of the operation brought about by disagreements within Israel's political and military

leaderships. He posits that its purpose may have been to gain a temporary advantage rather than decisive victory, and to “restore Israeli deterrence” against Hamas and other regional rivals by “conducting a highly punitive air and ground campaign against Hamas with limited losses to the IDF and an unacceptably high price tag to Hamas and Gaza” (Cordesman, 2009: 11). This uniquely Israeli concept of strategic “deterrence” as a default temporal state will be defined and critically evaluated in more detail in the following section.

The 2008 Gaza War is particularly illustrative of the “war of perceptions” (Cordesman, 2009: 31) in the Gaza-Israel conflict, in which Israel’s overwhelming application of superior weaponry and military force failed to result in an outright strategic victory, or achievement of political objectives. Cordesman (2009: 10) characterised Hamas’ *modus operandi* and Israel’s technological approach to countering it as follows:

The end result was that Hamas initiated the conflict as a weak non-state actor that could launch rocket and mortar attacks on Israeli civilians and civil facilities over an extended period of time but had little other warfighting capability other than using its own densely populated urban areas as barriers. It did so in part because it had no other real means of combat. At the same time, it seems to have relied on the population density of Gaza to both deter Israeli attacks, and as a defence against Israeli land and air attacks...

Israel responded as a state using modern weapons, conventional forces, and advanced technology. It exploited these capabilities to minimize its casualties, to attack Hamas in ways designed to produce maximum damage in a minimum amount of time, and in a form designed to deter Hamas and other threats to Israel by showing that even limited attacks on Israel would result in Israel’s use of massive amounts of force... The human cost, however, was again so high that it inevitably affected perceptions of Israel throughout the region and the world.

Hamas’ *modus operandi* deliberately took advantage of the density and volumetric space of the urban terrain to overcome a lack of planar spatial depth due to Gaza’s narrow and relatively small horizontal surface area and absence of large areas of open space due to its dense urbanisation. It did so by combining the verticality and concealment of its built environment at, above and below ground with guerrilla tactics that made use of small, agile

units with intimate knowledge of both the urban terrain and the support of the population that inhabited it to both defend its own territorial integrity within Gaza and to put political pressure on the Israeli state by demonstrating its ability to continue rocket and mortar attacks against Israeli settlements in the Western Negev region throughout the course of the conflict. Israel's response to this was to make strategic use of overwhelming and relentless firepower, combined with fast ground manoeuvre in the second phase of Cast Lead. Whilst this approach led to a definite victory for Israel in conventional military terms, contrary to Bregman's (2016) claim of no clear victory for either side, this did not necessarily translate to successful political outcomes for the state. By the time Israel declared a unilateral ceasefire on January 18, 2009, followed by a reciprocal announcement by Hamas (McGreal et al., 2009) to allow IDF troops to withdraw from Gaza, Israel had destroyed 80% of the smuggling tunnels into Gaza from Egypt (Bregman, 2016). It also temporarily halted Hamas' rocket attacks into southern Israel. However, the IDF's actions in the war caused significant diplomatic and reputational harm to the state's political legitimacy due to the high numbers of civilian casualties and the significant damage caused to Gaza's urban architecture and infrastructure, including the destruction of UN facilities (Bronner, 2009; Sengupta and Macintyre, 2009).

The 2008 war began with an intensely fast and coordinated surprise airstrike on Hamas positions in Gaza, and aerial bombardment of Gaza continued for its first week, prior to the second phase of the operation, which was a coordinated land-air incursion into Gaza involving IDF ground forces. In addition to the intensity of the aerial bombardment, one of the most notable aspects of the war in technological terms was the controversy that

surrounded the IDF's use of munitions containing white phosphorus during the ground operation.

White phosphorus is a highly flammable molecule that self-ignites upon contact with the air, and burns at a high temperature. It is both toxic and causes severe burns when it comes in contact with the skin. According to the MoFA report produced justifying Israel's actions in the aftermath of the 2008 war, the IDF used two types of munitions containing white phosphorus. One was "*exploding munitions containing white phosphorous*" which the MoFA report claims "were fired only at open unpopulated areas and were used only for marking and signalling rather than in an anti-personnel capacity" (State of Israel, 2009: 144-145; italics in original). The second type was "*smoke projectiles containing white phosphorous*" which used "felt wedges dipped" in the chemical to create a smokescreen to camouflage the movements of IDF armoured units against Hamas' anti-tank squads in urban areas during the ground invasion (State of Israel, 2009: 146; italics in original). These were the primary type of phosphorus munitions used in Gaza. Their use in densely populated areas was reported to have caused severe burns to victims that were difficult to treat due to the chemical properties of white phosphorus (UN Human Rights Council, 2009: 195-196), and also set fire to buildings that caused civilian fatalities due to burning or smoke inhalation (Human Rights Watch, 2009). This is despite the MoFA's claims that they were used for cover or illumination, which is recognised as a legitimate use according to IHL, rather than as an incendiary weapon (State of Israel, 2009: 147), a practice which is illegal under the Convention on Chemical Weapons Protocol III (although Israel is not in fact a signatory to it). Israel's use of white phosphorus munitions led to public pressure from human rights

organisations including Human Rights Watch (2009) and Amnesty International (2009), and generated negative global media attention for the state. In response to a legal petition brought to Israel's High Court of Justice in 2013, the IDF declared that it would adopt a policy to "avoid the use in built-up areas of artillery shells containing white phosphorus, with two narrow exceptions" (Cohen, 2013a).

The Israeli state's failure in the "war of perceptions" necessitated that the IDF detach itself from its symbiosis with white phosphorus as an arrangement for reducing the risk of troop casualties in the spatial context of urban warfare. Arguably, Hamas underwent a symbiosis with white phosphorus munitions through their negation by Israel vis-à-vis the chemical's enrolment in human rights and IHL discourses, since the IDF's decision to eschew its use took away one of its avenues for technological advantage in the challenging conditions of urban warfare, thus ceding a tactical advantage to Hamas on their home turf and in the dense and vertical urban space in which its style of guerrilla warfare is most successful. The reduction of its technological advantage for minimising the political costs of troop casualties in the complex urban battlespace due to "the war of perceptions" could also partially explain the IDF's aversion to a ground operation in favour of the overwhelming application of air power in the next struggle between the two antagonists.

Tensions between Israel and Hamas continued in the years following the 2008 war. The conditions of the Israeli and Egyptian blockade remained largely unchanged, and the IDF continued to make incursions into Gaza to conduct limited operations. Likewise, rocket attacks from Gaza into Israel increased year-on-year between 2009 and 2012 with 680

attacks in 2011 and 797 attacks in 2012 (Bregman, 2016). Following an escalation of violent activities by both sides that intensified from late October 2012, Israel declared Operation Pillar of Defence⁷ on November 14, 2012. This eight-day assault on Gaza was conducted entirely using air power and ranged weapons from within Israel's land border, and its naval forces, but did not involve a ground invasion. This time, Israel's goals for the operation were clearly stated by then-PM Ehud Barak as four-fold: to "restore the deterrence that had been achieved after Cast Lead but eroded since 2011"; to "decrease" Hamas' rocket launching capabilities towards civilian areas; "to minimize the damage to its home front"; and to "deliver a blow to Hamas" that would weaken the organisation, but not topple it (Cohen et al., 2017: 38-39).

One of the defining technological aspects of the confrontation for all sides was the proliferation of missiles in the aerial domain, both as a means of territorial penetration and as a defence against it. The Israeli operation began with the deliberately spectacular targeted assassination of the secretive Hamas military commander Ahmed Jabari carried out using a Precision Guided Missile (PGM) launched from an Israeli-manufactured Hermes 450 UAV (Anon, 2012a), and made possible by high-quality intelligence gathering. Footage of the attack was posted on YouTube shortly thereafter by the IDF (Shachtman, 2012) as part of a

⁷ The Hebrew title for the operation was actually *Mevetzah Amud Anan* [lit. "Operation Pillar of Cloud"] after a story from the Old Testament book of Exodus. It was deliberately given an interpretive official translation to English as "Pillar of Defence" by the IDF as a public relations move to imply the legitimacy of Israel's decision to declare war based on self-defence (Handelzalts, 2012). Hamas also used religious allusion in naming their counter-operation in that war, using an Arabic term '*amaliyya hijara sijil*' which has been translated in English alternatively as "Operation Stones of Baked Clay" (Handelzalts, 2012) or "Operation Stones of Shale" (Milton-Edwards, 2016: 73). It alludes to an event described in the Quran in which Allah brought about the defeat of an invading army intent on destroying the Kaaba in Mecca by sending a flock of birds to "smite" them with "stones of baked clay" (Milton-Edwards, 2016: 82).

concomitant online social media war. By the end of the operation, the Israeli Air Force (IAF) reportedly carried out 1,235 airstrikes, many of which were executed from UAVs (Cohen, 2013b). The IDF's strategic goals in making extensive use of PGMs and UAVs were to inflict maximum damage whilst minimising the exposure of their own soldiers to risk, and to deflect politically damaging criticism for using disproportionate force and causing wanton civilian casualties. This application of technologies to do political work intended to strengthen the state by the IDF's strategic leadership and defence policy-makers was enabled by the enrolment of certain (perceived or assumed) capacities of these weapons. According to an Israeli UAV squadron commander quoted in *Haaretz* "Operation Pillar of Defence ended the way it did because of these surgical operations... When we take to the air we understand that part of our mission is to ensure minimal civilian casualties" (Cohen, 2013b).

However, in actuality these strikes are sometimes less than surgical in their precision since the "onus is on the operators of unmanned drones to verify that there are no uninvolved civilians in the vicinity of an attack... [which is] a significant issue when considering the overcrowded conditions of the Gaza Strip" (Cohen, 2013b). This was the case in a botched aerial assassination of a Hamas rocket firing team commander. An error, supposedly resulting from a technical failure of the system for marking targets, led to a guided bomb striking the al-Dalu family home, killing 11 civilians including four children. This incident generated negative international press coverage for Israel (Cohen et al., 2017: 43). Furthermore, according to a strategic analysis of the conflict by the RAND Corporation, following the Jabari assassination Hamas rocket-firing units and the organisation's leadership quickly adapted to "moving underground, where ISR [Intelligence, Surveillance

and Reconnaissance] and air interdiction would be much less effective” (Cohen et al., 2017: 66). This was “a critical lesson that would drive [Hamas’] operational concept in response to Operation Protective Edge” (Cohen et al., 2017: 66) in which it made extensive use of tactical tunnels and underground command centres within Gaza to evade detection and ambush Israeli ground forces.

Hamas, for its part, did not seem deterred by the IDF’s display of force, and was able to fire “about 1,500 rockets” into Israel during the course of Pillar of Defence (Human Rights Watch, 2012). In particular, Hamas gained a degree of advantage in destabilising in Israelis’ domestic confidence in their political leadership by demonstrating its capability to strike Israel’s “civilian heartland” of the Tel Aviv and Jerusalem metropolitan areas with Iranian manufactured and supplied medium-range Fajr-5 missiles, which have a strike radius of 75 kilometres (Black, 2012). Israel responded by rushing to deploy a battery of its high-tech Iron Dome missile defence system to defend Tel Aviv, in addition to the four batteries that were already in place over southern Israel (Bregman, 2016). According to official Israeli sources the system had an 85% success rate in intercepting Hamas’ missiles during Pillar of Defence (Anon, 2012a), although this high number has been disputed by some sceptics (Pedatzur and Postol, 2013). The question of the Iron Dome system’s efficacy and what it does as part of its geopolitical environment will be the empirical focus of Chapter 7.

However, Iron Dome did have an influence on Hamas’ strategy and tactics in that it encouraged Hamas to fire rockets at a greater rate, and to fire simultaneous barrages of multiple rockets in an attempt to exploit weakness in the Iron Dome system. According to the RAND Corporation report cited previously “while these strategies were not highly

effective, the fact that rockets continued to fall on Israel did generate physiological [*sic*?] effects, achieving at least a part of Hamas's desired outcome" (Cohen et al., 2017: 59-60).

Operation Pillar of Defence ended on November 21, 2012 with a bi-lateral ceasefire agreement between Israel and Hamas brokered by the Egyptian government led by the Muslim Brotherhood's Mohammed Morsi. Both sides claimed a military victory, although both sides' declarations seem hollow. Hamas' strategic rocket caches were severely depleted along with a significant part of its key military infrastructure. Likewise, Hamas was able to continue to fire rockets at Israel throughout the course of the conflict, in defiance of the goals set out by Israel's political echelon. Following the conflict, there was a temporary easing of the blockade regime on Gaza from Egypt opening its border with Rafah, due to the Muslim Brotherhood-led government's sympathy towards Hamas. However, this tightened once again after the 2013 Egyptian coup that overthrew the Morsi government. The new military government led by General Abdel Fattah al-Sisi was antagonistic towards Hamas due to their close association with the Egyptian branch of the Muslim Brotherhood, and resealed the Gaza border and waged a campaign to destroy the Sinai smuggling tunnels. This, alongside Hamas' growing political and strategic isolation from its erstwhile Syrian and Iranian allies, due to its support of Sunni militias in the Syrian Civil War, led to another period of harsh economic and humanitarian conditions in the Strip. This contributed to a volatile geopolitical context in Gaza, which ignited into a full-blown war with Israel less than two years after the conclusion of Operation Pillar of Defence.

The 2014 Gaza War started after Hamas began firing rockets from Gaza into southern Israel in response to a crackdown on Hamas activists in the West Bank during attempts to find three Jewish teenagers from the West Bank settlements who were kidnapped, and subsequently found murdered, in a plot carried out by a “rogue” Hamas cell from Hebron (Eldar, 2014a). On July 8, 2014 the IDF launched Operation Protective Edge⁸ with the initial stated goal of halting Hamas rocket fire. The operation began with a heavy air offensive on targets in Gaza. However, nine days later the operational objective and strategy changed to a ground invasion to locate and destroy a series of cross-border tunnels from Gaza into Israel that had been built by Hamas, following a subterranean infiltration attempt by Hamas militants that was thwarted by the IDF (Levy, 2014). The reasons for the Israeli political and military leaderships’ anxiety over these tunnels, and the technological challenges faced by state security apparatuses in locating them is the topic of Chapter 6.

Another notable feature of the 2014 war, which occurred dialogically to the significant expansion of the battlespace into the underground, was the IDF’s extensive use of ‘primitive’ non-precision “statistical” weaponry⁹ such as mortars and cannon shells, which

⁸ In yet another example of creative English translation, the IDF translated the Hebrew name for the operation *Metzava Tzuk Eitan*, which translates literally as “Operation Strong Cliff” or “Operation Firm Cliff,” to “Operation Protective Edge” in order “to give it a more defensive connotation,” according the IDF’s Arab media spokesperson. However, unlike Cast Lead or Pillar of Defence it does not have a biblical or religious significance, and was most likely chosen by officers from a list of options generated by a military computer algorithm (Ghert-Zand, 2014).

⁹ “Statistical weaponry” is a term used within the IDF to describe non-precision ranged weapons with a wide area of dispersal, such as mortars and artillery shells. This term was also used in a discussion with me by an Israeli military expert whom I interviewed on an ‘off-the-record’ basis. According to the NGO Action on Armed Violence:

“Firing [statistical weapons] sometimes requires a process of error correction in which shells are aimed over and short of a target as the artillery weapon gradually closes in on the correct range. An attack... is considered a ‘hit’ if a shell lands within 50 yards (46 metres) of the target... This term shows that the

are imprecise, but advantageous in giving coverage of fire across a wide geographical area. This must be understood relationally to political expectations about the purported surgical capabilities of PGMs. Although PGMs and intelligence-led targeting were also prominent components of the IDF's tactics in the war, several events involving "statistical" munitions became the most defining moments of the war in terms of military strategies and outcomes for the belligerents, as well as global media and human rights investigations. Isolated incidents including the shelling of United Nations Refugee and Works Association for Palestine Refugees in the Near East (UNRWA) schools by Israeli tanks, and the killing of four children playing on a beach by shells fired from an Israeli Navy ship received widespread diplomatic and media condemnation. However, the use of such munitions in two key battles of the war is more telling of the strategic and political significance of their enrolment.

The Battle of Shuja'iya, an empirical focus of Chapter 5, took place from July 19-20, 2014, in the second week of the seven-week-long war. During this battle, IDF units fired a barrage of shells and mortars in a densely-populated residential area of Gaza City in response to a Hamas ambush of an armoured vehicle, and the capture of an IDF soldier's remains. This assault nearly flattened an entire city block according to satellite evidence. A detailed account of this battle will be provided in Chapter 5 as part of an analysis of the political agency of low-tech trajectory weapons in contrast to high-tech weaponry such as PGMs. The second noteworthy battle was the Black Friday incident that took place in Rafah

IDF itself readily acknowledges that the wide area dispersal of shells is not only possible but likely: an inherent feature of way this weapon works (Perkins and Overton, 2014: 11).

on August 1. During this battle, the IDF commander ordered the controversial Hannibal Directive to be initialised in response to the suspected capture of Lt. Hadar Goldin by Hamas militants by means of an underground tunnel.

The Hannibal Directive, which has since been revoked, was a top secret protocol to be brought into effect to prevent a soldier from being kidnapped and held hostage by the enemy. The Hannibal Procedure orders soldiers to engage fire in order to halt the abduction, even if it risks killing or wounding IDF soldiers, including the abductee, in the process. It has been modified several times, apparently to clarify that it did not call for the killing of captured soldiers (UN Human Rights Council, 2015: 94-95). The reason behind its formulation comes down to a poignant political issue in Israeli society and domestic politics around the abduction of soldiers and soldiers' remains, which goes back to a precedent that was set during the First Lebanese War for exchanges of prisoners or remains. These exchanges were often numerically unequal in favour of Palestinian militant groups, and later Hezbollah in the 2000s, and sometimes involved releasing prisoners whom many Israelis' perceived as perpetrators of heinous crimes. This concern was the catalyst for IDF commanders' tactical decision-making in both the Battle of Shuja'iya and Black Friday. Stopping such outcomes has become a strategic imperative for the IDF in response to Hamas' strategy of using kidnapped soldiers as hostages, or their remains as bargaining chips, to extort costly political concessions from Israel.

Hamas has exploited this practice as a strategic tool after its political success with the 2011 Gilad Shalit prisoner swap. Hamas released Sgt. Shalit, an Israeli conscript kidnapped from a border post in 2006 and held hostage for over 5 years, in exchange for the

release of over 1,000 Palestinian prisoners held in Israeli jails, including those responsible for perpetrating several large-scale terror attacks in Israel. This decision was politically divisive within Israel, and came after a long-running public campaign by the Shalit family that received great public solidarity. However it was vociferously opposed by many Israelis, including family members of the victims of terror attacks including the 2001 Sbarro Pizzeria Bombing in Jerusalem. They were angered that the organiser of the attack was on the list of prisoners to be released in the exchange, and publicly petitioned Prime Minister Netanyahu not to deny them justice by going ahead with the swap. The deal caused political embarrassment to Netanyahu, as it weakened the authority as a security hard-liner that he derived from a well-rehearsed platform of not recognising Hamas as a legitimate political entity. In retrospect, it is clear that the successful result of the prisoner exchange for Hamas has also encouraged them to use the strategy again, this time using tactical tunnels inside Gaza to ambush encroaching Israeli units and conceal hostages.

Following the Black Friday incident, Goldin was declared dead and was controversially given a burial that was approved to be in accordance with Jewish religious law, despite the absence of a corpse, by a panel of IDF rabbis based on forensic evidence, including DNA testing, even though only personal effects and blood traces were found at the location he was wounded (Efrati and Pfeffer, 2014; Anon, 2014a). It only later became clear that Hamas had in fact captured his remains. At present, Hamas is using the remains of Goldin and Sgt. Oron Shaul, the soldier whose remains were captured by Hamas during the ambush of an Israeli armoured personnel carrier (APC) that ignited the Battle of Shuja'iya, to barter for another prisoner exchange. The handling of Goldin's death illustrates that the

Jewish character that is the definitional basis of the state's identity is malleable and can be subordinated to the political goals of the state. Hamas revealing that they still have Goldin's remains after the supposed finality of burial also unsettles the state's political authority. This contradiction resulted in a public confrontation between the Prime Minister and the soldiers' families (Anon, 2018). This situation was deeply embarrassing to the Prime Minister as his handling has been perceived by many Israelis as highly insensitive to the families of fallen soldiers, whose sacrifices and narratives of trauma are considered sacrosanct in Israeli domestic political discourse.

The ferociousness of the Israeli assault and the prolific use of indiscriminate ranged weapons in the Rafah battle have also led to several investigations by the UN and human rights NGOs that have found evidence of war crimes likely being committed by the IDF (Bregman, 2016; Amnesty International and Forensic Architecture, 2015; UN Human Rights Council, 2015). According to Amos Harel (2018a) reporting for *Haaretz*, "artillery shells were fired at dozens of targets marked in advance along the main roads, in order to prevent the abductors from escaping" and "Israeli forces shot about 1,000 artillery shells and about 240 mortar shells at Rafah" in the first four hours of the 72-hour conflagration. The IDF's conduct in the battle resulted in the deaths of "at least 70" civilians between August 1 and 4 according a recently closed IDF inquiry (Harel, 2018a). Amnesty International reported estimates of 135 civilian deaths according to figures taken from the UN Protection Cluster and over 200 civilian deaths according to figures from The Joint Documentation Unit of Palestinian NGOs in Gaza. According to the report, many of these deaths occurred from civilians using the roads to flee the area of the fighting, and the destruction of 2,579 houses,

with the great majority occurring on the first day of the battle (Amnesty International and Forensic Architecture, 2015).

The IDF ground war inside Gaza ended on August 5 following the location and destruction of 32 cross-border tunnels, although the IAF aerial campaign continued for several more weeks (Bregman, 2016) as several Egyptian-brokered cease-fire collapsed. The war finally ended with a cease-fire declared on August 26 being upheld by all belligerent parties after 51 days of hostilities. This agreement also gave a few minor concessions to Hamas including a reduction of the exclusion zone for farming on the Gazan side of the border fence from 300 metres to 100 metres, as well as an extension of the maritime zone for Palestinian fisheries enforced by the Israeli Navy from 3 kilometres to 6 kilometres from Gaza's shore (Cohen et al., 2017: 124). Ultimately, however, it is once again unclear if either side could claim a victory in the war, and both sides suffered considerably as a result of it. The IDF was successful in its objective of destroying the cross-border tunnels, alongside many of Hamas' tactical tunnel inside Gaza, other military infrastructure and weapons caches. However, the war was costly in economic terms. Israel suffered an estimated \$54 million in direct damage to private property and public infrastructure, and \$443 million in indirect losses caused by economic disruption due to the war (State of Israel, 2015: 132-133). The war was also damaging to the Israeli political leadership in terms of poor domestic public opinion which broadly considered the war a failure, with few concessions having been made by Hamas and little immediate change in the geopolitical situation. Despite this, some strategists have argued that Operation Protective Edge restored Israel's "deterrence" and

has led to a period of relative quiet on the border (Cohen et al., 2017). Hamas for its part was able to gain some minor concessions in exchange for a cease-fire, and gained popular political support for its 'resistance' and from the perception of victory from Gazans. However, the war resulted in a high number of casualties for Hamas in both absolute terms and relative to Israeli casualties; an even higher civilian death toll; high levels of infrastructure destruction; the internal displacement of over 500,000 people, which is roughly 28% of its population (UN Office for the Coordination of Humanitarian Affairs, 2014); and the decimation of its military assets. A longer term consequence of the 2014 war is that it made international financial donors and investors, including sympathetic Arab states, reluctant to lend support to the beleaguered territory because they believe their contributions will be obliterated in the next round of inevitable hostilities. In essence, the outcome of the war for Hamas was ostensibly a Pyrrhic victory, if it could actually be considered a victory at all. For the State of Israel it was an exercise in futility, in which the amount of military effort and suffering endured on the home front led to a military victory in the classical sense, but the political, economic and social repercussions for the state seem to have outweighed any political benefits of achieving its strategic aims in the first place.

Overall, the post-2005 Gaza-Israel conflict up to now can be best summarised as a repetitive pattern of periodic violence, followed by a simmering of tensions, followed by an inevitable overboiling on a several year basis. Whilst the intensity, length, technological and geospatial dynamics might differ to some extent in each outburst, and the temporal spacing of interludes might fluctuate, the overall invariability of this pattern still continues. The next section will explain how the spatial and temporal logics of the Israeli state's strategic

approaches to Hamas as a symbiotic object entwined with the territory of Gaza iteratively condition the perpetuation of violence in the Gaza-Israel conflict.

4.5 The spatio-temporal dynamics of Israel's strategic approach to Gaza

Attention will now turn to the strategic logics that underpin the IDF's attempts to order territory in the Gaza-Western Negev envelope. Unpacking these strategic logics can give a clearer understanding of the "the work that military strategy performs socially and politically" (Reid, 2003: 10) and how weapons technologies emerge as political agents through the *generative* "conditions of possibility" (Croser, 2011: 113) they create in the implementation of strategic theories. Strategic management here is not only a spatial project, but is also fused with an event-ful temporality. It should also be made clear that the present discussion of strategy does not reify a normative theory of strategy as a higher-level concept that in turn operational art and tactics are deployed to serve. Rather this hierarchical distinction, along with the traditionally perceived hierarchy of command that accompanies it, becomes compressed and enfolded in the complex and iteratively emerging reality of the battlespace.

The IDF's strategic approach is characterised by an attentiveness to the varying intensities of (in)security through the time-space of its operational environment. This approach is anticipatory and seeks to maintain a baseline state of non-violence through deterrence. In the Israeli context, a home-grown conception of deterrence has come about, which differs from the arguably more familiar MAD notion of nuclear *détente*. In theory, MAD relies on the balance between state rivals with the same destructive potential to

restrain the willingness of the other state to apply catastrophic violence. In contrast, the Israeli conception of deterrence is paradoxically based around an active application of violence to achieve a “*quiet*” state of non-violent security (Rid, 2012: 143; italics in original). It is premised on a ready willingness to apply violent force when necessary, and even to use a calculated level of military force at periodic intervals to cause harm to its opponents as a reminder of the IDF’s strength so as to reinforce the “rules of the game” (Rid, 2012: 141, 143) sanctioned by the Israeli state. The Israeli concept of deterrence is also unusual in its pervasive and often elided applications within Israeli security discourse as a baseline ontological state of normality, as well as a means to achieve that state of security. For example, the phrase to “restore deterrence” frequently appears (e.g. Haaretz, 2018; Harel, 2016a; Naveh, 2015: 3), or in another instance IDF chief of staff Gadi Eizenkot states that “the IDF is working day and night to ensure preparedness and deterrence” (Kubovich, 2018).

The Israeli deterrence concept has evolved to become an anticipatory model that deliberately manages threat and danger through the technologically-mediated modulation of temporal intensities of violence. In 2015, following criticism for a lack of strategic clarity in its actions and planning approach to the 2014 war, the IDF produced a new comprehensive *IDF Strategy* as a written document. The IDF headquarters released a declassified version of the document, the first such time that the IDF has codified its strategy publicly. In the new *IDF Strategy* “creating deterrence” is given centrality as an organising pillar alongside “the existence of long periods of normal stability” (Israel Defense Forces,

2015).¹⁰ Within the document a tripartite temporal schema is articulated that modulates strategic action based on variable states of intensity defined as “routine” [*shigra*], “emergency” [*charum*] and “war” [*milchama*] (Israel Defense Forces, 2015). Whilst the state of “routine” might be assumed as a default state of rest defined by a lack of military force, this is not in fact the case. The IDF Strategy has a particular section titled “The principles of the use of force in routine” that outlines the ways in which the force should operate during “routine”:

23. As stated, the essence in routine is to preserve security, to deter the enemy from operating against the State of Israel and to delay the next confrontation as long as possible by combining secret operations and non-secret operations as one.

24. The use of force in routine includes these actions:

a. Ongoing defensive efforts for the State of Israel, which has the possibility to allow the continuation of [normal] daily life (routine security measures, defending the borders and inside the borders, cyber defence).

b. Deterrence by the means of ongoing and continuous offensive methods (the campaign in between wars [MBM]). This effort is mainly secret and confidential and is integrated with awareness efforts.

c. Civilian aid operations.

d. Creating legitimacy that will allow us to start a confrontation, give our forces freedom to act, and will deny the enemy’s freedom to act in routine, in emergencies and in war. (Israel Defense Forces, 2015)

¹⁰ The quotations from the *IDF Strategy* document use an original translation from the Hebrew text produced in late 2015-early 2016 by myself and my Hebrew tutor, Gil Reshef. This is because no substantive English translations were available at the time. However, several English translations of the document are now available.

The Journal of Palestine Studies has translated an abridged version with a critical introduction: Khalidi, A. ed. (2016) ‘Special document file: original English translation of the 2015 Gadi Eisenkot IDF Strategy’ *Journal of Palestine Studies*, vol. 45, no. 2, pgs. 1-33. Available at: <http://jps.ucpress.edu/content/45/2/1.4.full.pdf+html>

Harvard University’s Belfer Centre for Science and International Affairs has published a full translation: Rosenberg, Susan trans. (2016) *Deterring Terror: How Israel Confronts the Next Generation of Threats* (English Translation of the Official Strategy of the Israel Defence Forces). Available at: <https://www.belfercenter.org/sites/default/files/legacy/files/IDFDoctrineTranslation.pdf>

One of the most striking and seemingly paradoxical revelations from the above excerpt is explicit acknowledgement of the acceptability of the pre-emptive use of offensive force as a legitimate strategic tool to delay all-out war, characteristically through clandestine special operations. However, rather than applying a self-contradictory illogic of using violence to prevent greater violence, the IDF strategy makes clearer sense when understood in the context of the Israeli conception of deterrence as an ontological state that must be actively (re)produced. This is tied to a cyclical and quasi-rhythmic ontology of space-time in which war is an inevitable, albeit undesirable, burst of violent intensity punctuating “normal life.” Such a spatio-temporal concept is at odds with the linear history of violence favoured in both Western diplomacy and “peace-building” in which peace is a teleological state (Dalby, 2014: 29) that can be produced from an impetus to avoid future violence. This arises from a desire to transcend the collective trauma caused by the cataclysmic rupture of war. In the Israeli concept, while war’s barrage of violence cannot be postponed indefinitely, it must be held off for as long as possible, both to secure the “continuation of daily life” and to maximise the IDF’s ability to arrange the spatial, technological and political conditions to its advantage in preparation for the next round of conflict.

When the tensions do eventually escalate to the point of war [*milchama*], in which a sustained outbreak of violence occurs, war is not understood as an existential fight to end all hostilities, but rather as a limited technique to restore a state of equilibrium to the geopolitical situation. One participant with high-level strategic planning experience in the IDF, suggested that the periodic states that erupt are “not really a war, this war” but instead are a “kind ... of limited operation which is part of the ongoing process of war” (Expert

Interview 2). Rather, he suggests that what can be achieved through the attrition scenario in Gaza is more partial and temporary:

Both sides, they don't really think about these limited operations as something that can change the equation from the basics" and that "you have to leave the thoughts, the general thoughts of ... decision and fast wars, you have to be much more patient, you have to be much more ... modest. (Expert Interview 2).

This suggests that the boundaries of events in this distinction between routine, emergency and war are in fact quite blurred and elided. Therefore, Israel's approach to the conflict in Gaza is in fact more of a constant and relentless project of territorial management that requires modulating and manipulating the "affective intensities" (Adey and Anderson, 2012: 112; Thrift, 2008: 68) of (in)security rather than moving between binary states of peace and war to achieve total victory.

This cyclical temporality at the heart of the IDF's strategic doctrine is best characterised by the concept of the "campaign between wars" [*haMaarachah sheBein Milchamot* (MBM)] that is formalised in the IDF strategy document:

30. The logic of the use of force in MBM is to preserve and to strengthen the achievements of the previous campaign with a line of aims and secondary goals that are designed to postpone the [next] war:

- a. To weaken the negative force factors.
- b. To minimise the growth of the enemy's strength.
- c. To create optimal conditions for winning a future war.
- d. To create legitimacy for Israeli action and to rule out the legitimate basis for the enemy's action.

31. Managing the operations in the framework [of MBM] is executed on the basis of the principle of multidisciplinary coordination (military, economic, legal, media, and political) meaning, the MBM is expressing a principle of operations with a unified strategic logic.

32. The basic principle of the use of offensive force in MBM is a combination of –

a. **Secret and confidential action**¹¹ in all arenas and dimensions outside the borders of the Israel; this policy is intelligence-based and is intended to harm the enemy's efforts and initiatives.

b. **Known action to create deterrence** – demonstrating Israel's boundaries of forbearance. All this — while creating legitimacy for the actions of the State of Israel and while holding a consecutive effort to defend the sovereignty of the State of Israel.

(Israel Defense Forces, 2015)

As evidenced by the above quote, the MBM concept adapts an explicit awareness of the temporality of conflict to the management of space as a project of creative development alongside the limitation of “the enemy's growth.” The two-fold goals advanced here of “creating legitimacy for actions” while “defend[ing] the sovereignty of the state” suggests both a need to expand the state's ability to operate extra-territorially, whilst maintaining its coherence as an object that is in itself territorialised. It is notable that MBM entails a “multidisciplinary coordination (military, economic, legal, media, and political)” which expands the role of the military beyond the conduct of violence to achieve political goals to encompass a holistic coordination of all of the resources of the state, and extends the reach of the military to its engagement with actors beyond the state such as media and economic interests.

In both of the above quotes, the IDF strategy document identifies “legitimacy” as a condition that must be actively produced in order give the IDF “freedom to act.” Craig (2013: 12) defines legitimacy as “a value judgement that gives authority to the exercise of power,”

¹¹ **Secret operations** – operations that their outcomes are known to the enemy, and they are planned and executed in a way that will hide the identity of who is behind it, or will allow a degree of denial to the actor behind it.

Confidential operations – operations that are managed in a way that will ensure secrecy or concealment. A confidential operation is different from a secret operation in that an emphasis is given to concealing the operation, but not concealing the identity of the actor behind it. [Footnote part of above quotation]

and most frequently refers to the authority of the state. However, rather than being an “achieved status” that the state can “secure,” it is both a “process that is always under contestation” and a “processual technique of governance” (Jeffrey et al., 2015: 180; Wilson and McConnell, 2015: 206).

Legitimacy has been typically considered in two separate senses. One is “an entity or action being genuine and valid,” and the other is “conformity to the law” (Jeffrey et al., 2015: 178). A distinction can also be drawn between international and domestic legitimacy, albeit in practice there are often linkages between the two (Jones and Clark, 2015). International legitimacy can be understood within international relations according to the first sense an adherence to the norms expected of “a liberal democratic state” that makes its actions acceptable within the framework of “recognition to a liberal international society” (Craig, 2013: 12). The second sense of international legitimacy can be tied to an instrumental adherence that complies with the rules and procedural obligations set out by IGOs, including international law, a subset of which is IHL. According to this standard of legitimacy “there is an emphasis on rightful authority through a hierarchal relationship to an ultimate rule of recognition. Here, legitimacy is about complying with the rules, and law has a big part to play” (Craig, 2013: 12). In basic terms, this means that the actions of a state that has been found guilty, or even credibly accused, of committing war crimes, are not seen as having authority in their actions as a sovereign by the international community and may be subject to political or economic sanctions, or more rarely military intervention. In practice however, whilst some form of ambiguous relationship does exist between the two, the extent to which

adherence to legal norms or procedures actually determines political legitimacy to act is debateable (Wilson and McConnell, 2015).¹²

In contrast, domestic legitimacy concerns the respect for, and disposition towards, the state's authority by its population. O'Lear (2007: 209) emphasises this aspect in her theorisation of legitimacy:

Legitimacy provides a window to state stability or fragility through a consideration of how well the government of a state is able to secure acceptance, if not approval, by its populace. If the population does not view the government as the legitimate authority of the country, then a state will either have to make up the imbalance in its sovereignty by exerting considerable control through force or risk instability in one form or another.

This understanding argues that a relationship exists between "legitimacy" and the "stability or fragility" of the state. This has significant implications for an object-oriented approach to the state when combined with the above conceptualisation of legitimacy as an ongoing process. Constant work must be done by the political and bureaucratic organs of the state towards defending or enhancing legitimacy in order to maintain its coherency as an object against the immanent and active forces working to destabilise it. This must include enacting symbioses with certain forms of technology that have the perceived capacities to enhance the state's legitimacy, and detaching from technological objects which are deemed likely to be detrimental its legitimacy.

The IDF's concern for the state's legitimacy creates a mutually reinforcing dialectic between the strategic role of military operations and the political goals of the state. The ways in which the ways that the military conducts its operations, including its tactical

¹² Examples of a lack of causality in legality bestowing legitimacy include the US intervention in Iraq and Guantanamo Bay, Russia's support for Assad in the Syrian Civil war despite clear evidence of chemical weapons attacks against civilians, or the Sri Lankan military's shelling of civilians in its counter-insurgency operations against the Tamil Tigers.

decisions and the weapons it uses and the circumstances in which they are deployed, in turn affect the future political options available to the state and the IDF's own future ability to project its power spatially and temporally. This cycle of action required to attain/maintain legitimacy is at odds with the classical Clausewitzian notion of strategy in which military strategy, and the subsidiary layer of tactics used to achieve a strategic objective, is a subordinate means to achieve political ends. This imbrication of political legitimacy and capacity for military action, convolutes and expands the boundaries of what can be considered a military and political concern so as to blur the distinction between military operations, domestic political processes, international diplomacy, public relations, and globalised trade.

This concern alters how force can be applied in the conflict. As Expert 2 explains:

We are trying of course... to shorten the operation as much as possible ... on the other hand, of course we stand in a friction with how much force you use because if you want to achieve your goals in a very fast [err] very short time, you have to use a lot of force and of course it hurts the legitimacy – both international legitimacy and internal legitimacy. And legitimacy is not just a slogan, it's the factor that creates the frame of the operation.

Two things about the relationship between force and legitimacy become apparent. The first is that military force, although the traditional means through which strategy is applied to achieve the state's political goals, has an antithetical and non-causal relationship to both international and internal political legitimacy. The second is that political legitimacy is the overarching "frame" through which strategic action must be considered in Israel's conflict with Gaza. When making decisions about the use of force, military and political leaders must engage in a balancing act between the utility of coercive violence to achieve political aims, and the extent of the political harm that such violence will likely cause.

This situation requires a rethinking of the structure-agency relationship in the spatial and temporal dynamics of the Gaza conflict. Are the IDF's actions constrained by the status-quo of continued periodic conflict vis-à-vis Hamas and other Gazan militant groups, and the "rules of the game" established through past calculations of deterrence? Does the IDF have the ability to act creatively to transcend this cycle, or is it limited in responding or pre-empting a particular "threat," and does its actions in the course of conflict reshape its future ability to act? Are Hamas acting strategically to use the IDF's asymmetric strength against itself by slowly wearing down Israel's international legitimacy over successive conflicts in order to force an accession to its political goals?¹³ Does Gaza's spatiality – areas of high urban density and verticality, limited surface area with less room for manoeuvre, geology and border positioning relative to Egypt and Israeli population centres – constrain or determine the IDF's pathways for military action?

To examine these questions, it is perhaps useful to turn to a more focused attention on the practical approaches of Israel's Gaza strategy. By doing so, it becomes possible to explicate how technologies *act* as a coherent part of the object of the Israeli state, and the political challenges for the state that these technologies produce. The most subscribed to, and dominant, position on Israel's strategic approach has been termed the "Mowing the

¹³ A caveat should be noted here that the discussion of Hamas' strategic approach and its political goals in this research is more or less a discussion of how these are anticipated and interpreted by IDF strategists, and how this in turn shapes Israeli thinking and behaviour, rather than how Hamas themselves define their political goals, strategies and tactics.

Grass" (MTG) strategy. An influential articulation of this strategy comes from Inbar and Shamir (2013: 68):¹⁴

Israel's approach in the twenty-first century is often termed "Mowing the Grass", a new term in Israel's strategic parlance that reflects the assumption that Israel finds itself in protracted intractable conflict with extremely hostile non-state entities, which is qualitatively different from an inter-state conflict. The use of force is therefore not intended to attain impossible political goals, but rather to debilitate the capabilities of the enemy to harm Israel. Realizing the difficulties in affecting the behavior of radical ideological non-state actors, Israel's use of force can achieve only temporary deterrence. Therefore, Israel has adopted a patient military strategy of attrition designed primarily to destroy the enemy capabilities. Only after absorbing a series of attacks and showing much restraint in its offensive actions does Israel act forcefully to destroy the capabilities of its foes, hoping that occasional large-scale operations will also have a temporary deterrent effect in order to create periods of quiet along its borders.

In summary, MTG is predicated on the assumption that in response to what is a politically unsolvable state of persistent conflict against an ideologically-driven "irrational" non-state actor, the best solution is to periodically apply violent force in order to restore "deterrence" by weakening the opposing side's capacity for violent action by targeting its military infrastructure. However, over time the deterrence achieved in one bout of MTG wanes, and thus "the grass" must be mowed again as a matter of the routine maintenance of deterrence, with the objective being to prolong the periods of time between violent conflagrations. The catalyst for the failure of deterrence according to Inbar and Shamir (2013: 76) is the persistence of "fundamental political realities," the continuation of an immutable *status quo* rather than the more plausible explanation of a dynamic shift in political circumstances to some degree. In practical terms, MTG is put into practice during the delimited timeframe of *war* in terms of the temporal schema set out in the IDF Strategy document.

¹⁴ In an interview, Shamir clarified that MTG should be understood as an actual description of the IDF's "imperfect," but largely effective, strategy for managing security risk versus Hamas at present, rather than a prescription for how the IDF should act in relation to Hamas.

The strategic logic behind MTG in itself raises several questions in relation to Gaza. The first is whether Hamas is in actuality a non-state actor, or can be better characterised as a territorialised quasi-state actor that has a (somewhat limited) spatial extent of sovereignty within Gaza. This is at odds with the current status of Hamas not being recognised as a legitimate state actor by the international community, which acknowledges the Fatah-controlled State of Palestine/Palestinian Authority as the legitimate sovereign in Gaza, despite its inability to *de facto* act in such a capacity due to Hamas' control. The MTG paper makes several references to "quiet borders" as a strategic goal, which suggests that Israel treats Hamas as an external and territorial actor in the sense of a state, despite its unwillingness to recognise Hamas directly as a diplomatic counterpart. Instead, the territorialised relationship between Hamas and Israel can be imperfectly mapped as a form of "hybrid sovereignty" that "transcend[s] the accepted binaries that mark realist views of sovereignty: state/nonstate, legitimate/illegitimate, order/chaos..." (Fregonese, 2012: 670). In the Gaza-Israel case, this is not an organic relationship based on a consensual agreement to carve out particular security roles, but has come about through a "coordination" of mutual "opposition" (Fregonese, 2012: 669) that is discursively produced through the performative practices of violence and restraint that articulate "the rules of the game."

The second question pertains to the issue of rationality. MTG is defined as a response to a fundamentally irrational actor. However, the mechanism through which the deterrence component of the MTG strategy works is based on the presumption that a non-state actor will make a rational decision to eschew an act of political violence due to the fear of the violence it would unleash in response:

Indeed, “Mowing the Grass” is also intended to have a deterrent effect. Deterrence aims to persuade “a potential enemy that he should in his own interest avoid certain courses of activity While “Mowing the Grass” operations are primarily designed to inflict damage on valuable assets and capabilities, a corollary effect is lowering the motivation of the enemy to harm Israel. Past evidence shows that Arab actions decrease in response to Israeli actions. (Inbar and Shamir, 2013: 75).

This requires the enemy to make a rational choice based on self-interest and a cost-benefit calculation of the utility of violence in a particular instance. Therefore, this changes the strategic calculus from a contest between a rational and an irrational violent actor into a contest between two rational violent actors, albeit with unequal capabilities in the force they can apply. These distinctions destabilise the assumption of enemy irrationality on which MTG theoretically relies. Rather, the IDF’s opponents, namely Hamas, are required to make a choice based on the assumption that they will suffer greater damage than they can inflict due to their asymmetrical military weakness to Israel. As such, they must decide whether the benefits achieved will outweigh the ultimately heavy price of a given action.

Unsurprisingly, MTG has been heavily criticised on both humanitarian and strategic grounds. MIT security analyst Jim Walsh (2014) questions the utility of MTG as a metaphor since “cutting down civilians, like the children playing on that Gaza beach, is not like cutting blades of grass. To compare the two is dehumanizing. And to embrace a policy that entails the killing of hundreds, if not thousands, of civilians with each application violates the conscience, if not the basic rule of law.” Furthermore, grass as a topological conception connotes a flat and undifferentiated surface of a homogenous class of flora that can be re-levelled through force, rather than attending to what spatial difference is and does. This is particularly acute with regard to the conditions of life in urban space.

Inbar and Shamir (2013: 78) argue that the military objective of MTG “is to dismantle the terror infrastructure through systematic destruction of weapons caches, bomb-making laboratories, headquarters, training camps and the capturing and killing of militants.” In actual practice however, through the convergence of the loci of militant activity, IDF targeting decisions and the density of Gaza’s urban spaces, MTG relies on the urbicidal (Coward, 2010) targeting of Gaza’s infrastructure and built environment and the lives of the inhabitants this architecture sustains. This enmeshes targeting decisions with the IHL tests of *proportionality* — does the military benefit outweigh potential harm caused to non-combatants? — and *distinction* — does the targeting adequately distinguish between combatants and non-combatants? The entire premise of distinction becomes elided in urban battlespaces as it becomes increasingly difficult to separate militant activity from the infrastructures and social networks that support it. Walsh (2014) goes on to question the passive “grass” metaphor’s ability to convey the iterative nature of technological advancement and strategic and tactical development that occurs between wars: “Grass does not learn from each mowing; it does not develop new capabilities. By contrast, over the course of a decade, it has become clear that militants in Gaza are acquiring better rockets — and, now, drones — and reaching deeper into Israeli territory. Their new targets include Tel Aviv Airport and the Dimona nuclear reactor.”

In a *Foreign Policy* piece Byman (2014) also criticises the MTG strategy for its lack of nuance with regard to the domestic politics within Israel, explaining that “Israeli leaders compete to maintain their security credentials: While most democratic leaders struggle to convince their people to use force when necessary, Israeli leaders must struggle to explain

that force can often backfire.” He also contends that weakening Hamas too much would lead to competing sovereignties:

There is one ironic danger of Israel’s war against Hamas — for deterrence to work, you don’t want your enemy to become *too* weak. A weaker Hamas makes rogue attacks more likely, and disarming Hamas, which Israeli leaders have at times called for, would risk Gaza being controlled by even more extreme groups (Byman, 2014).

This requires a tricky and careful calibration of allowing Hamas to remain strong enough to police and constrain other factions in the Strip, but weak enough that they cannot cause serious harm to Israel. Israel has explicitly made this their official position and will retaliate against Hamas targets as a matter of form in retaliation for any rocket strikes into Israel emanating from Gaza, no matter which faction is responsible. A more revealing explanation of this strategy was made clear in a newspaper article titled “Senior IDF official: we could've taken down Hamas in 10 days” written in 2014, during the course of Operation Protective Edge:

"There's an Israeli interest to have one address in Gaza, we don't want a Somalization in the Strip, but rather one group to enforce its control of the Strip. This is why the collapse of Hamas was not defined as one of the objectives," the senior [IDF] source said (Zitun, 2014).

The term “Somalization” is a very interesting one, as it draws parallel to the “failed state” discourse of territorial fragmentation that occurred in Somalia due to a long-running civil war (Traub, 2010: 81). This shows a logic of expedience that simplifies political responsibility by making use of a statist conception of territorialised sovereignty. The IDF actively seeks to keep Hamas salient as an object or entity, rather than destroy them in a total war scenario, in order to produce a knowable and actionable enemy against which a spatialised military strategy, such as MTG, can be operationalised. The alternative for Israel would be a greater lack of strategic clarity of who or what to target as objects of security, and where to target

them. Without the simplicity of having an obvious target the MTG strategy falls apart, as it is no longer possible to locate where the grass that must be mowed can be found, and who or what is being incapacitated and deterred. This reflects the broader problems that states have in adjusting to post-statist modes of political violence such as that advanced in Kaldor's (2012) "New Wars" thesis.

Possibly the biggest problem with the MTG strategy, which is paradoxically the reasoning behind it, is its incapacity to allow either or both sets of actors the agency to transcend or actively disrupt the structural pattern of cyclical violence it assumes. Some alternative strategic approaches have been posited by the IDF's strategic echelon that allow for a more creative application of violence. This is elucidated in a policy report by Brig. Gen. (res.) Moni Chorev (2016) one of the architects of Israel's strategic approach in Operation Protective Edge, to explain the rationale applied in that conflict. First, it works from a territorial expectation that counter-intuits a typical structural-realist statist bias. It suggests that "an analysis of Hamas' operational behaviour indicates that it does not view territory as an essential value; preventing incursions into, or conquests of, its territory does not seem to be of great importance" (Chorev, 2016: 17). This is predicated on the assumption that any IDF incursion will be "limited in duration" and that it is counter to Israeli interests to re-occupy Gaza. Rather, this line of thinking suggests that Hamas actually views an Israeli ground infiltration as in its own strategic interests because it can draw IDF troops into "dense and complex areas containing a civilian population very well prepared by the defender, with military objectives that are difficult to define" and would "multiply" Hamas' strategic advantage (Chorev, 2016: 17-18) by forcing the IDF to expend operational energy to

logistically supply and hold any territorial gains made. This contradicts the Westphalian territorial assumption that a (state) actor's authority derives from its ability to maintain sovereign inviolability.

The strategy employed here is based around the temporal modulation of conflict. It was based on a "learning from mistakes" approach in the previous war in 2012, which Chorev's (2016: 38) report characterised by a rapid and harsh escalation of force through an intensive aerial bombing campaign that left little room for strategic manoeuvre. This approach is typical of the "rapid decisive victory" conception in Israeli strategic thinking combines "the massive use of force" with fast-paced territorial movement (Chorev, 2016: 41). Essentially what happened in 2012 is the momentum of force, and the available targets to inflict "pain" on the enemy diminished so rapidly that the state was not able to realise its political goals. In contrast, during Protective Edge a deliberately gradual strategy was developed that involved "starting gently" with a "low level of firepower" and "offering exit points" for de-escalation that would allow Hamas "the option to return to a state of calm quickly and with little cost" (Chorev, 2016: 39). This was then followed by a "gradual and controlled escalation" that "balanced" the "spread of attacks on targets over the operational timeline" (Chorev, 2016: 39). The benefits of this approach were designed in part to prevent a rapid burn-out of targets that would both give Hamas little to lose, and reduce the IDF's ability to apply pressure to achieve political results, and to increase domestic and international legitimacy for the IDF to act. Finally, incorporated into this strategy is the device of creating "strategic pauses," a calculated downshifting of military force that takes deliberate advantage temporary ceasefires brokered by international actors (Chorev, 2016:

39). These pauses are designed to serve multiple purposes. Most significantly, they give the enemy pause to take a calmer and more collected re-evaluation of their strategic and tactical position, and whether violent means are useful in achieving their intended goals. The spatiality of Hamas' operations in Gaza is explicitly treated as significant in this approach. Chorev argues that Hamas' "command structure is spread out in hiding places and tunnels, and may thus have a limited awareness of the full realities of the field. Temporary halts allow the enemy to look around and internalise the realities of what is happening on the ground" and to "create additional psychological pressure... to damage enemy resilience, as well as driving a wedge between different groups within the Gazan population" (Chorev, 2016: 39-40). Aside from the obvious strategic use of cease fires to regroup and analyse, it can be used to "improve the synergy and coordination diplomatic and military efforts" and to broaden "the legitimization given by the international community" as Israel "was seen as the moderate and considered party, seeking an agreed compromise" (Chorev, 2016: 40). However, the latter conclusion is very much a matter of heated debate rather than an established fact. This discussion of the modulation of temporality points to an internal contradiction and contestation in both the conduct and characterisation of Israel's military strategy vis-à-vis Gaza. However, despite the differences between MTG and what will be termed here as a "temporal modulation strategy," they are both predicated on a non-linear temporal framework based around managing Gaza in terms of long-term attrition warfare that is fundamentally at odds with the teleological conception of decisive warfare. Instead, the goal of military violence is to achieve deterrence through the manipulation of the rhythms and patterns of (in)security.

4.6 Conclusion

This chapter has provided an empirical context for understanding the case studies presented in following three chapters. It has done so by working through the historical and contemporary spatial and temporal dynamics that have produced Gaza's present territorial formation and circumstances vis-à-vis Israel. It then elucidated the strategic concepts and techniques by which Israel has worked to strengthen its own position relative to Gaza. These approaches are predicated on manipulating the variables of space — territory and terrain — and time — intensities and timescales of peace and violent force — to shape desirable geopolitical conditions and outcomes for the State of Israel. The historical approach to Gaza in the first part of the chapter narrates through historical evidence the shaping of the territory of Gaza as a relational and dialogic process concomitant to the creation and development of Israel as a territorialised entity. The contemporary Palestinian exclave of Gaza came into existence and metamorphosed to its present state through the growth of a Palestinian national movement that derived strength through opposition to the creation of the State of Israel in 1948. Over the course of the mid-twentieth to early twenty-first centuries Gaza coalesced as an object through a dynamic interplay of factors and events including regional geopolitics, spatial demography and periods of violent conflict. This culminated in Israel's 2005 withdrawal and disavowal of the territory, which made Gaza into a (quasi-) autonomous Palestinian space.

This relational treatment of the recent history of Gaza-Israel stems from this thesis' object-oriented theoretical underpinning in which the State of Israel exists as a complex object that does work to retain its integrity. Likewise, Gaza is an opposing object that has

the power to destabilise the coherency of the Israeli state (and vice-versa). Therefore, Gaza is treated by Israeli political and security practitioners through a governmental logic best characterised as resilient risk management that works to manage Gaza as an on-going problem.

This begs the question of why Israel does not attempt to permanently destroy Hamas outright in order to neutralise Gaza as a competing object? There are two reasons for this. First is that the political harm to Israel's international and domestic legitimacy, which is a clear strategic imperative for Israel, would cause permanent and lasting harm to the political and economic success of the state. Second is the worry of 'unknown unknowns.' For Israeli security elites Hamas is a known quantity, which albeit challenging, can be managed through anticipatory practices and technologies, and that indirect mechanisms and channels of communication exist (mainly through Egypt's Intelligence Service) to reduce the intensity of conflict when desirable for either or both parties. In contrast, if another militant group or state proxy were to gain political control of the Strip, or if it were to fragment into anarchy, Israeli security elites are less confident about their ability to manage the anticipated danger that would result. However, despite the comparative assuredness of Israeli security practitioners in their ability to contain Hamas, the actuality of the situation is far more febrile. The excessive dynamics that result from the complex interplay of political desires, terrain, geography, socio-economic pressures and technology is evidenced by a recent turn in the conflict. Large numbers of incendiary kites are being flown by Palestinian mass protesters over the border fence into Israel, with the likely encouragement of Hamas, circumnavigating Israel's security infrastructure and causing significant economic and

ecological damage to the Western Negev region (Harel, 2018b; Williams and Al-Mughrabi, 2018).

The reasons explained above for not destroying Hamas outright make plausible the underlying premise behind the strategic logics influencing Israel's military actions contra Gaza. Israeli strategic planners deliberately keep Hamas coherent as the political hegemon in Gaza, but weak enough to mitigate their strength to act against Israel. Treating Hamas as the sovereign in Gaza allows Israeli security officials to assign Hamas a clear responsibility for any military or civil action against Israel emanating from Gaza, whether or not Hamas is directly responsible. This strategy is designed to enhance Israel's international legitimacy as a political object by creating a normative and legal framework to allow and justify Israel's military actions, and the domestic political legitimacy of the Israeli government by displaying a tough stance against Hamas to enhance the population's security. Despite this, the actual extent to which Hamas is actually sovereign in Gaza is constrained by Israeli control of maritime borders and airspace, as well as the impacts of Israel and Egypt's long-standing partial blockade.

This logic of responsabilising Hamas as the sovereign within Gaza, despite Israel's effective control of significant parts of Gaza's territorial volume and official position of recognising the PA as the sole legitimate Palestinian government, undercuts the notion that the Westphalian model of territory is in fact the natural basis of the sovereign state. Rather, Israel approaches Gaza as a dangerous but malleable spatio-temporal object that can be managed through specific calculations over sovereignty and deterrence. This conception of Gaza is actualised through the "mowing the grass" strategy, which is predicated on the

assumption that violent conflict with Hamas is an inevitable and quasi-permanent state of affairs. Therefore, action must be taken periodically to reduce Hamas' ability to act militarily against Israel and to restore deterrence as a default state of restraint. The arguably more sophisticated approach of temporal modulation that emerged in the strategic planning of the 2014 Gaza War deliberately manipulates the intensity of violence in the conflict through the escalation, de-escalation and strategic pauses in the use of force to influence Hamas to capitulate. While these two strategies differ in their fundamental understanding and application of the relationship between space, time and force, with MTG being a closed cycle and the temporal modulation approach being an iterative process, they both share in common a non-linear and non-teleological temporality that influences the way implied or actual force is spatially deployed through technological means. This in turn influences how, when and where technologies are present or absent in the Gaza-Israel conflict.

Having a grasp of the strategic logics underlying how technologies are applied to further the security of the state in war provides a layer of conceptual depth necessary for understanding the mechanisms through which the state's ontology is reinforced and strengthened. This sets the foundation for a meaningful intervention on the ways in which the state's technological capacities iteratively reconfigure the politics of armed conflict in relation to competing forces and limitations. The three chapters that follow apply a "thick" case study approach (Geertz, 1973: 7) to empirically evidence the crucial and *active* roles in which the imbrication and interplay between weapons technologies, competing political desires, terrain and the elemental produce and condition the contours and outcomes of violence in the Gaza-Israel conflict. These accounts are the empirical crux of thesis, and

follow a narrative path that moves through the territorial volume of Gaza-Israel starting from the labyrinthine surface of Gaza's urban terrain, into the dense opacity of the subsurface beneath the surficial border between the two territories, and finishes in the volatile atmosphere above.

CHAPTER 5. *SURFICIAL*: TECHNOLOGIES AND THE LIMITS OF STRATEGIC CONTROL IN THE URBAN BATTLESPACE

5.1 Introduction

This chapter will relate the Israeli approach to managing Gaza as a security threat — central to which has been periodic bouts of urban warfare — back to the thematic focus of this thesis. It will do so by investigating how the technological capacities and limitations of the weapons employed by the Israeli military to manage what they perceive as the challenging urban terrain of Gaza affect the State of Israel's international relations, media and legal discourses. This analysis will elucidate the emergent relationship between technology, terrain, security and the state's political legitimacy. In particular, it will evaluate the ramifications of the interaction between technology and the variegated surface of terrain for the political project of security during intense periods of conflict. In doing so, this chapter will argue that the capacities of spatialised objects, such as weapons, buildings, infrastructures and electronic devices, modulate the state's capacity to enact security in relation to the dynamic relationship between spatiality and temporality in geopolitical conflict.

To spell out this argument more clearly, the political legitimacy of the state in war, and by extension its ability to project power as a security actor, is affected by how its technological capacities are politically articulated through discursive forums in relation to their being and actions. However, this issue of what a technology can or cannot do must be understood in terms of its ontology and imbrication in its geopolitical environment. Urban

terrain represents “a complex multidimensional blend of horizontal, vertical, interior and external forms, superimposed on natural relief” (Hills, 2004). Adding to this labyrinthine complexity is the fact that cities are populated spaces that both sustain life (Coward, 2009), and through which life circulates and processually reconfigures urban materialities (McFarlane, 2011). The city’s architectural and biological density makes military tactics for manoeuvre and situational awareness difficult, in part due to the fact that it is virtually impossible to see three-dimensionally inside buildings, and that corners, walls, roofs, doors and windows provide cover to defending forces. Furthermore, in urban warfare situations, the built environment lends itself almost naturally to the tactics of camouflage and concealment that are tried and tested means used by guerrilla forces to overcome their weakness in force size and weaponry relative to conventional state militaries.

The complexity of urban terrain has the power to weaken the viability of the state politically because it undermines the techniques used by state apparatuses to enact power in pursuit of political objectives. As a counter-response to the overwhelming complexity of urban terrain, conventionally powerful forces attempt to mitigate their relative loss of advantage and increased risk in urban environments by deploying technological solutions. Examples include, UAVs, PGMs, elaborate missile defence systems, scanning technologies, and C⁴ISR¹ platforms. However, the agency and limitations of technologies can result in unintended political effects and risk rebounds that exceed a technology’s instrumental

¹ C⁴ISR is a shorthand for Command Control Communications Computers Intelligence Surveillance Reconnaissance. C⁴ISR systems are computer arrays used by commanders in battle to assess the changing battlespace and iteratively make tactical decisions as the battle unfolds. They work by combining several technologies to gather, update and visualise intelligence in real-time including Geographical Information Systems, UAVs and crowd-sourcing from individual units on the ground using networked electronic devices.

function, lifecycle, use or absence. These active roles become manifest through technologies' present or withheld capacities in relation to their existence within a specific environment.

The first section of this chapter provides a theoretical grounding for understanding how objects exert political agency by variably withholding and revealing their potentialities when enrolled in the eventful temporality of war. The following section uses a discussion of the Battle of Shuja'iya, which took place during the 2014 Gaza War, to highlight how the complexity of terrain constrains technological agencies and strategic intent in urban warfare. The final section foregrounds the roles of military technologies as they pertain to the discourses of legal responsibility in war. It utilises documentary sources that argue for or against the legality of particular technological practices and actions by the IDF during specific instances in the 2008-2014 Gaza Wars as case study evidence to evaluate the political implications of technological agency.

Many of these scenarios have already been well rehearsed in the literature and in public discourse. However, this ubiquity has created a rich supply of primary and secondary sources which allows for a critical re-evaluation that can give a more nuanced account of the material politics that these cases evoke. What is novel here is not necessarily the empirical situations being discussed, but the way in which they can be theorised differently through an object-oriented lens. Attending to the eruptive nature of the creative and destructive materialities that coalesce in the extreme intensities of war will elucidate the subtle yet powerful role that the relationship between particular sorts of technologies,

infrastructures and topologies of terrain at the centre of a violent dispute plays in shaping the politics and dynamics of armed conflict.

5.2 Weaponising the object

In order to be able to evaluate the complex and multifaceted roles that technologies play in the Gaza-Israel conflict it is first necessary to articulate a theoretical basis through which they can be constituted as agentive objects. Following this, it will elaborate on how objects' agencies manifest through these capacities for action and limitations that inhibit action, and how these capacities unfold when they are correctly understood as part of the time-space process in which they act. This dynamic relationship will be elucidated by relating the spatiality of objects to a temporal concept of *event* as it applies to the violently ruptured space-time of war.

A recent intervention in materialist international relations goes some way to making the discussion of what an object is and how can it act in the world relevant to the condition of war by asking "what counts as a weapon?" (Bousquet et al., 2017: 2). In their introduction to a special issue of *Critical Studies on Security* titled "Becoming Weapon," Bousquet et. al. call for a "rejection of a purely instrumental understanding of weapons that would see their design and uses emanating straightforwardly from purposive human intentions" that is interpreted "through the sole lens of rational decision-making." Instead they suggest that by "placing particular emphasis on the making or becoming of weapons" it becomes possible "to break the deadlock between techno-fetishism and normative-polemical rejections of weapons, which together function as obstacles to a greater understanding of the

significance of weapons in the making of worlds of violence and war” (Bousquet et al., 2017: 2). Shah (2017: 19; italics added) furthers this thinking about what makes a weapon a cogent actor by paying particular attention to the ways in which “a weapon ‘*calibrates*’ what kind of killing in war becomes *conventional* both as a matter of course and a matter of principle.” In contrast to the ANT-slanting focus on the “genealogy” of the processes and buildings of relations (Shah, 2017: 19) that make weapons viable social agents, which the above authors emphasise, this chapter will instead examine what a weapon is and does in a more enduring sense through its application as a tool of violence and the aftermath of its use. In doing so, it will draw from the productive tension between Harman’s (2016: 7) notion of objects as “sleeping giants” that always withhold some of their latent power at any given moment, and Mol’s (2002: 180) conception of the “multiple object” that simultaneously acts in many ways in relation to the positionality of a given interlocutor.²

In order to produce a “technography” (Woolgar, 1998: 441) of a weapon, it is necessary to better articulate the role of temporality in object politics with regard to the singularly violent vector of war. According to Harman (2016: 49-50), an object has a lifecycle in which one can trace temporal changes of birth, death and “symbioses,” key junctures that move an object into a new “stage” of its lifecycle. These symbioses ought to be measured in how they affect the object itself, rather than be measured in terms of the agency that an object exerts on another actor, in order to avoid the relativist position that an object can only be understood in terms of its relational agency to other objects and that

² See Section 2.5 for a more detailed discussion of Harman’s critique of Mol’s theory of the multiple object.

all objects have an equal agentive capacity. This understanding must be contrasted with and developed in relation to other concepts of event that appear in the critical security studies literature, and in the literature on *affect* in human geography.

Shaw (2012: 621) writes that “objects are therefore force-full: they are full of forces, smoldering furnaces of affects.” It is through the interactions of these object forces that events coalesce. The events contained within this chapter might vary in their scale from the undramatic, e.g. legal argumentation, to isolated but unremarkable acts of violence within a conflict, e.g. a particular instance of mortar fire, to more sensational events that garner global media attention, e.g. The Battle of Shuja’iya. However, it should be clarified that the significance or temporal scale of the events discussed should not be reduced according to a scalar hierarchy, but should be evaluated according to their lasting effects and *affects*.

The temporality of peace, conflict and security is modulated through the shifting intensities of violence and power during armed conflict. Spinks (2001: 24) notes that “political decision is itself produced by a series of inhuman or pre-subjective forces and intensities.” Intensities as they are used in this chapter’s discussion of political violence can be defined as the dynamic temporal shifts in the concentration of violent power that occur through the interplay between human intentionalities, technological capacities and space. Croser (2011: 22, 99) links this temporal affectivity with Lefebvre’s *rhythmanalysis* to analyse the urban battlespace as “event-ful,” based on the varying degrees of intensity structured around daily routines and patterns of life. Likewise, the eventfulness that occurs in a given instance of significance has a political resonance through which it is “made present” in the future (Adey and Anderson, 2011: 786), which often long exceeds its burst of intensity. One

clear example of this is the still unresolved debate over whether an Israeli PGM that hit an UNRWA school in the Rafah District of Gaza at approximately 10:40am on August 3, 2014 (the twenty-ninth day of Operation Protective Edge) constitutes a war crime according to IHL (Moon, 2015; Human Rights Watch, 2014; News Agencies, 2014). Factors that must be accounted for to resolve this debate include who launched the PGM and what rationale was used to justify its use. Therefore it must be established whether the PGM was outside the control of IDF by the time it hit the school, and to what extent the weapon's own agency is autonomous from the user. How these factors are understood depends on the interested actors' interpretations of an object's agency, which often exceeds its desired intention, or ascribed qualities. The consequences of how the event is interpreted by particular types of actors has political implications for the state.

The modulations of events disrupt the mistaken premise of geopolitical stability as a default state. Instead, this approach iterates that "war and peace should not be seen as dichotomous periods and spaces" and that "places, state, regions, and landscapes are continually being destroyed and re-built by organized violence, or war"(Kirsch and Flint, 2011: 19). The modulations that come about through the changing intensities of violence occur as a result of the interactions between the agencies of human actors and the potentialities of weapons. As Barkawi argues (2015: 56), it is through the "organisation and facilitation of coercive capacities" by political actors including the state that the so-called condition of 'peace' is maintained.

However, in paying attention to the temporality of war through the theoretical framing of the event, it is important not to get caught up in the mistaken notion that the

event is a transient and ephemeral phenomenon that subsumes the lasting powers of objects. Gregory (2010: 267; italics in original) theorises that “for it is not only that maps must be understood ‘as events rather than objects’... but also that the mappings of late modern war are increasingly required to produce a space *composed* of events rather than objects.” This emphasis on events as antithetical to objects underplays the actual centrality of materialities in producing events, and to exercise power through affects that far outlast the event. It also ignores the actual situations in which objects’ own agentive capacities transcend the anticipated ends of their use by human actors. This chapter’s discussion of Israel’s strategic approach to managing its security vis-à-vis Gaza will pay particular attention to the temporal logics that have been formulated to control the changeable rhythms of local and regional events, and how the excessive affective capacities at loose in urban warfare disrupt this project.

5.3 The limits of control: terrain, technology and strategy in the Battle of Shuja’iya

The excessive and unpredictable political agency generated through the imbrication of technology and terrain can overpower the instrumental strategic logic through which state actors are trained to make decisions. This is aptly demonstrated by the chain of events that took place during one of the bloodiest conflagrations of the 2014 Gaza War, the Battle of Shuja’iya. This incident is significant for a study of technological agency in war for several reasons. First, the dense urban spatiality of the Shuja’iya district of Gaza City has a causal role in both the origin and severity of the incident. It is archetypal of the urban warfare scenarios that have taken place in recent Middle-Eastern conflicts in which state armies have

had to fight against non-conventional militias in confined, vertiginous spaces that were unfamiliar to them, but intimately familiar to their opponents. In the case of Shuja'iya, this volumetric dimensionality was exacerbated by the presence of clandestine tactical tunnels used for ambush attacks by Palestinian militants in the battlespace. Without undermining the very real specificities of the Gaza-Israel conflict, its commensurabilities and contrasts to other examples from the recent literature on technology and urban warfare (Shaw, 2016; Graham, 2010a; Gregory, 2010; Kaplan, 2009) make it a useful platform for evaluating common concerns and productive "*difference[s]*" (Rokem, 2016: 473; italics in original).

Second, the battle achieved media notoriety that led to a public and diplomatic backlash against the legitimacy of Israeli military action from Western European democracies and even Israel's closest ally, the US. The significant condemnation and questioning of the legality of Israel's military actions took place at the intersection between popular and elite level human-rights and foreign policy discourses. Therefore, this section will examine how the materialities of urban warfare modulate the Israeli state's international political legitimacy at the juncture between media, popular and elite human rights discourses, in order to shed light on how the technological capacities of weapons can have complex political ramifications that disrupt the supposed hierarchal relationship between tactics, strategy and politics.

The chronology of the battle began several days prior to its climactic moment in which a symbiosis fused together the state, the IDF's artillery and a particular class of armoured vehicle. On July 17, the IDF launched an operation in Shuja'iya with the stated goal of destroying underground tunnels and weapons caches used to store rockets in the

area. The spatial context for this area as an operational focus is that Shuja'iya is a densely built-up neighbourhood located on the eastern edge of Gaza city closest to the border fence with Israel, directly opposite from the *kibbutz* communities of Nahal Oz and Kfar Aza. Shuja'iya also happens to be the site of Gaza City's main open air market, making it both an important centre of economic activity and a focal point for civilian life.

Prior to the start of the operation, on July 16, Israeli forces airdropped leaflets, and sent text messages and phone calls in the neighbourhood warning civilians to leave the area ahead of an operation. However, most residents did not evacuate. The IDF claims that airdropping warning leaflets met the IDF's humanitarian obligations to prevent civilian casualties by giving civilians the opportunity to leave the area to avoid danger (State of Israel, 2015: 170-175). However, critics have asserted that this tactic is problematic as it does not remove the IDF's obligation to protect civilians according to IHL (UN Human Rights Council, 2015). They also suggest that Israel was trying to obtain a tactical advantage in urban warfare by creating a "sterile zone" in which they can treat any person they come across as a combatant, meaning they do not have to exercise the same degree of caution in their use of force as they would if civilians were present in the area (Geva, 2016: x).

The IDF's elite Golani Brigade began infiltrating Shuja'iya on July 17, but was drawn deeper into the more densely built up sections by Hamas militants engaging fire from these areas on July 19. In the early morning of July 20, an IDF M113 APC³ was ambushed by Hamas

³ The M113 is an American-designed APC dating back to the Vietnam War-era, and has been used by the IDF since the Six-Day War. It is an obsolete machine which was already known to the IDF to have weaknesses in its armour that made it vulnerable to the explosive devices used in contemporary urban warfare. However, its continued use was justified by commanders due to budget constraints that led to a shortage of the newer, better-armoured *Namer* (Leopard) APCs. Directly following the Battle of Shuja'iya, a group of IDF reservists informed their commanders that they would refuse to enter Gaza in the M113 (Stermann, Times of Israel 2014).

fighters with an anti-tank rocket killing seven soldiers inside the vehicle. The remains of one of the soldiers were presumed to have been taken by Hamas. The IDF brigade commander ordered military engineers to recover the vehicle to prevent the other remains from being taken, and the burnt-out vehicle being used as a propaganda symbol by Hamas (Anon, 2014b).

This decision was a key moment of intensification that led to grave political consequences. The commander's decision to risk more soldiers' lives and deploy great resources to collect the soldiers' remains may seem perplexing and questionable, since the soldiers in the vehicle were already dead. However, as discussed in Chapter 4, it must be understood in terms of the poignant sensitivities in Israeli society and domestic politics around captive soldiers' and soldiers' remains.

Pinned by heavy fire from Hamas fighters during the attempt to recover the APC, the Israeli commander gave an order in which infantry troops were given 30 minutes to shelter inside the newer heavily-armoured *Namer* APCs, which have a specification meant to withstand heavy artillery fire, before starting a barrage of heavy artillery fire and air strikes against several blocks to wipe out Hamas forces in the area (Lappin, 2014). The assault caused significant damage to buildings in the area, and by the end 67 Palestinians were killed and 400 wounded, although it is unclear how many were civilians or militants (Beaumont, 2014). During the most intense 7- hour period of the conflagration, an estimated 4,800 High Explosive (HE) shells were fired by 11 Israeli artillery battalions (Perry, 2014). Such weapons

are called “statistical weapons”⁴ in the IDF’s terminology and by definition lack precision guidance. It is notable that the commander was willing to risk heavy casualties to his own troops in order to fulfil a military objective. According to IDF protocol, the acceptable distance for firing artillery near one’s own forces is no closer than a 250-metre radius from your own troops. However, in this incident it was deemed acceptable for artillery to be fired with less than 100 metres of separation because “the enemy was spread in every direction, and was shooting” according to an IDF artillery officer who participated in the battle (Cohen, 2014). This risky decision was dependant on faith by the commander that the *Namer* APC’s actual technical capabilities would match its specification. If this had not been the case, then it would have been a considerable failing by the military echelon tasked with ensuring the welfare of its conscript soldiers by their family members.

Although the operation ultimately ended with an Israeli military victory despite (or possible because of) the risky tactical and strategic decisions made by the Golani Brigade’s commander, it had severe political repercussions for the state. In the aftermath of the battle, Israel faced severe diplomatic pressure from both its allies and in the UN for its conduct, as well as from indirect political pressure from negative public opinion internationally. The latter was partly due to the extensive reproduction in global media outlets of damning before-and-after satellite imagery shown in Figure 5.1, which was distributed by the United Nations Institute for Training and Research (UNITAR) as evidence of the decimation of the cityscape by IDF activity (Knell, 2014; Tomlinson and Duell, 2014). At the elite diplomatic and

⁴ See detailed explanation of this term in Chapter 4, footnote 9.

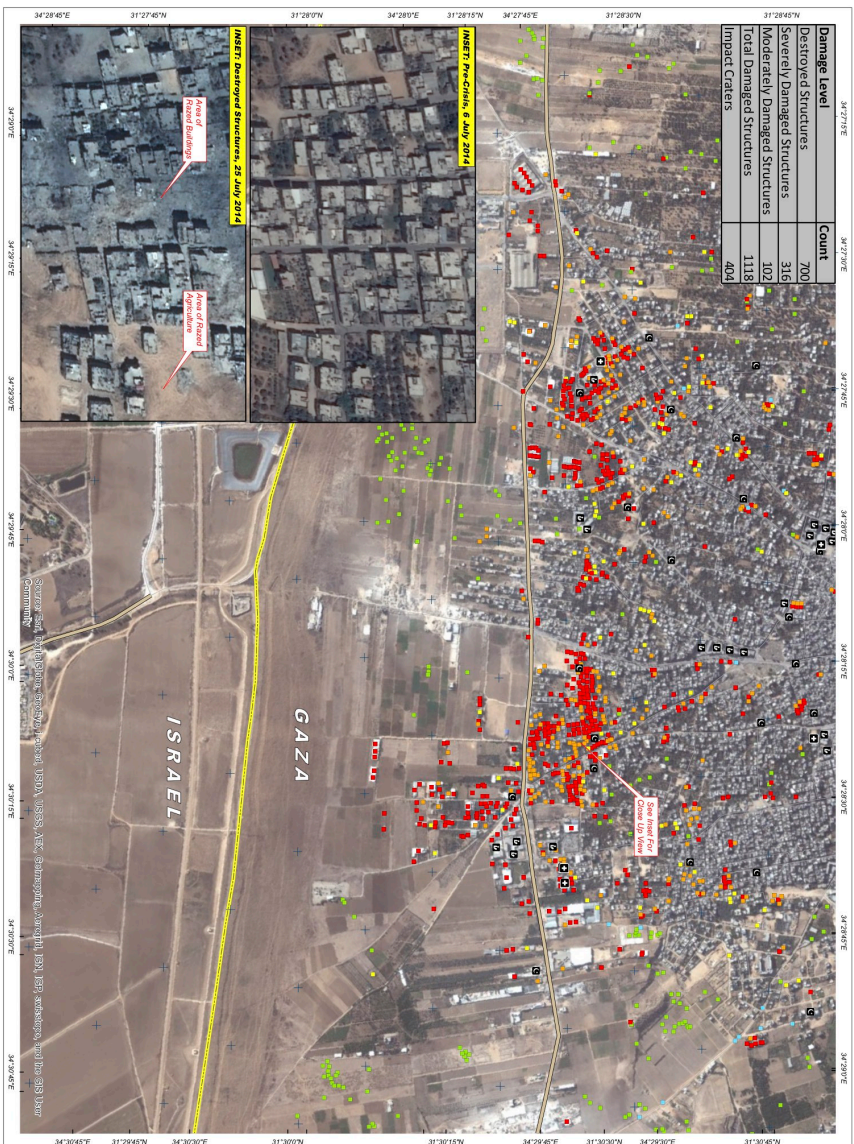
Complex
Emergency

Production Date:
7/28/2014

Version 2.0

Activation Number:
CE20140715PSE

Damage Level	Count
Destroyed Structures	7000
Severely Damaged Structures	316
Moderately Damaged Structures	202
Total Damaged Structures	1118
Impact Craters	404

[illegible]

The selection and use of boundaries, geographic names and related data shown here are not warranted to or accepted by the United Nations. UNOSAT is a program of the United Nations Institute for Training and Research (UNITAR), providing satellite imagery and related data to UN practitioners and development agencies and their implementing partners.



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strategic level, the IDF's actions were heavily criticised for being excessive and indiscriminate by the UN, the Palestinian Authority and the Arab League, with the PA calling it a "massacre" (Anon, 2014c). According to Mark Perry (2014), writing for *Al Jazeera*, the use of artillery in the battle was also criticised by Pentagon military analysts, who work for Israel's close US allies, for being an excessive and questionable use of force. The US Secretary of State at the time, John Kerry, was inadvertently caught on camera making the sarcastic remark "it's a hell of a pinpoint operation" whilst preparing for a television news interview when informed of the situation (Anon, 2014d). The paradoxical result of the conflagration is that although Israeli forces were able to pacify a problematic section of the urban terrain militarily by obliterating it through an intense application of destructive force, the political cost of lasting harm to the Israeli state's international legitimacy overshadowed any potential strategic achievement gained by the execution of the IDF's military objective.

When the Battle of Shuja'iya is evaluated as a case study for how heterogeneous agencies work in urban warfare what becomes apparent is a forceful relationship between the spatial arrangement of territory, the surficial complexity of terrain and the technologies actively applied to manage that complexity. This interplay is the catalyst through which desired political goals are achieved or thwarted, and both anticipated and unanticipated political consequences emerge. The strategic location of Shuja'iya near the boundary with Israel made cross-border tunnelling possible, which in turn made gaining control of the area to neutralise the tunnels an objective for Israeli forces. The architectural density, labyrinthine layout, verticality and concealability of Shuja'iya's urban terrain made ideal

conditions for Hamas to use the guerrilla tactic of goading IDF forces deeper into their defensive stronghold and laying ambushes. This in turn influenced the IDF commander's decision to use the powerful destructive capacities of mortars and artillery to create an overwhelming barrage to flatten the challenging difference of the urban terrain. The attack achieved the immediate goal of asserting spatial dominance, although it did not achieve the intended strategic goal of recovering the body of Sgt. Oren Shaul, which fell into the hands of Hamas. However, what became more significant in the aftermath of the event was the political backlash and controversy over the IDF forces' use of statistical weaponry in the densely populated urban area which harmed Israel's political legitimacy. What came to matter in this adverse outcome for the state were the dormant agencies of certain weapons technologies, namely PGMs, which produced political effects through their absence from the battle. This theoretical concern of how the withheld capacities of weapons can be sometimes agential will be elaborated further in the next section's discussion of the role of technologies in IHL discourse, which is an important forum through which Israel's military lawyers and diplomats negotiate the state's international legitimacy.

5.4 Weapons, IHL and legitimacy in asymmetric conflict

This section will give an enriched understanding of how weapons technologies influence the state's political legitimacy by making use of OOO's theoretical contribution of the object as "a sleeping giant" (Harman, 2016: 7) with the power to variably exercise or withhold some of its capacities at different times. It will demonstrate how technological agencies mediate discourses of responsibility in IHL through both their present and absent

capacities and limitations. These agencies are articulated through the forensic translations of objects' capabilities into compelling narratives by contending lawyers and technical experts in legal forums. The success or failure of a side's legal argument rests on how convincingly they can convey what a given weapon, or potential weapon, can or cannot do in the conditions of a particular place and time. In order to cogently unpack how this interplay of technological agency, expertise and terrain influences international legitimacy through IHL discourses, it is first necessary to define what is meant by political legitimacy in the context of Israel's international relations, and spell out how legitimacy is conferred through IHL.

The previous chapter's analysis of the 2015 IDF Strategy document demonstrates that the IDF treats international legitimacy as a strategic concern that is instrumental to its authority to act militarily, regardless of the extent to which this is actually the case. Conversely the IDF's latitude to act militarily is central to the state's political authority as a security hegemon. The state's legitimacy also affects its ability to maintain its stability through the economic, social and geopolitical repercussions it influences. However, the state's political legitimacy and its very authority are constrained by factors that exceed its claim of sovereignty. According to Agnew (2005: 442):

In no case, however has the authority of the state ever been complete. There have always been competing sources of authority from the church in the medieval context to international organizations, social movements, businesses, and non-government organizations (NGOs) today. More specifically, transparency, efficiency, expertise, accountability, and popularity are as much foundations of legitimacy as are nationality and democratic process (Delbruck 2003, 30-34; but also see Hudson 2001; Mulligan 2004). Thus, even ostensibly private entities and supranational governments are often accorded as great or even greater authority than are state.

This leads to a question of how the state's legitimacy is asserted and maintained in the international arena and domestically, and the interplay between these two scales.

As discussed in Chapter 4, the relationship between legal compliance according to international law and international political legitimacy is not a causal or linear one. In the case of international institutions, the UN Security Council is a prominent venue for deliberating the political legitimacy of violent action by a given state, and for punishing determined illegitimacy through economic sanctions or the multilateral authorisation of the use of force against a pariah state. Motions advanced in the Security Council are often supported by positions concerning the legality of the actions of a state against which punitive action is being tabled. However these legal statements do not necessarily determine the outcome of a resolution. Whilst Israel has been frequently condemned through votes in the General Assembly and the UNHRC, censure from these less powerful institutions has been largely symbolic and has had little actual effect on Israel's practical international relations, economic position or scope for military action. This is in contrast to the likely detrimental consequences that would result from punitive action in the Security Council. In the latter forum Israel's close ally the United States will most likely exercise its procedural power of veto against any Security Council resolution that would seriously threaten Israel's interests. This begs the question of why the Israeli state is concerned about defending the legality of its military actions in Gaza if this does not necessarily confer or deny political legitimacy?

Within international relations, the intricate debates over the sources of legitimacy and why states care about it tend to narrowly confine the assignation, adjudication and

states' concern for it to their participation in the formal geopolitics of the "international system" (Franck, 1988: 707; Coleman, 2007; Clark, 2005). However, Jeffrey et. al. (2015: 179) challenge "the unidirectional idea that legitimacy emanates from the state." Legitimacy can also be arbitrated, attributed and denied from other sources including news media, public opinions, NGOs and other civil society actors, and "non-sovereign" diplomacies (McConnell et al., 2012: 804). There is "considerable overlap" between "international legitimacy judgements" and "international laws," and illegality can be correlated as an indicator or evidence that suggests illegitimacy, even if it does not determine legitimacy (Coleman, 2007: 27-28). Therefore, the argumentation and interpretation of international law by invested actors is one of several fronts in which legitimacy is ascertained and contested in discourses about armed conflict, including in the above-mentioned political institutions.

How international law is interpreted, contextualised and deployed is contingent on the positionality of invested parties, including state militaries, IGOs and humanitarian NGOs. According to Luban (2013: 315) there are two competing "interpretive communities" at odds over the laws of war, which he characterises as the Laws of Armed Conflict (LOAC) camp of military lawyers and state officials versus the IHL camp of human rights organisations. Whilst LOAC and IHL both refer to the same juridical corpus, including the Geneva Conventions, the purpose that the law is meant to serve and how it functions are understood and interpreted in greatly divergent ways by the two factions. Luban (2013: 316) explains that "The LOAC vision of the law begins with armed conflict. It assigns military necessity and the imperatives of war-making primary, axiomatic status." The opposing "IHL

vision begins with humanitarianism, and assigns human dignity and human rights primary status... This vision regards war as a human failure” and “not something that deserves legal priority over the protection of rights and dignity” (Luban, 2013: 316).

The distinction between the two visions gets played in political and legal forums through the forensic examination of weapons as objects and their expended and withheld capacities for action, and in some cases their relations to other withheld weapons. Weizman’s *Forensic Architecture* (2017) consultancy project advances a position that falls firmly into the IHL programme of exposing alleged human rights violations by state actors. In particular, *Forensic Architecture* investigates material objects and landscapes – initially architecture and urban infrastructure, but more recently expanded to include geophysical data – by exposing the traces they offer as evidence of violence at “*the threshold of detectability*” (Weizman, 2017: 20; italics in original). These weapons continue to act through legal practices that involve “contemporary modes of *prosopopoeia* and *energia*” that “animate material objects by converting them into data or images and placing them within a narrative” (Weizman, 2017: 65). Weizman updates the concepts of *prosopopoeia* and *energia* from rhetorical strategies of Roman legal discourses to explain how objects do work as evidence in cases of LOAC/IHL. *Prosopopoeia* is “the attribution of a voice to inanimate things,” whilst *energia* is “vigor of style” that advocates the roles of objects not as mere facts, but as lively drivers of an argument that a criminal act has been perpetrated according to a specific sequence of events and motive (Weizman, 2017: 65). Ultimately, objects such as weapons and buildings become powerful agents that can afford or diminish

political legitimacy through their articulation in legal discourses through both their presence and absence, and action, inaction or withheld potentials for action.

These two opposing positions on the purpose and nature of international law in war have come to a head in accusations surrounding the notion of “lawfare,” or the weaponization of law itself in war (Dunlap, 2009: 35). Two competing but non-corollary understandings of lawfare have emerged relative to the LOAC and IHL positions. The concept is described by some ‘pro-Palestine’ activists and allied NGOs to criticise the IDF’s use of legal mechanisms and juridical argumentation to justify the excessive use of force or the military utility of operations that harm civilians’ activity, and to attack the legitimacy of human rights NGOs (Ben-Naftali et al., 2018: 247; Gordon and Perugini, 2016: 176-179; Gordon, 2014: 313; Hajjar, 2012; Weizman, 2011: 92-94). This position takes issue with the heavy involvement of lawyers as a pre-emptive resource to approve targeting decisions and make retrospective justifications for specific military actions to deflect the state’s culpability for violations of IHL. A contrasting accusation has been made by the Israeli state and ‘pro-Israel’ positions, which posits lawfare as the weaponisation of the laws of war as a planned strategy to overcome conventional asymmetrical weakness that reduces the state’s legitimacy to act. The most frequent mode of this understanding of lawfare is accusing Hamas and its allies of deliberately obfuscating the principle of distinction between civilian and military targets (Kittrie, 2016: 305; High Level Military Group, 2015: 15; Jewish Institute for National Security of America, 2015: 46; Blank, 2010: 281-282). Examples given include using human shields, launching rockets or assaults from densely-populated urban areas,

<p>[The commission] finds it difficult to believe that the IDF, with the substantial amount of aerial means available to it and the relatively small area of Gaza to cover, would leave troops coming under constant fire without any aerial surveillance for over 50 minutes... the commission also finds it difficult to understand why aerial platforms with more accurate and precise weapons than mortars were not available.</p> <p>Extract from the UNHRC commission of enquiry report on the 2014 Gaza War (UN Human Rights Council, 2015: 100-101)</p>	<p>Urban terrain limits the capacity for a military to rely upon certain weapons platforms to protect its ground forces. If aerial support is needed, requests must be relayed back to command, and significant time may elapse before the aerial support arrives. Aerial support is also difficult to provide when used in close proximity to friendly forces.</p> <p>Extract from <i>The 2014 Gaza Conflict: Factual and Legal Aspects</i> (State of Israel, 2015: 151)</p>
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Table 5.1. Comparison of competing legal claims about the IDF's use of aerial power in the 2014 Gaza War.

storing weapons caches or setting up operational bases in residential buildings, mosques, schools or hospitals.

The capacities of technologies to act politically within the context of war is mediated through states, organisations, media actors and public opinion. The articulation of competing expectations about what weapons can and should do by contrasting actors frames the scope for exercising political legitimacy by the state. This comes about through debates on the legality of the use of force in a given situation, and adherence to the legal concept of proportionality in the application of violence. Evidential support for or against the proportionality of the use of force in the Gaza conflict is based around how technological capacities are understood and translated by interlocutors in legal terms.

Table 5.1 shows two competing claims about the capacities of aerial targeting technologies to ensure legal compliance with LOAC/IHL during the 2014 Gaza War. The quote on the right is taken from the UN Human Rights Council's (2015: 3) commission of enquiry report on the 2014 Gaza War, which was written by a commission established by a UNHRC vote on July 23, 2014 to “to investigate all violations of international humanitarian law and international human rights law in the Occupied Palestinian Territory..., particularly in the occupied Gaza Strip, in the context of the military operations conducted since 13 June 2014.” Its remit was “to identify those responsible” and “to make recommendations, in particular on accountability measures” (UN Human Rights Council, 2015: 3). The commission’s tenure was mired in controversy. Both the State of Israel and Hamas refused to cooperate directly with the commission, although the Fatah-led West Bank Palestinian government, who were not a direct belligerent in the conflict, did cooperate fully. The chair of the commission William Schabas was forced to resign in February 2015 following a public diplomacy push by Israel to disqualify Schabas for being biased against Israel, citing a conflict of interest based on previous consultancy work he had carried out for the PLO, which Schabas had failed to disclose (Simons, 2015). These accusations and the refusal of either of the main belligerents to cooperate or provide evidence ultimately undermined the authority and legitimacy of the commission, although its findings were praised by human rights NGOs such as Amnesty International (2015).

The right-hand quote comes from a report produced by MoFA that sets out legal positions and evidence in justification of its conduct in the war. This report was released in May 2015 and some of its claims were subsequently evaluated in the UN commission of

enquiry report, which was released a month later. The Israeli document was clearly designed to discursively contest the UN report and deflect accountability for any potential war crimes, without engaging with the commission directly or needing to further defend the IDF's actions against counter-arguments.

The quote from the UNHRC report comes from an analysis of a specific incident that took place in Shuja'iya ten days after the events of July 20-21 discussed in the previous section. In this instance, an IDF mortar attack destroyed the al-Selek family home, killing eight members of the family, "including seven children" and their elderly grandfather (UN Human Rights Council, 2015: 98). According to the IDF Military Advocate General's (MAG) office, this incident happened when Israeli forces responded to intensive shelling from Palestinian militants that wounded an Israeli soldier, and that commanders assessed was potentially an attempt to abduct a soldier for strategic purposes. The MAG report asserts that "the possibility of using 155 mm high-explosive artillery shells was also considered, in order to address the danger faced by the forces. This possibility was dismissed for the reason that the collateral damage expected from mortar shells was more limited" (IDF Military Advocate General, 2015). The findings of the MAG's investigation of the incident conclude that "the commander's assessment that the collateral damage expected from the strike would not be excessive in reaction to the military advantage anticipated from it" and that the commander was not aware at the time that the civilian home had been hit or that a crowd had gathered outside the house to assist the victims prior to a second lethal mortar hit (IDF Military Advocate General, 2015).

However, the UN report disputed this legal analysis, using as evidence the specifications of the weapons used:

On the basis of the information available, it appears that the weapons the IDF used in this incident were high explosive 120 mm mortars, which have a circular error probability of 136 meters, and are therefore imprecise. Remnants of these shells were found inside and around the Al Selek house. (UN Human Rights Council, 2015: 99-100)

What is being used to determine adherence to the principle of distinction here are competing claims about the capacities of weapons that were used or avoided. Although the MAG claims the IDF commanders chose not to use more powerful 155-millimetre high explosive rounds in order to minimise “collateral damage.” However, the UNHRC commission counters that the weapon’s designed capacity to distribute firepower over a wide horizontal plane inherently means that it cannot adequately distinguish an intended target in these circumstances.

The UNHRC commission’s summary legal analysis of the incident concludes that the IDF decision to use mortars instead of precision weapons shows that the IDF “did not take all feasible precautions to choose means with a view to avoiding or at least minimizing civilian casualties” (UN Human Rights Council, 2015: 101). To reach this finding, it relies on the conjecture about the IDF’s aerial capabilities quoted in Table 5.1. However, the right-hand quote from the MoFA report pre-empts this accusation in a section discussing the problematic nature of urban warfare for conventional militaries. It argues that the density of the urban terrain and the compressed time-intensity relationship in urban warfare negates the perspectival advantage and speed of aerial weapons platforms.

This comparison demonstrates how the state’s technological capacities become political agents in complex, ambivalent and unpredictable ways that exceed the intentions

and goals of their presumed operators. Israeli politicians, the Israeli defence industry and the IDF tout that Israel has one of the world's most technologically advanced militaries. However in this instance the decision to use 'statistical' mortars rather than advanced surveillance capabilities and precision weaponry are treated by the UNHRC investigation as evidence that the IDF is potentially liable for war crimes for failing to distinguish between military and civilian objectives, based on assumptions about the IDF's present or withheld technological capacities. This argument also plays into the 'God-trick' of ascribing unrealistic omniscience to aerial weaponry based on a two-dimensional fetishization of technological power that fails to adequately account for the abilities and limits of material agency within a volumetric and biometric spatial context.

This evaluation of the events surrounding the destruction of the al-Selek home raises poignant questions about the relationship between technological innovation and the nature of war. Can advanced weaponry in fact order war into a cleaner, less messy enterprise? Or is there an inherent uncertainty and chaos endemic to violent conflict that is ultimately impossible to transcend? The UN commission's legal arguments suggest that the former is possible, and this supports their position in the IHL camp, using Luban's framing. Whereas the Israeli argument relies on the Clausewitzian concept of the fog of war to support the state's desire to maximise its scope to apply military force:

On top of the distinct dangers inherent in urban warfare is the natural fog of war. Inevitable uncertainties exist in combat. Despite the best efforts of military forces, there is always the possibility that as events unfold in real-time forces may not be fully aware of the operational picture, technology may suffer malfunctions, and the employment of force may result in unintended consequences. (State of Israel, 2015: xv).

In doing so, it suggests that the environmental complexity of urban warfare, chance and the fallibilities and limitations of the IDF's technological capacities limit the predictability with

which force can be applied, and that the inherently chaotic nature of warfare means that some civilian casualties are inevitable, no matter what steps are taken to mitigate civilian risk. This is used to justify the position of the LOAC camp that military necessity in a complex operational environment allows the *ad hoc* use of weaponry, and that these decisions must often be made quickly and reactively based on incomplete information and limited available resources, and that humanitarian consequences are a secondary consideration. This logic places on IHL proponents the onerous requirement to prove the criminal intent of an action in order to ascribe responsibility or liability (Rome Statute of the International Criminal Court, 1998: Article 30[1]), rather than the actual consequences that occur through the use or non-use of a particular weapon. This criteria for proof makes it much harder to obtain supporting evidence than a comparative analysis of the capabilities of classes of weapons to determine the possibilities for reducing magnitudes of harm.

In the case of both the Battle of Shuja'iya and the al-Selek incident, the relationship between technological capacities and legitimacy is mediated by the complexity of the terrain in urban warfare. Advocates for the LOAC camp endorse the position that the textured and concealable nature of the urban environment necessitates the use of powerful weapons with low margins of safety that would not be appropriate in other contexts, whilst conversely the IHL camp suggest that the use of these weapons in urban warfare is deplorable due to the population density and patterns of life endemic to urban space.

This section's discussion of competing claims regarding the legality of Israel's actions in the 2014 Gaza War foregrounds the role of technologies in articulating the legitimacy of the use of force in IHL/LOAC. The outcomes of a given legal contest are determined to a

significant extent by how the ambiguities of IHL/LOAC are reasoned and interpreted, the positionality of interlocutors and the resources available to argue for or against the legitimacy of an act of force. The ambivalence of international law and its limited enforceability undercuts a morally certain 'layperson's' understanding of IHL, in which questions of proportionality and legitimacy of force seem clear-cut and determined by consequences of civilian casualties.

Central to legal positions that argue for or against the legitimacy and proportionality of the use of force in a given instance are arguments based around representations of the capacities and capabilities of weapons. Through these legal discourses the intensities of weapons are reanimated. The properties of weapons have degrees of strength, latent force, active power, aftermaths and resonances that can be withheld or revealed at various instances, and have particular political effects. These capacities and actualities can convolute the relationship in intentionality between cause and effect in ways that are complex and often unpredictable. The catalysing factor for these articulations is the agency of terrain that can powerfully disrupt the achievement of military objectives. Arguments for or against the use of a given weapon in a particular situation can only be understood in complex relation to the terrain in which a particular type of weapon is either used or eschewed in favour of a different one. With incidents in urban warfare, it is the density of architecture, infrastructure and the population that informs military decisions about targeting and the use of particular weapons. Conversely, the symbiosis between political desire, particular weapons and the urban terrain in the state's pursuit of its strategic or tactical goals increases both the potential for accusations of war crimes, and the likelihood

of its soldiers committing probable war crimes, for which the state arguably bears ultimate legal responsibility under IHL (International Committee of the Red Cross, n.d.).

5.5 Conclusion

This chapter has interrogated how military technologies are used by state actors to manage 'dangerous' spaces as manifestations of bureaucratic and strategic logics of security, and what consequences emerge from these weapons' existence. It has done so by applying a theoretical framework that mediates between Harman's Object-Oriented-Ontology, which foregrounds the power that emerges through objects' stability in the world, and Mol's theory of the object as a multiple. What results from this investigation is a model for how the capacities of weapons affect the political power of the state through their action or inaction, and presence or absence relative to their situation in an endemic spatio-temporal context. This is evidenced through a discussion of the dynamic interplay of weapons technologies with competing strategic logics, international political legitimacy and the unruly agency of terrain in urban warfare in Gaza during the IDF's 2014 Operation Protective Edge.

The temporality and spatiality of war is dynamically created through the alternating flow between inchoate tension and the emergence, unfolding and aftermath of events that are produced by the convergence of technologies and terrain with divergent political desires. It is through this convergence that the capacities of technologies become politically salient, and their limitations also become apparent and come to matter politically. The cascading multiplication of the intensity of violence that occurred in the Battle of Shuja'iya, outlined

earlier in the chapter, demonstrates how the powerfully dense terrain of the urban environment is a catalyst through which events in war unfold in non-linear and complex ways. Likewise, the acceleration of urban destruction that occurred as a result of the quick-fire enrolment of certain classes of weapons by the Golani Brigade commanders in response to the temporal compression of combat led to unforeseen consequences that could constrain the state's future scope for the use of force. This is conditioned through actions taken by government and military decision-makers to preserve the state's political legitimacy, and the pressures that are brought to bear diplomatically and economically by other states, NGOs and publics based on their perceptions of that state's political legitimacy.

As military technologies and political desire become entangled through the vicissitudes of international legitimacy, the neat strategic hierarchy that subordinates technologies as instruments or ends to achieve political objectives collapses. The unsettling of a teleological approach to technological agency requires a reconsideration of Clausewitzian strategy's understanding of violence as an instrument of policy. Now, attention must be paid to how objects reconfigure political agency in war. The political effects of weapons often become apparent at an inconveniently delayed timescale for the state in whose service they are deployed due to the capacities of objects to withhold some of their properties at any given time, allowing these hidden capacities to emerge at a later point. This makes it difficult for security practitioners and elected government ministers to anticipate the iterative political effects that emerge through a technology's use or substitution in a specific instance.

International law is an arena in which political legitimacy is contested that exemplifies particularly well the power of technologies to help or harm the state's political agenda through both their actualised and withheld capacities. It would be naïve to suggest that there is a clear causal relationship between IHL/LOAC and political legitimacy that is hermetically insulated from other political dynamics, even ignoring the glaring question of the extent to which illegitimacy is likely to have substantively detrimental political and economic consequences for a pariah state. To some extent, this indeterminacy can result from the sometimes ambiguous and abstract interpretive grey areas that exist in international law. However, the allegations or outcomes of war crimes that are suggested or determined through forensic investigation and legal debate do amount to evidence that can support or undermine a claim for or against international legitimacy. As the comparative analysis of the al-Selek incident in the previous section illustrates, legal conclusions are drawn by judges and expert panels through the interpretation of technological capacities as they are articulated by lawyers, technical consultants and witnesses. Because of this, the side that can convey a legal 'truth' by giving a more empirically convincing account of the relationship between what a given technology can or cannot do in a particular context gains an advantage in advocating their case for international legitimacy or illegitimacy.

The next chapter will turn from problematising how the materialities of weapons and their imbrication with terrain mediate the state's international legitimacy to a critical evaluation of how the state works to maintain its domestic legitimacy through technological security practices. It will use the difficulties faced by Israeli engineers and scientists attempting to detect a series of subterranean infiltration tunnels built by Hamas from Gaza

to Israel to question how the spatialisation of the state as a territorial container of sovereign power is challenged by the geological density of the subsurface. This case adds another layer of nuance to this thesis' discussion of the political agency of technologies by interrogating the extent to which security technologies can in actuality realise territorial sovereignty as a basis for the political authority of the state when confronted with the elemental materiality of qualitatively different compositions, densities and configurations of spatial volume.

CHAPTER 6. *SUBTERRANEAN*: EXCAVATING A MORE-THAN-HUMAN GEOPOLITICS IN GAZA'S TUNNELS

6.1 Introduction

This chapter will assess the limitations of technological agencies in relation to other forms of geopolitical agency. It will continue the thesis' arc of working empirically through the territorial volume of Gaza-Israel by using as a case study Israel's efforts to detect cross-border tunnelling from Gaza by Hamas around the 2014 Gaza War. By focusing on the theme of tunnelling in war, this chapter will also evaluate how the subterranean dimension can uniquely affect the complex relationship between territory, techno-scientific risk management practices and geophysical material agency in violent conflict. It will unpack how Israel's techno-territorial assemblage works to manage risk in a dialectic with Hamas' competing assemblage working to destabilise Israel's territorial control by applying the same materialist epistemology that underpins the thesis as a whole. Such a theoretical approach is useful here because it explicitly deals with the co-constitutive relationship between society, materialities and technologies in a sophisticated way that is neither deterministic nor deconstructionist. This engagement with place-specific complexity contributes to making the dynamics of violent geopolitical conflict more clearly legible, and thus amenable to interventions that can mitigate its harm.

The IDF declared Operation Protective Edge on July 8, 2014 in order to meet the objective set by the Israeli cabinet of halting persistent rocket fire into civilian areas in the

Negev from Hamas in Gaza (State of Israel, 2015; UN Human Rights Council, 2015). However, ten days into the conflict the government decided to suddenly shift the operation's primary objective to detecting and neutralising a series of newly discovered clandestine attack tunnels from Gaza (State of Israel, 2015: 2), which had taken the IDF by surprise. Furthermore, this new goal necessitated a ground incursion by the IDF into Gaza, as opposed to its preferred strategy of intense aerial bombardment demonstrated in the 2009 and 2012 Gaza Wars. Such a ground battle was a politically undesirable strategy for the appointed Israeli security cabinet due to public casualty aversion in relation to Israel's conscript military.

According to Israel's count, 32 cross-border tunnels were destroyed during the conflict, 18 of which had actually penetrated into Israeli territory while the other 14 were incomplete (State of Israel, 2015: 47). However, it is unclear whether all of Hamas' cross-border tunnels were actually discovered. Since the end of the 2014 Gaza War, Hamas has started to build new tunnels into Israeli territory in preparation for a stand-alone attack or use in the next round of conflict. Several tunnels have been discovered and destroyed by the IDF between the end of the 2014 Gaza War and 2016 (Harel, 2016b). The unusual and sudden circumstances of a state apparatus shifting the stated goals of a military operation mid-campaign, as well as taking the politically unpopular decision to put 'boots on the ground,' begs the question of why these tunnels were considered such a severe threat as to initiate this uncharacteristic set of actions by Israel's political leadership?

This chapter argues that the tunnels were, and still are, perceived as a serious threat by Israel's strategic decision-makers because they are a technology of occlusion that makes

use of the material properties of the Earth to subvert the Israeli state's apparatuses of surveillance and calculation to secure against danger. The tunnels are unpredictable vectors from which Hamas militants could evade Israel's strong regime of border fences, visual and communications monitoring, and human intelligence to carry out surprise attacks within Israel. In this way, the tunnels attack the core premise of territorial sovereignty through which the state derives and articulates its power. The Hamas tunnels harness the elemental agency of the subsurface to undermine the surficial power of the state. In doing so, this tunnelling disrupts the way that "space is 'geo-coded' through mapping... to know, control, and govern territories" by state security agents (Crampton, 2011: 94). This undermining of cartographic representation unsettles the territorial knowledges through which the state asserts its perceived sovereignty.

However, this materialist analysis does not imply that the Hamas tunnels, or the conflict between Gaza and Israel as a whole, are purely technical issues. Rather, the tunnels are problematic for Israel's security organs due to the complex convergence of politics, geopolitical organization, socio-economic factors, material practices and geology endemic to the Gaza-Western Negev region within the broader context of the Israel-Palestine conflict and the turbulent geopolitical circumstances of the Middle East at present. It is precisely the entanglement of these converging vectors that make the Gaza-Israel conflict so complicated, as their totality transcends the capacity to deal with each aspect individually.

To explicate how a subterranean geopolitics can enhance a critical understanding of how political violence operates, this chapter will link the technological management and the manipulation of territory for political ends to the spatial production and rupturing of state

sovereignty. In doing so, it will work towards reconciling contending positions that have emerged in the recent literature on the volumetric nature of territory that treat volumetric space either as a vector through which political-rational calculations are spatialised (Elden, 2013b, 2013a; Graham and Hewitt, 2013; Weizman, 2007), or alternately as an elemental volume made up of a materiality that exceeds and constrains actors' agencies to manipulate the earthly volume (Squire, 2016; Adey, 2010b, 2015; Steinberg and Peters, 2015; Peters, 2012).

The present case study is contextualised within its historical framing and in terms of Israel's territorial logic regarding Gaza. Its implications for state sovereignty are then considered in terms of the everyday security dimension through which the tunnels affectively orientate the underground into a wellspring of anxiety and fear. The rest of the chapter attends to the ways in which local material agencies manifest and how this frustrates scientific attempts to know the underground layer, a space whose dense volume negates the primacy of visual perception and the state's ability to technologically manage risk through data analysis. This argument relates the Gaza tunnels case study back to the thesis' broader theoretical interrogation of how greater attention to the relationship between technology, geopolitics and volumetric territory alters the ways in which geopolitics can be understood. In this particular case the subterranean destabilises state power by interfering with the calculative rationality through which the state spatially projects authority over territory.

6.2 “Two Gazas”: locating the tunnels in a space of conflict

The Israeli journalist Shlomi Eldar (2014b) observed that the tunnels “suddenly revealed that there are two Gazas: One is the crowded, impoverished and faltering Gaza, but there is also an ‘underground Gaza,’ buried deep below the surface.” This subsurficial dimension of the Gaza situation is not without antecedents or parallels within the broader context of the Israel-Palestine conflict. Weizman (2007: 180) notably describes the “bewildering and impossible Escher-like territorial arrangement” created by Israel’s construction of “underground tunnels” and “infrastructure” in the occupied West Bank as a set of volumetric techniques to enable Israeli territorial control to occur above- and below-ground simultaneously with Palestinian political control on the “surface.” Furthermore, issues around the sovereign rights and distribution of subterranean resources have caused significant disagreements impeding a negotiated peace agreement. For some time, there have been disputes over shared aquifers concerning water allocation by volume, the digging and control of land for wells and pollution from agriculture and sewage (Tal and Rabbo, 2010; Zeitoun, 2008). More recently, the exploration and potential discoveries of fossil fuel deposits located both off-shore between Israel and Gaza, and at sites in the West Bank have become another locus for resource conflict (Schwartz, 2015; Hatuqa, 2014). However, it is necessary to look beyond geostrategic approaches to underground territoriality that treat the ground or what lies within it as an inert vessel for human political power in order to reappraise the constitution of territory and its significance within the Israel-Palestine conflict.

To understand how the subterranean mediates the existence of “two Gazas” and what makes the Gaza tunnels a “matter of concern” (Latour, 2004: 232) for Israel it is

important to locate their position within the regional geopolitical arrangements that produce Gaza as a territory. Following this, it is necessary to provide an account of Hamas' and other Palestinians' agentive roles within this subterranean space of conflict, whilst considering the extent to which the tunnels themselves can begin to exercise their own capacity for agency in ways that go beyond the instrumental functions anticipated by human actors. A caveat should be noted that there will inevitably be lacunae in this chapter's account of the tunnels due to the intentionally secretive nature of both the tunnelling carried out by Hamas and Israel's detection enterprises, and the impossibility of engaging with some of the actors involved in the complex network that is responsible for the tunnels' construction and destruction.

For several decades, networks of tunnels branching underneath Gaza have been the veins that have vitally sustained the enclave's conditions for life and economic survival, as well as its self-styled armed 'resistance' to Israel. These tunnels can be divided into three broad categories: cross-border smuggling tunnels from Egypt, tactical tunnels within Gaza, and cross-border strategic attack tunnels into Israel. Hamas' tunnelling practices have evolved from the experience gained through the earliest building of smuggling tunnels across the Philadelphia Corridor, the 14-kilometre-long narrow buffer zone between southern Gaza and the Egyptian border near Rafah, that has been ongoing for several years prior to Hamas' establishment in 1987 (Pelham, 2012). These early tunnels were built to smuggle cheap goods and to facilitate movement between the previously contiguous community after the physical partition of the Sinai border in 1982. These tunnels continued to be used to counter movement restrictions on people and goods through the 1990s and

early 2000s. However, the nature and roles of these tunnels have evolved drastically in the aftermath of Israel's 2005 withdrawal from Gaza.

In response to Hamas taking power in Gaza, Israel and Egypt both imposed a comprehensive blockade restricting the movement of goods and people entering or leaving Gaza. Banned goods have included many categories of food, clothing, household goods, cars and building materials (BBC News, 2010). Israel argues that the blockade is necessary to prevent weapons being transferred to Hamas and other militant organisations operating in the Strip from Syria and the Lebanese Shia movement Hezbollah in the context of increased rocket attacks emanating from Gaza (News Agencies, 2008). Egypt for its part has maintained the blockade because it views the Fatah-led government as the legitimate Palestinian authority to control Gaza's borders alongside monitoring by European Union observers (Haaretz Service and News Agencies, 2008). However, the UN and human rights NGOs have called the blockade "collective punishment" against Gaza's population for supporting Hamas which they argue is a violation of international law in war (Anon, 2012b). The blockade has variably eased and tightened over time in correlation with changing regional dynamics. However, it has continued to remain in effect as a long-term militarised governmental technique for managing security (Winter, 2016: 316) despite the concerns raised by human rights advocates about its proportionality, and indeed some Israeli security practitioners' questioning of its efficacy (Eiland, 2017; Harel, 2016c).

Since 2007, the Rafah tunnels have become an essential conduit for importing food and banned goods into Gaza against the backdrop of worsening humanitarian conditions (McCarthy, 2009). Hamas has consolidated authority over the cross-border tunnels, which

are privately operated by Palestinian families who pay a license fee to the regime. Hamas uses its oversight of the tunnels to raise revenue by levying taxes on goods imported through the tunnels, import fuel supplies, as well as to clandestinely transport weapons into Gaza (Piven, 2014; Verini, 2014; Pelham, 2012). This dual-use arrangement has made the tunnels a crucial infrastructure in maintaining Hamas' viability as a political hegemon inside Gaza, both financially as a source of income to sustain its government, and militarily as a logistical conduit. However, in early 2013 the Egyptian military launched a crackdown to seal the smuggling tunnels. This process intensified following the *coup d'état* that overthrew the Muslim Brotherhood government of Mohammed Morsi.¹ The Egyptians intensified these efforts partly as a solution to quell the growing instability in the Sinai perpetuated by militant groups with instrumental links to the al-Qassam Brigades (Eldar, 2015). In addition to the environmental contamination of Gaza's water supplies from the sewage and seawater being pumped from the Egyptian side to destroy the tunnels, this destruction had severe effects on Gaza's economy (State of Palestine, 2016) and Hamas' revenue stream.

Hamas has also used cross-border tunnels into Israel for both tactical and strategic ends in several incidents prior to the 2014 war. These tunnels specifically are the focus of this chapter's empirical discussion. The most significant cross-border tunnelling operation by Hamas was the 2006 kidnapping of IDF sergeant Gilad Shalit from a border post near the Kerem Shalom crossing. Shalit was used as a hostage with which to negotiate the release of Palestinian prisoners from Israeli incarceration in 2011. This tactic of tunnelling mobilises

¹ The Muslim Brotherhood is an ideological sibling organisation to Hamas, which was founded as the Palestinian branch of the Muslim Brotherhood, although more recently they have severed formal ties.

the elemental properties of subsurface soil to disrupt the contiguity of sovereign terrestrial space defined through the assemblage of practices and infrastructures that delimit the state's borders, such as patrols, fences, walls and border-crossing installations. According to an Israeli commander who was involved in strategic planning during the 2014 war "the attack tunnels [were] one of the most important challenges that we are faced with because it threatens most military camps and of course civilian ... and near the borders [and] we don't evacuate not military, not civilians from the war area" (Expert Interview 2).

Hamas' more recent military tunnels into Israel that played a role in the 2014 Gaza War were far more sophisticated than earlier tunnels, which were quite shallow and crudely built. To thwart detection by Israeli forces Hamas engineers have started to build the tunnels at greater depths. To do so, Hamas has reinforced these tunnels with concrete, a scarce commodity in Gaza due to Israeli import restrictions. The IDF claim that approximately 800 tons of concrete were used in the construction of the tunnels that it had discovered (McCoy, 2014). This material has either been diverted by Hamas from documented building projects, was smuggled from Egypt via the Rafah tunnels prior to 2013, or possibly stockpiled from a combination of sources (Barnard and Rudoren, 2014). Either way, clandestinely accumulating, storing and deploying such a massive supply of concrete for the attack tunnels was an onerous, expensive and well-coordinated enterprise. According to one media report the "cost of excavating, reinforcing and maintaining each tunnel [was] approximately \$1 million" (Eldar, 2014b), which was a significant expenditure for the cash-strapped Hamas government in the midst of a humanitarian crisis. Following the 2014 conflict, there is evidence that Hamas has been using concrete purchased through the black market at above-

market prices from supplies intended to rebuild Gaza's heavily damaged residential and public infrastructure (Khoury, 2015).

The extensive resources directed towards building the tunnels indicates that they are not built *ad hoc* for short-term tactical advantage, but as long-term strategic assets to further Hamas' political goals. The tunnels are an attempt by Hamas to "level the playing field" by strategically flanking the Israeli state's security assemblages, and by extension the Israeli state's claim to sovereign control. The tunnels' immanent potential for facilitating a surprise attack requires Israel to take seriously Hamas' interests and demands to avoid the domestic and international political consequences of an infiltration, or renewed conflict to incapacitate the tunnels. In this sense, the tunnels destabilise an understanding of territory in which state security apparatuses can protect their citizenry within the state's territorial confines by pre-empting vectors of existential danger through holistic territorial knowledges and techniques (Elden, 2013b). In practical terms, this weakens the confidence of Israel's political echelons and security agents in their own abilities to exclude threats from without, and in turn the Israeli citizenry's faith in the state's ability to provide security.

This strategic purpose is reflected in the deliberate design and internal construction of the tunnels' infrastructure. These tunnels are on average approximately 2 metres high by 1 metre across. These dimensions allow the movement of people and munitions with relative ease. They contain lights, electricity and in some cases tracks for transporting materiel, and are booby trapped with improvised explosive devices (IEDs) to hinder penetration. Furthermore, their entrances and exits are camouflaged by brush, trapdoors inside buildings such as mosques and private homes, or are positioned within *wadis* to evade

detection. Supporting the well-documented geographical critique of the “God’s eye” view of aerial surveillance (Graham and Hewitt, 2013; Shaw and Akhter, 2012; Gregory, 2011a; Saint-Amour, 2011), these camouflaged tunnel openings are virtually impossible to detect by conventional aerial imaging techniques, thus making ineffectual the UAVs used extensively by the IDF to maintain surveillance over Gaza (Hecht, 2015). Hamas’ tunnels became an acute security concern for the State of Israel’s political decision-makers and security apparatuses precisely because of their clandestine nature and power to enrol subterranean space to obfuscate their location. These capacities unsettle the state’s panoptic control over its territory and its political hegemony within a volatile democracy that depends on a modicum of reciprocity between its exercise of power and the population’s confidence in its leaders’ and administrators’ competence.

6.3 Danger from below

In addition to being a source of vexation for the military project of securing territory, the spatial uncertainty of the location of Hamas’ tunnels has produced an affective sense of insecurity² for the residents of the Western Negev, that was articulated, and thus required a political response from the government in order for the authority of the state to be sustained. For David, a resident of Kibbutz Nahal Oz, located approximately 1.5 kilometres from the Gaza border, the tunnels were a source of fear because of their spatial inscrutability:

² The theoretical concept of *affect* has already been introduced in Chapters 1 and 2. It will also be elaborated upon theoretically and applied empirically in significantly more detail in Chapter 7.

David: The problem, the difference between the rockets and the tunnels. The tunnels, it's a surprise, yes? You don't know. You don't know when they dig, where they dig, when they will come out and that, yes? This is a great problem. The rockets, we have the siren and you know, to run with shelters, but the tunnels it's something else. It's very frightening and uh... But we know that the army make very, very strong efforts to find, to search for the tunnels. And we sit also by, because we live so close to the border, we see all the things that the army do.

Researcher: Like what? You mean like the drilling and stuff?

David: Yes. They're not saying what they are doing, yes?

Researcher: Do you know exactly what they are doing, or not? ...

David: They do not say what they do, they dig and they try to find. But there are many things that they do, that we don't know.

The cross-border tunnels were a greater source of existential anxiety for David than the aerial penetration of rockets from Gaza because of their designed purpose of obfuscating their location through the enrolment of underground density, as well as their capacity for surprise, to create a sudden temporal eruption of violence. The Israeli State now has an established infrastructure of warning klaxons, shelters and emergency preparedness drills which makes the rocket threat visible, knowable and a risk that can be reacted to, whereas with the tunnels it is hard to predict or warn of a danger that defies visibility and is a vehicle for violent infiltration whose intent or planned trajectory is near impossible to ascertain. Furthermore, the uncertainty created by the activity of the IDF has an ambivalent affective resonance for the *kibbutz* residents. On one hand their visible presence is a source of reassurance. On the other hand, the secrecy of the military's activities provokes worry for the residents that comes from not actually knowing what is happening in the space in which they live, despite (and because of) seeing the intense activity around them. David's report of military activity in the area aimed at tunnel detection was corroborated by another

participant at another *kibbutz* proximate to the Gaza border³, who said that area around their *kibbutz* was being used as a test site by defence companies and the military, which involves drilling activity and the use of sensors. However, little concrete information has been provided by the military and defence companies, and although there is an officer from the IDF Southern Command⁴ assigned to liaising with the community, residents were given few briefings. According to this participant, the uncertainty about what the military and defence companies are actually doing in the area has led to an atmosphere of anxiety amongst residents fueled by “misinformation, rumours and assumptions.”

This fear is further exacerbated by the sensory qualities of the dangerous space of the Gaza border area. Residents of Kibbutz Nirim claimed to hear unusual noises that they feared was digging coming from beneath their homes. These citizens reported their concerns to the IDF and were instructed to capture recordings of the sounds so they could be sent to an IDF laboratory for analysis, in what could be described as a citizen-science approach to security. However, the IDF have consistently reported back that the recordings do not indicate digging and have provided alternative rationalisations for the noises, which are not necessarily accepted unreservedly by the residents (Interview with Noa; see also Sanchez, 2016). The aural perception (Adey et al., 2013: 307) of threatening subterranean activity combined with the visual incommensurability of not being able to verify by sight

³ Due to the sensitivity of this information, and to protect the participant’s anonymity at their request, details of the interview and its location have been deliberately omitted.

⁴ According to several participants, the communities in the Western Negev in the proximity of Gaza, come under the purview of the IDF Southern Command, which is geared towards border defence and combat operations, rather than the Home Front Command, which is tasked with civilian protection and search-and-rescue. This indicates the heightened militarisation of the region as a bureaucratic imperative, in comparison with most other areas of Israel.

what is happening (Fregonese, 2017: 6-7) underground has compounded for the Western Negev residents an ontologically disrupted experience of their world in which it has become almost impossible to ascertain between rational concern or irrational paranoia through the corroboration of multiple sensory phenomena.

The existential precarity of the security atmosphere in the border communities in reaction to the unknowable and incipient danger of the Hamas tunnels has necessitated action by the state to restore a sense of control. However, it is plausible that attempts at restoring a sense of security have been implemented in a way that prioritises political expediency and the stability of the state as a hegemonic object over the best interests of the threatened communities. The anonymous participant quoted earlier recounted a particular instance that took place several months prior to the interview, in which residents became scared after hearing extensive drilling taking place next to the *kibbutz*. Their concerns were dismissed by the army, who replied that it was clear that there were no tunnels in the vicinity and that the drilling was part of “routine activity.” The military has also sought to ease residents’ fears by claiming that the tunnels are intended for attacking soldiers, not civilians, despite the actual fact that Hamas’ aims and intentions in operating from the tunnels are unclear. Despite their assertions that the tunnels are directed at military targets, the army has still asked communities to prepare for the possibility of an infiltration attack on the community. An armed first response team made up of volunteers from the *kibbutz* who are also trained IDF reservists has been established as the first line of defence in case of an attack. The team members store their weapons in their homes in order to be able to act rapidly if an incident were to occur. Furthermore, the *kibbutz* has a

designated security officer, who is either employed by the military or MoD (the participant was unsure which), to liaise between the community defence volunteers, the army and the government.

The contradiction between the IDF's assurances and these measures suggest two things. First, that the IDF command is either uncertain about Hamas' intentions, which undermines their authority to manage security in the eyes of the community, or are deliberately prevaricating about intelligence that would suggest the likelihood of an attack on the border communities in order to prevent panic or as a strategy to conceal their intelligence capabilities from Hamas. Second, that the state is responsabilising ostensibly civilian communities for their own security through the militarisation of daily life and domestic space in the Western Negev. The dialectic between the Israeli state's need to demonstrate territorial control in order to maintain political stability and Hamas' deliberate practices of tunnelling to evade surficial detection also required that the IDF turn to complicated and precarious geophysical sensing techniques to locate subsurface incursions.

6.4 Subsurface complexity and political agency

Attending to elemental geopolitics' imbrication with technological agency requires a reconfiguring of our understanding of war as a spatial phenomenon by accounting for the agentive role of the geophysical materialities and processes of rock and soil, and the extent to which engineering practices and infrastructures either harness or are confounded by their endemic properties in a given place. The Gaza tunnels have become a political danger for Israel due to the convergence of a unique set of human and physical factors becoming

enrolled together in a specific place to become a salient military assemblage. To produce the tunnels, both the digging practices of Hamas and the earthly conditions of Gaza and the Western Negev have become agents in the messy three-way political conflict between Hamas, the PNA and Israel. Likewise, the area's heterogeneous soil types and chemical composition in conjunction with the specific depths at which the tunnels transect, and the border practices and settlement patterns of the area, have made finding the tunnels a challenging techno-scientific problem for Israel's scientists, engineers and soldiers. It is precisely Hamas' ability to capitalise on these limits of the scientific ability to know the density of subterranean space that make the tunnels a political matter of concern.

In order to understand the material relationship between soil composition and the political-strategic issue of tunnel detection, or failure thereof, it is first necessary to have an appreciation of the geophysics of seismic sensing and electro-magnetic sensing techniques (Ruffell and McKinley, 2008; Daniels, 2004; Kearey et al., 2002). Several geophysical sensing techniques are being experimented with for detection of the Gaza tunnels including classical seismic techniques using acoustic waves generated by a sound source, ground penetrating radar (GPR) that uses radio waves and frequency domain electro-magnetic mapping (FDEM) that measures the variance in electromagnetic conductivity of different materials. Seismic techniques and GPR are both similar in their basic principles. Waves, either sonic or electro-magnetic, are projected from a source into the underground. The waves then reflect off the subsurface materials. Data is collected by measuring the time it takes a signal to bounce back from the source to the proximate sensor at the surface level at a given point. Different surfaces reflect a frequency back at different rates depending on their material properties.

This time/distance data is then converted and manipulated into a legible representation of a cross-section of the Earth.

A signal will be able to penetrate deeper, or will reflect more easily, based on the density of a given subsurface material. However, a trade-off must be made between the depth of penetration and the resolution of the data collected. Lower frequency wavelengths can penetrate more deeply beneath the surface, but resolution decreases drastically at lower frequencies (Expert Interviews 3,4 and 5). FDEM is somewhat different in that it uses a large and powerful electromagnet to produce a signal and a sensor located on the apparatus measures disturbances in the subsurface magnetic field.

In contrast to the earlier smuggling tunnels into Rafah from Egypt that were typically between 10 to 12 metres deep, the more recent attack tunnels into Israel at 20 to 30 metres depth are far more challenging. They exist below the depth of approximately 10 metres that the high frequency electromagnetic waves used in GPR are most effective, but well above the several kilometres of depth that seismic techniques are typically used to detect large geological features. Also, as previously mentioned, since the resolution decreases at greater depths, lower frequency waves struggle to detect objects the size of the tunnels, which are less than 2 metres high by 1 metre wide. While FDEM can in some cases produce resulting images showing up to 50 metres of depth, it is particularly susceptible to interference from magnetic anomalies (Expert Interview 4).

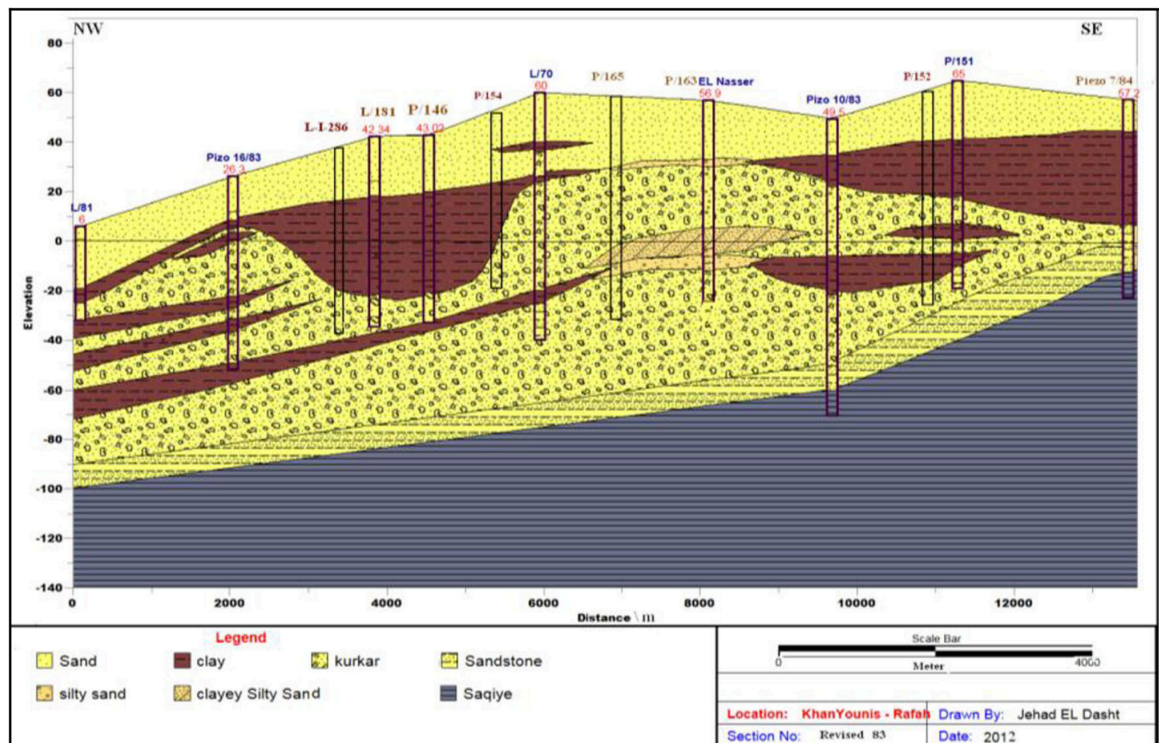


Figure 6.1. Cross-section of soil layers in Rafah District, southern Gaza. (Source: Zaineldeen et al., 2014: 4352; used with the kind permission of the publisher Springer Verlag)

Another source of frustration for tunnel detection experts is the heterogeneity in soil types, compositions and strata. Different techniques are better suited to specific soil types, and each soil type presents its own set of challenges for geosensing (Kuloglu and Chen, 2010). As shown in Figure 6.1, beneath Gaza are variegated layers of sand, clay, loess and rock both laterally and across, as well as harder rocks imbedded in the soil which waves reflect back at different times, complicating the process of gathering geophysical data. Compounding this problem, the endemic soil contains a high saline content (Expert Interview 4). As salt is hygroscopic, the soil contains numerous pockets of liquefied salt which reflect electromagnetic waves back to the surface, often at oblique angles from the signal source,

producing anomalies that are detrimental to obtaining a clear subterranean image. Another layer of frustration for rendering the subterranean expanse knowable is the amalgamation of discrete strata. Several of the experts that were interviewed described the soil conditions at the Gaza border as “disturbed” (Expert Interviews 3 and 4). This “disturbance” can be attributed to the historical conditions of the area as a settlement hotspot for several millennia. The intensive agricultural activity endemic to the area has contributed significantly to blending the natural soil layers, which disorients the locations of objects in the geophysical images.

Subsurface detection is further complicated by unwanted interference. These artefacts occur largely as a result of patterns of settlement and human activity in the border area. Vibrations from road traffic and heavy farming equipment interfere with small-scale seismic techniques that can best target the 20 to 30 metres depth range of the tunnels. Likewise, GPR and FDEM are affected by fences and metal detritus in the ground that produce anomalies due to electromagnetic conductivity. Paradoxically, the interference generated by the extensive military activity and material security infrastructure of fences, walls and communications posts along the border in fact mitigates security from tunnels by interfering with the capacities of detection technologies.

As this section demonstrates, the technologies and techniques required to render territory knowable in its elemental volume will remain for the foreseeable future a fraught, contingent and inevitably incomplete project constrained by the material agencies of local geological and geopolitical conditions. The elemental qualities of the Earth in concert with the patterns of human activity, and even the security assemblages of the state itself,

collectively generate a more-than-human agency that has an inertial force against the security aims of the state to defend its self-defined territorial integrity. Following on from the technical challenges of merely gathering accurate and useable geophysical sensor data, there is a second problematique of how to cartographically represent this data in a legible way. Since the opacity and density of soil requires sensing outside of direct visual experience, novel forms of visualisation become necessary that are dissociated from the intuitiveness of direct visual perception.

6.5 A cartography of the unknowable

Collating and representing the gathered data from geophysical sensing will always rely on multiple, contingent and incomplete ways of knowing and visualising the subterranean volume. Once raw data is acquired it must be processed into an image that is suitable for analysis. This time-consuming process necessitates enhancing particular aspects of the data and organising it as a diagrammatic output useable for analysis. Even at the final stage, analysis of the processed data requires highly specialised expertise to make sense of the underground cartography and to find relevant anomalies. Unlike a photograph, which is a familiar and naturalised visual form that enables quick interpretation, subterranean geophysical exploration requires highly abstract forms of imaging that require knowing what object is being sought in advance, e.g. a fossil fuel deposit, an archaeological site, or a tunnel, as well as specialist knowledge of what an anomaly will look like when represented (Expert Interviews 1, 4 and 5).

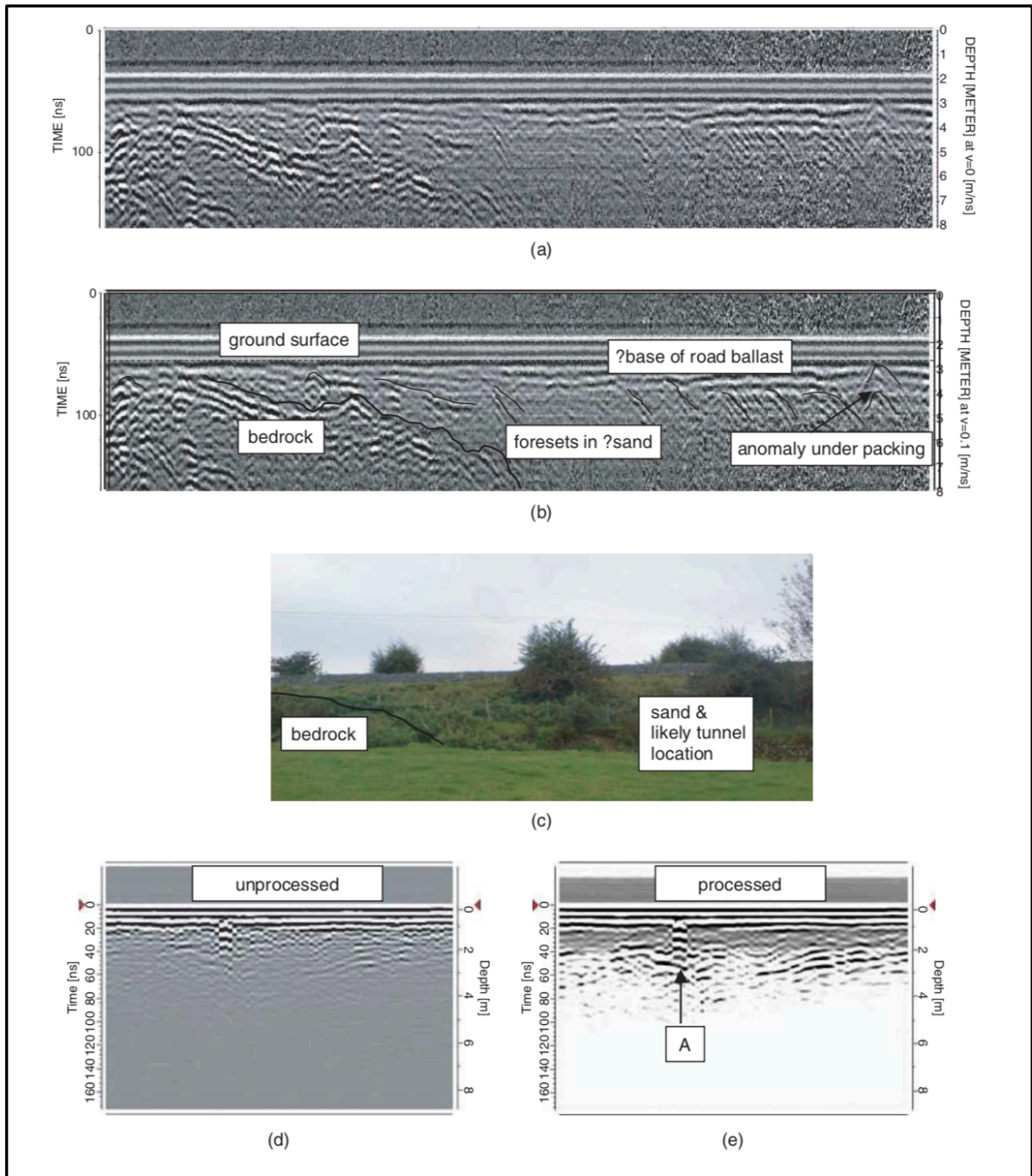


Figure 6.2. (a) Long profile (100 metres long) scan used in the investigation of a suspected prisoner escape tunnel in Northern Ireland. (b) Expert interpretation of (a). (c) Annotated photograph of the scanned location. (d) 200 MHz profile (raw data, 25 metres long) over the only unexplained anomaly of the survey. (e) Processed scan from the raw data shown in (d). (Source: Ruffell and McKinley 2008; used with the kind permission of the publisher John Wiley and Sons Ltd.)

At present, the specialist training and intensive computer-aided post-processing that are necessary to make geophysical scans legible preclude the possibility of a simple solution for tunnel detection that could be easily and quickly operated by soldiers in the field. See for example the GPR scan shown in Figure 6.2, used to investigate a suspected escape tunnel leading from a prison in Northern Ireland, near the border with the Republic of Ireland, following subsidence on a road adjacent to the facility.⁵ It would be very difficult to identify the features labelled in Figure 6.2b that were extrapolated from the scan shown in Figure 6.2a without a high level of training and expertise. Furthermore, even with this expertise, the representation such a scan can provide will always be incomplete and imperfect. Near the bottom of the cross-section below 5 metres depth, the image becomes noticeably distorted, due to the high-frequency radio waves' inability to penetrate at greater depth. It should be noted that the target depth for this investigation was in the 1-metre to 8-metre range, which is far shallower than the cross-border tunnels from Gaza into Israel.

The specificity of the conditions of a particular area in conjunction with the strengths and drawbacks of each exploratory technique necessitates the use of a combination of heuristically derived methods to obtain a viable model of a location's underground terrain. Several research participants suggested that there is no simple 'one-size-fits-all' solution to the tunnel problem that could be easily applied without highly specialised scientific education. Rather, successful detection in each place will require an *ad hoc* solution that

⁵ I was unable to obtain actual scans of the Israel/Gaza border for inclusion in this thesis due to issues with participant confidentiality and state secrecy requirements. However, the scan in Figure 6.2a is comparable in type to test scans that were shown to me by Expert 5; Further investigation of the anomaly identified in Figure 6.2b determined that a rotting tree stump caused the road to subside, and that the suspected tunnel did not exist (Ruffell and McKinley, 2008).

combines several geophysical techniques with other forms of knowledge, such as human and signals intelligence (Expert Interview 1; Kuloglu and Chen, 2010). Recently, Israeli forces have interrogated several captured Hamas militants, including a 17-year-old, in order to obtain intelligence on how the tunnels are being built and concealed (Cohen, 2016; Cohen and Ben Zikri, 2016).

The subterranean layer presents a significant challenge for a totalising political knowledge of territory by the state through cartographic representation. As Expert 1 put it, finding these tunnels is “like searching for a needle in a haystack [where] you need to separate valuable data from background noise.” Instead of being able to directly visualise what lies below the surface through intuitive forms of perception, the underground must be indirectly sensed through technological means calibrated by an arduous process of trial and error. The intensive time and resource allocation required for such a project is at odds with a temporal and economic logic of security based on the quick and efficient identification and targeting of threats. Whatever useable sensory data that is eventually gathered must then be represented diagrammatically and interpreted using knowledge that is contingent on highly specialised forms of scientific expertise. Even then, successful tunnel identification is contingent on the limitations imposed by the rules of physics and the actual capacities of technologies at present. These limitations necessitate a shift towards abstract forms of topological representation that are increasingly divorced from the immediacy of direct visual perception of a phenomenon. Such knowledge is not always accurate because it is predicated on reasonable conjecture from pre-existing expectations about what should be found beneath the ground (Expert Interview 5). This opacity and uncertainty destabilises the

confidence of state security actors to identify with any certainty the security threats concealed within the soil of the territory they are tasked with managing.

This uncertainty has profound implications for the calculation and anticipation of risk by the military. Despite expectations of politicians and the public that technological solutions can provide anticipatory evidence of threats, the present techniques of scanning, data modelling and mapping cannot give the definite locations of cross-border tunnels. All of the scanning techniques discussed in this chapter require 'boots on the ground' to operate large and unwieldy apparatuses in exposed areas in a conflict zone, making the operators highly susceptible to attacks from infantry, snipers or ranged munitions. Even then such efforts might not produce any actionable data, despite the risks involved. Additionally, the amount of guesswork required by experts in tunnel detection requires definitive action to be taken by combat forces based on information that invariably comes with an increased probability of inaccuracy. Expert 2 explained the challenge of neutralising the tunnels in the 2014 war:

We don't see where the objective starts, where it ends... this is the basic reference you cannot make distinctions where the military objectives are so ... this is something that should change all the concepts that you ... because you cannot work without the basic layer of understanding [of] the enemy and you cannot understand the enemy not by the objectives, the specific objective, and also not by the intention, "what he's going to do"... If we had a system that can take all the relevant military camps and move them and also some people from the community and move them for few weeks, it could have achieved much better results than using very expensive measurements in order to detect where the [tunnels are].

The concealed nature of the tunnels makes it impossible for military planners to even identify a basic space from which a threat will emanate. This makes it difficult to ascertain the intended target or temporal frame of a threatening action. This knowledge gap makes it near impossible to effectively direct force towards a military objective. Complicating this matter is an understanding of the border area as a spatial container for people and objects

that must be protected. To create a calculable space in which targets can be identified and military action can be effected, the sources/objects of risk protection must be removed completely. Such a move would be an admission of failure in the state's ability to anticipate and secure its population and resources from danger. This undercuts the very foundations of risk management underlying contemporary state security practices.

Amoore (2014: 424) uses the case of the aftermath of another geophysically imbricated crisis, Italy's 2009 L'Aquila earthquake, to argue that contemporary risk logic demands that "nothing is incalculable" and that for experts and politicians "to have available data — even if they are tangentially related, partial or fragmentary — and to fail to infer across the gaps" is tantamount to negligence. Such perceived negligence is likely to have severe political repercussions. A commission of enquiry was carried out by the Israeli State Comptroller's (2017) office in response to criticism in the Knesset of the security cabinet and military brass' handling of the tunnels in the 2014 war. The report excoriated Prime Minister Benjamin Netanyahu and former Defence Minister Moshe Ya'alon for failing to act on intelligence about the immediacy of the threat posed by the tunnels and for failing to share relevant information with the full security cabinet (Jerusalem Post Staff, 2016). It points to a previous report on the potential for tunnel attacks from 2007 to demonstrate the availability of adequate intelligence to allow decisive action and to show that warnings about "the necessity of oversight and even intervention by the political leadership" had been made clear prior to 2014 (Bob, 2016). According to one former defence industry executive who consulted on the 2007 report, possible pathways for technological solutions were proposed including a "sensor net" several kilometres in area that could detect and locate underground

vibrations from the digging of tunnels. However, he believed that no action was taken at the time due to “political decisions” and competing budgetary priorities within Israel’s MoD (Expert Interview 6). While the risk for a tunnel attack was conceivable based on available intelligence and conjecture from Hamas’ past use of tunnels, the occlusive properties of the subsurface interfered with the presentation of directly verifiable and incontrovertible evidence of an imminent threat. This uncertainty gave the political leadership the option to ignore the tunnels risk to pursue other avenues of political interest, until that risk had materialised and rebounded, leading to accusations of negligence or even wilful manipulation at the expense of Israel’s national security. Put simply, this example illustrates how the materiality of the subterranean makes the technical political, and vice-versa.

6.6 Conclusion

The Israeli response to the Gaza tunnels is a particularly illustrative case of how human political activity is inextricable from the vicissitudes of the technological and physical properties and processes of the environment in which it occurs. This hybrid agency comes from the endemic convergence of the capacities of geosensing technologies with material practices of bordering and tunnelling, discourses about security and danger and the elemental processes of the subterranean layer of the territorial volume. Whilst it would be an overstatement to suggest that the following are causes of the ongoing Gaza-Israel conflict, the soil composition, settlement patterns and infrastructures of the Gaza-Western Negev envelope all contribute in intricate and entangled ways to the conflict’s tactical, strategic

and geopolitical dynamics in relation to the technological practices of both Hamas and the State of Israel.

The entanglement of these heterogenous and sometimes competing forces makes palpable the limits of techno-scientific capacities to obtain certain cartographic knowledge of the subterranean. The contingent nature of state sovereignty in relation to an elemental inertia of a dense and heterogeneous soil that defies attempts to bring it “to account” (Adey, 2015: 55) necessitates constant work by state scientific, military and intelligence actors to secure subsurface territory through increasingly complex and fractional materialities, practices and discourses. This provokes what Joe Painter (2008: 346) terms a “cartographic anxiety” over “the desire to make geographical space legible” and thus calculable. The subterranean “unknown” must be drawn “into the ambit of Reason,” otherwise it will aggravate an epistemological crisis that threatens the intrinsic logical foundation of territory as the geographical manifestation of state power (Painter, 2008: 346). To assuage this crisis, the cartographic inscrutability of the subsurface must be overcome by the state. This necessitates innovating new ways of obtaining geographical knowledge that are tailored to the specific conditions of the terrain, and can synthesise fragments of partial knowledge to produce at least a crude epistemology of underground space.

However, the limited adequacy of these spatial knowledges, and the increasingly indirect forms of representation being generated to visualise them, greatly diminishes the abilities of state authorities to accurately forecast and manage security risks. The soil’s ability to obfuscate techniques through which data can be gathered, analysed and used to predict future threats profoundly alters the calculus through which the political logic of risk operates

in a fundamental way. An inability to anticipate risk at the foundational level of territory undermines the authority of the state in the eyes of both its citizens and its adversaries, and thus destabilises its legitimacy as the sole provider of existential security. This unsettling of the political order begs the question to what extent can technological solutions effectively manage the epistemic lacuna precipitated by the enrolment of the material agency of the Earth by contending forces? Answering this question requires a critical evaluation of how techno-scientific knowledges, practices and tools are enrolled in the project of securing territory when confronted with the ambivalent elemental agencies of the subsurface. The next chapter will move from the dense underground to the porous skies above the Gaza-Western Negev area to investigate how technological agencies can produce and modulate a changeable atmosphere of security and insecurity by way of their political capacities.

CHAPTER 7. *AERIAL*: ISRAEL'S IRON DOME AND THE ATMOSPHERIC MANAGEMENT OF SECURITY

7.1 Introduction

This chapter will work through the aerial layer of the territorial volume of the Israeli state, using Israel's Iron Dome missile defence system as an empirical case to examine how advanced technological apparatuses act as ambivalent political agents with "pluripotential" capacities (Meiches, 2017: 8). It will analyse how Iron Dome's technological governance of rocket fire from Gaza modulates atmospheric security and insecurity in the Western Negev region. Investigating Iron Dome from a range of positionalities including military decision-making, elite politics, the defence industry, and localised activists, community organisers and residents will elucidate the question of how and to what extent Iron Dome can provide security in a way that exceeds a positivist reductionism of its efficacy? This approach demonstrates the imbrication of military and security technologies with the everyday register. Paying attention to how these technologies relate the politics of the everyday to both technocratic expertise and the instrumental implementation of governmental techniques, as well as parliamentary and institutional politics, can unsettle reifications of technologies' (and institutional bureaucracies') functional efficacy, and break down the false division between elite and everyday politics (cf. Jones and Clark, 2015). This allows for a more nuanced position on technological agency to emerge, and a more modest and well-considered application of technologies in practice.

The evaluation of different aspects of Iron Dome in this case study will exemplify the multiplicity of an object's capacities and agencies, in contrast to the unity of its existence, in a synthetic way and push towards the thesis' analytical conclusions about the extent to which military technologies exercise political agency and how they influence political concerns in relation to other factors. In order to do so, it will treat Iron Dome as an object with potent capacities that can exercise agency in myriad ways over different timescales (Harman, 2016: 7). However, the system does not work in isolation, but must be understood contextually and processually as a constituent of its complex geopolitical environment, including the intangible and penetrable medium of air through which it operates in opposition to rival objects that can aerially penetrate territory.

Iron Dome is part of what Bratton calls "The Stack" (2016: 5) in which the calculative operations of algorithmic computing and cloud network telecommunications are pervasively spatially distributed as imbricated layers of the geopolitical arrangement of the Earth, albeit in the present case not at the planetary scale that Bratton envisages. The Stack spatialises Iron Dome as a calculative object within the multi-layered enmeshment of human and nonhuman elements that give volumetric territory fullness and depth. This enriched conception of the production of territory exceeds the notions of flatness and interchangeability of symmetrical components that are evoked by assemblage theory. Iron Dome exists within The Stack as a technology that both secures and must be secured. It is through this situated existence that its latent capacities can become emergent as agencies.

This volume consists of humans, in this case the residents of the Western Negev region; organisations such as the military and local municipalities; architectures including

homes, community buildings and bomb shelters; infrastructures such as roads, telecommunications, security fences, and warning sirens; practices that include daily routines, military activities, and emergency preparedness drills; and technologies including the Iron Dome system. However Iron Dome itself, whilst it is a coherent object that exceeds the sum of its parts, must also be understood as an entanglement of its constituent parts – which include radar units, missile batteries, interceptor rockets, computer algorithms and the specialist soldiers operating the system – with the geopolitical volume. As such its objecthood needs to be understood as both singular (cf. Harman) and multiple (cf. Mol), as well as in terms of its varying latent capacities to act as a technology in the world.

The chapter will begin by depicting the Iron Dome system as an object in terms of what it is and give a historical overview of its ontological “*becoming*” (Bousquet et al., 2017: 1; italics in original). It will then examine the contested political, economic and strategic dimensions of Iron Dome in terms of the elite controversies and discourses that surround it. The latter half of the chapter will draw out Iron Dome’s environmental milieu, and the ways in which its imbrication within this place-specific environment brings forth Iron Dome’s ambivalent capacities to produce atmospheric security and insecurity.

7.2 What is Iron Dome?

This section will define Iron Dome as an object. In keeping with Harman’s (2016) interventions on materialist thinking in the social sciences, it will do so by considering what Iron Dome *is* as an object, as well as how it acts. This can better account for Iron Dome’s salience as a security apparatus and its capacities to act in different ways, whilst remaining

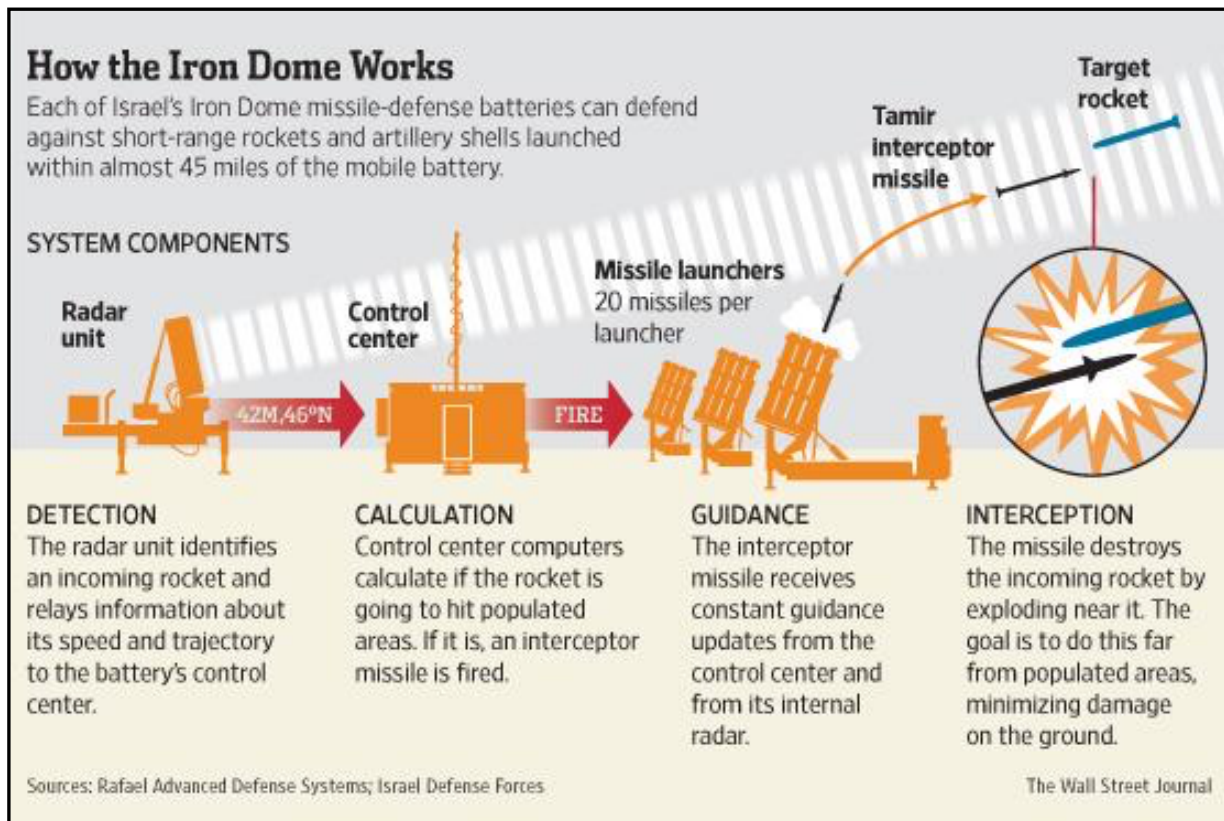


Figure 7.1. Diagram showing how the Iron Dome system functions. (Source: Mitnick et al., 2014; used with the kind permission of *The Wall Street Journal*)

a singular object. In doing so, this narration will work to avoid the corollary traps of duomining. It will do so by explaining the techno-politics of Iron Dome as an object that exceeds its assembled relations to do work within its contextual environment. This grounded approach can give a more credible account of the capacities and limitations of the object, without overstating or unduly subordinating its agency.

In functional terms, Iron Dome is comprised of four components that work together to form a complex system, whose operating process is illustrated in Figure 7.1. First, a radar unit detects incoming projectiles. This information is then relayed to a staffed mobile command centre where threats are assessed within milliseconds using computer algorithms

to decide whether the incoming projectile is likely to land in an open area, or in a location where it can cause injury or property damage. If the computer deems an incoming rocket or mortar to be a viable threat it will suggest a firing solution. The human operator must then quickly decide whether to authorise the launch of an interceptor or apply an alternate firing solution (Defence Update, 2009). Once the launch command is given, the interceptor missile will fire from a rocket battery located adjacent to the command trailer. It will continue to receive guidance information in real-time and will adjust its trajectory accordingly until it crosses paths with the incoming projectile. It will then explode in mid-air alongside the incoming projectile, destroying both weapons in the process. Furthermore, multiple Iron Dome batteries within a region are linked via a communications network to allow them to work in concert to intercept threats from multiple directions and barrage attacks.

Unsurprisingly however, defining *what* Iron Dome is as an object, as opposed to an assemblage of functional components, is a difficult task. As a starting point, here is how the manufacturer Rafael Advanced Defence Systems' (2017) defines Iron Dome in its product brochure:

Iron Dome is the only multi-mission system in the world that provides a combat-proven defence solution for countering rockets, artillery & mortars (C-RAM) as well as aircraft, helicopters, UAVs, and PGMs (VSHORAD) for land and sea. Iron Dome is an effective system for countering C-RAM threats with ranges of up to 70 km and for NG VSHORAD protection. The system operates day and night and in all weather conditions, including low clouds, rain, dust storms or fog. Iron Dome protects cities, towns & strategic assets, maneuvering [sic] forces as well as ships. Iron Dome can handle multiple threats simultaneously and efficiently. Iron Dome is economical, as it enables effective selective handling of critical threats aimed at a pre-defined defended zone thus reducing unnecessary interceptor launches.

According to Rafael, key features of Iron Dome are its cost-effectiveness, its ability to detect and discriminate threats intelligently and quickly, and its comprehensive effectiveness in neutralising these threats in a range of atmospheric conditions. The marketing material

impresses the reader of the product's technological sophistication and scientific precision by using a range of pseudo-objective acronyms and technical terminology. However, do these features accurately describe what Iron Dome is, and can we take Rafael's claims about its affordability, efficacy and ability to be a comprehensive solution at face value? Machold (2018: 94) warns that defence industry "narratives should not be approached as unproblematic admissions... but as ideological and at times deeply misleading representations to be critically interrogated." Defence industry claims, such as the ones made by Rafael about Iron Dome, are in actuality not taken as axiomatic by Israel's military or security echelons, as the following quote from a retired IDF commander illustrates:

I think that Iron Dome is not a stand-alone system. It is part of a system [of] Israel's security and anything would be to use it smartly... [to] neutralise these organisations [*e.g. Hamas*] ... but it's part of a bag of tools, it's not the only one, and you have to use all of them.
(Expert Interview 7)

This perspective instead acknowledges that Iron Dome is enrolled as one component in a broader configuration of Israel's security infrastructure, and must be understood and utilised as a "tool" that can only partially secure against danger. However, it is a tool – that can be applied in coordination with other tools – in the service of pursuing offensive military objectives as means to produce conditions of security. Whilst this approach is more pragmatic, and avoids the hyperbolic claims that Rafael makes, it still instrumentalises Iron Dome as a domitable means to a political end, which overlooks its potency as an object possessing withheld capacities and agencies.

In contrast to both of the above positions, this chapter argues that Iron Dome has ambivalent capacities to act in ways that both produce security *and* insecurity, which challenges the assuredness of Rafael's claims about its ability to "protect." It also posits that

Iron Dome is primarily a political object, rather than merely a technical one, and that its efficacy is relational to the spaces, events and positionalities that are enrolled with it.

To begin to provide a contextualised understanding of Iron Dome as a political entity, it is useful to start with a brief history that outlines its origins and deployment. Iron Dome started as a concept developed through the Israeli Ministry of Defence's Administration for the Development of Weapons and Technological Infrastructure (MAFAT).¹ Its antecedent was the Arrow missile defence programme launched in 1988, which was tasked with creating an anti-ballistic missile interceptor rocket system. It was collaboratively conducted by MAFAT in coordination with the US Strategic Defence Initiative Organisation, despite opposition from within the IAF due to budgetary concerns and scepticism about its strategic value (Gutfeld, 2017; Eilam, 2011: 239-242). This project resulted in several innovations that would later be applied to Iron Dome, including combining a missile battery with a computerised command and control centre, and the development of warning and tracking radars that would detect the launch and trajectory of an incoming missile (Eilam, 2011: 244).

However, the interceptor missile defence concept faced setbacks due to the poor performance of the American Patriot missile defence system that was deployed against chemical warhead-laden SCUD missiles launched against Israel and Saudi Arabia during the 1991 Persian Gulf War. In the aftermath of the IDF's 1993 Operation Accountability in

¹ MAFAT is an organisation within the Ministry of Defence that provides funding and coordination for advanced research in military technologies. It is comparable to the United States' Defence Advanced Research Projects Agency (DARPA).

Lebanon, launched in response to Hezbollah firing Soviet-designed short-range unguided Grad rockets (a.k.a. Katyushas) at the northern Israeli town of Kiryat Shmona, MAFAT decided that a solution was needed “to address the threat of rocket fire from Lebanon, preferably based on active defences” (Eilam, 2011: 251). This time a different approach was applied. Project Nautilus was premised on the use of a Tactical High Energy Laser (THEL) to destroy incoming rockets in mid-flight. However, MAFAT’s Pentagon partners were opposed to this technological method because in initial testing the range of the laser beams was dependent on air particles and weather conditions, which mitigated its universal potential for use in all locations and conditions (Eilam, 2011: 250, 251). Despite its financial support from the US Congress, overruling the Pentagon’s concerns, the Nautilus programme collapsed in 2005 because of the “system’s bulkiness, high costs and poor anticipated results on the battle field” (Gutfeld, 2017: 942). This led to a renewed pursuit of interceptor-based missile defence technologies. The David’s Sling medium-range missile defence programme was launched as a collaboration between Rafael and the US defence corporation Raytheon, and received \$840 million in US government financial backing between 2006 and 2015 (Gutfeld, 2017: 942). The catalyst for this programme was the 2006 Israel-Lebanon war, in which Israel claims 3,917 Katyushas were fired at civilian population centres in northern Israel from across the Lebanese border by Hezbollah and allied Palestinian militant factions (Human Rights Watch, 2007b).² Soon after, Rafael began development on the Iron Dome system as a short-range interception system in response to the home-made Qassam rockets

² Hezbollah sources boasted that they fired over 8,000 rockets into northern Israel (Human Rights Watch, 2007b). Due to the large disparity in numbers it is difficult to give a more precise figure.

being launched from Gaza, which incorporated research from the David's Sling project. The Iron Dome system began to receive financial support from the US only after it was declared operational by the IDF in 2011. Between 2011 and 2017 the system has received \$1.25 billion in financing from the US government, and in exchange Raytheon has been made a "production partner" and the US Missile Defence Agency has been given access to Iron Dome's proprietary technology (Gutfeld, 2017: 942-943).

The Iron Dome programme's transformation from research to actual development has been widely credited to the championing role of then Defence minister Amir Peretz in 2007, at a time when rocket attacks on Israel's southern communities were escalating in the aftermath of Israel's 2005 disengagement from Gaza. The consensus from the IDF and security elite was that the Qassams were a nuisance that could be tolerated by civilians, despite the high number of rocket attacks, injuries and several deaths they had caused. Peretz made Iron Dome a top budgetary priority, despite intense opposition from the IDF brass (Bassok, 2012). Peretz was not from a military background, and of Moroccan origin, which meant he was not well-respected by Israel's military and national security establishment. Significantly, he was also formerly a mayor of Sderot and a leader in the Israeli Labour movement. Sderot features prominently in this case study because it is a spatially peripheral and socio-economically disadvantaged Development Town that has been frequently targeted by Palestinian rockets due to its proximity to the Gazan border. According to Peretz' critics "because he came from Sderot, Peretz was unable to think rationally about the military needs of the Negev," which he countered by stating that "[b]ecause my family and I have experienced the rocket attacks, I know that we cannot

expect the public to live under constant threat, without any hope of living a routine life. Defence is a valid, sound strategy, because civilians aren't supposed to play Rambo" (Prince-Gibson, 2012). However, Peretz was forced to resign as Defence Minister following a party leadership election defeat, and it was in fact his successor Ehud Barak who overruled the IDF Chief of Staff to actualise the project (Bassok, 2012).

Iron Dome is exceptional in terms of military innovation in that it was produced, tested and manufactured over a time span of just four years. The first Iron Dome battery was deployed in Ashkelon, a small port city with a population of approximately 130,000 people located approximately 10 kilometres north of the Gaza Strip in 2011. It initially achieved positive results in intercepting the home-made short-range Qassam missiles used by Hamas at the time. However, when the battery was moved to the major city of Beersheva, 40 kilometres east of Gaza, it fared less successfully in response to Palestinian tactical counter-measures. In order to overwhelm the system, militants fired a barrage of seven rockets simultaneously. Iron Dome failed to intercept one of the rockets heading towards a residential area, resulting in the death of one person. The IAF Air Defence Corps commander responsible for Iron Dome responded to criticism over this incident by stating that the "this wasn't a hermetic system" and that "air defence units were learning on the fly and improving the performance of Iron Dome while operating it" (Pfeffer, 2011). IAF officers also noted that the deployment of additional batteries in adjacent areas would allow the batteries to work in concert to handle barrage attacks in the future (Pfeffer, 2011). Additional Iron Dome units were rolled out during the 2012 Gaza War. At this point five batteries were used, including a battery protecting Tel Aviv, Israel's biggest metropolis located in the country's

densely populated central region. Subsequently, ten Iron Dome batteries were deployed during the 2014 Gaza War. The majority of these were located in the Western Negev region, although one battery respectively was deployed outside of Tel Aviv, Jerusalem and Eilat, a resort city located on the Red Sea that is Israel's southern-most point.

In active use, the Iron Dome system has appeared to be most effective against Palestinian Qassam rockets, which are relatively crude unguided solid-fuel projectiles manufactured in small factories from sheet metal and metal pipes. These are the missiles most commonly fired from Gaza into Israel by Hamas, PIJ and other militant groups. According to statements by the IDF in the Israeli press, it has also successfully intercepted Soviet-designed and Iranian or Syrian manufactured short-range Grad missiles and Iranian Fajr-5 medium range rockets fired at Tel Aviv (Jerusalem Post Staff et al., 2012). However, it only works from a minimum range of 4 kilometres to a maximum range of 70 kilometres, and is not intended to be a solution against medium and long-range ballistic missiles. Rather, it has been designed to form the lowest layer in Israel's multi-layered missile defence strategy in conjunction with the David's Sling and Arrow-2 systems designed to work against medium and long-range ballistic missiles respectively. This technological arrangement positions Iron Dome both as a localised security infrastructure, and as an actor that exceeds the scalar categorisation of local within the spatial politics of Israel-Palestine and in terms of MENA geopolitics at-large. The geopolitical spatialisation of Iron Dome as both a security technology that exists and works through a volumetric conceptualisation of territory, and as an agential object that politically exceeds its instrumental function, both within Israel and

beyond it, requires further elaboration about the social, economic and political factors that emerge through Iron Dome's capacities and limitations.

7.3 The elite politics, economics and strategic dimensions of Iron Dome

So far, the question of Iron Dome's efficacy has been narrowly framed in terms of its technical probability in intercepting projectiles. However, even this positivist calculation has become a focal point of contentious debate, and the politics surrounding Iron Dome can best be characterised as diametrically polarised about its efficacy, economic benefit and strategic role. Actors from the defence industry including the state-owned manufacturer Rafael Advanced Defence Systems and experts involved with ballistic missile defence solutions suggest that Iron Dome is a "panacea" (Expert Interview 8; Handel, 1994: 549) that can singularly safeguard Israeli communities from rockets from Gaza, citing an almost 90% success rate. However, some critics, including the outspoken Massachusetts Institute of Technology Professor of Science, Technology and Security Theodore Postol and the late *Haaretz* journalist Reuven Pedatzur, have suggested that the efficacy of Iron Dome has been grossly overstated (Pedatzur and Postol, 2013). Postol suggests that contrary to Rafael Advanced Defence Systems claim that Iron Dome has a 90% rate of successful interceptions, it is only 5% successful (Postol, 2014). Prominent amongst the critics of Iron Dome within the Israeli defence industry are the supporters of the defunct Nautilus programme and its successor Skyguard, which was brought to the research and development phase by Raytheon's rival company Northrup-Grumman with Israeli cooperation (Pedatzur, 2013). However, proponents of Iron Dome have shot back at Postol's methodology of analysing

user-created YouTube videos of Iron Dome interceptions, perceived lack of data and his political and professional positionality (Rubin, 2014). The latter is notable because Postol had established his career by making similar arguments against the Patriot missile defence system in the 1990 Gulf War (Postol, 1991). The limitations of the Patriot missile were also a source of scepticism towards rocket-based missile defence within the Israeli MoD. It is difficult “for outside observers” to definitively answer these questions of instrumental efficacy with statistics at present due to “a lack of comprehensive data on Iron Dome interceptions” (Landau and Bermant, 2014: 38). Furthermore, these expert debates about efficacy in both academic and public forums cannot be objectively separated from the ideological, professional and economic interests of their interlocutors with which they are wedded.

The above dissensus about Iron Dome’s performance is, however, useful for explicating Iron Dome’s political salience because it is implicitly bound up with concerns about the economic calculability of security as a governmental logic. One of the evidentiary debates in Postol’s critique centres around the question of private property insurance. The State of Israel by law insures citizens against damage from acts of conflict, and is responsible for paying out damages in the case of property damage or injury to affected civilians. Postol’s critique cites a lack of access to these figures and the purported secrecy surrounding these figures as evidence that the Israeli government is hiding the truth about Iron Dome’s poor track record. Another more recent quantitative analysis concludes that of the “countermeasures” against rocket attacks applied by the state “military operations incurred the highest costs and prevented the fewest losses” in comparison to Iron Dome and “passive”

civil defence in terms of an economic cost-benefit relationship (Armstrong, 2018: 142). However, civil defence is a more “cost-effective” means of population protection than Iron Dome although its perceived “passivity” and inability to “prevent property damage” make it politically and socio-economically “unattractive domestically” (Armstrong, 2018: 142).

Rubin and others have made counter-claims that do provide statistical comparisons using Israeli Treasury data about state-funded compensation from the 2006 Lebanon War and the 2014 Gaza War, which suggest far fewer claims and casualties per rocket in 2014. This rebuttal argues that the reduction in casualties and property damage cannot be put down to civil defence measures such as alert sirens and shelters alone, since these measures were in place in 2006 (Rubin, 2015: 30). However, one question left unanswered through the insurance data is whether damage caused to property is a result of rocket strikes that have circumvented Iron Dome, or whether they are in fact caused by debris falling from a successful interception itself, assuming that the system performs instrumentally as claimed. This is significant if the latter is the case, because Iron Dome itself would paradoxically become the cause of the damage and injury it is designed to prevent. Therefore, whilst a political factor in the deployment of security in the Western Negev, and the decisions resulting from this logic, insurance calculations cannot be considered an objective calculation of the system’s economic efficacy as the causal relationship between Iron Dome and the mitigation of economic harm cannot be established as separate from its own technological agency, and the human practices and agency of its environment.

Another economic critique that relates to the above discussion of effectiveness as an economic calculation is an instrumental assessment of the cost-benefit relationship of

Iron Dome when comparing the cost of operating the system for Israel versus Hamas' operational costs. This criticism juxtaposes the irony of using an approximately \$50 million system per battery (Vick, 2013) with individual interceptor rockets that are estimated to cost between \$50,000 and \$90,000 each (Gatopoulos, 2014) against the Qassams, which are comparatively primitive weapons that cost as a high estimate less than \$600 each to manufacture (Putz, 2008). One critic, whom it should be noted seems to advocate the Skyguard laser system, has even gone as far as to suggest that Iron Dome could bankrupt Israel through the cost of interceptor rockets in a more prolonged war against Hamas or Hezbollah (Efrati, 2011). Whether or not this is the case, the grossly disproportionate cost-ratio between Iron Dome and the rockets it is meant to provide security against is undeniable. This suggests that although economic calculation is certainly a governmental logic through which Iron Dome operates, its primary perceived benefits for the state are political ones that exceed a purely economic rationality.

There are also several concerns bound up with Iron Dome's politics that are not based on economic rationality. Anxieties have also been expressed by military leaders, and in public discourse about how effectively the Iron Dome system would work in a future war against the Lebanese Hezbollah, which is a much larger, better organised and better armed military force than Hamas in Gaza (Shapir, 2013: 90). Hezbollah is also purported to possess large stockpiles of medium and long-range rockets capable of hitting Israel's densely populated centre (Harel and Cohen, 2016).

Another political concern is that the extent of Iron Dome's defensive role has been overstated in relation to its actual technological capacities. Subrata Ghoshroy (2012) writing

in the *Bulletin of the Atomic Scientists*, makes a semantic argument that Iron Dome is only a “rocket defence” system against unguided fixed-trajectory projectiles rather than an effective full-blown “missile defence” system that is capable against guided projectiles. This ties the question of Iron Dome’s effectiveness to a broader debate over the effectiveness of missile-defence as a strategic solution against ballistic weapons including nuclear ICBMs, which are perceived as a technological enabler of continued nuclear proliferation in nuclear-armed states’ national security strategies (Landau and Bermant, 2014: 40; Ghoshroy, 2012).

Directly contradictory hypotheses have been posited by Israeli strategic analysts for the roles of Iron Dome in terms of the acutely Israeli strategic concerns of the use of force, deterrence and legitimacy.³ However, many of these work from the normative assumption that Iron Dome fulfils its advertised function with a high degree of accuracy, although some do acknowledge the systems limitations against short-range trajectory fire with a less than 5-kilometre to 7-kilometre range (Shapir, 2013: 84), and the intangible psychological and economic harm the rocket attacks cause mean that the system cannot “provide ‘hermetic’ protection” to the Israeli home front (Stenzler-Koblentz, 2014), thus necessitating some form of offensive military action. The first set of contentions are also predicated on the basis that Iron Dome is a temporal fix for Israel’s strategic echelon, because it reduces political pressure from the home front to react “like a Pavlovic Dog, immediately to jump and bite” in response to every rocket attack (Expert Interview 9). Proponents of Iron Dome’s strategic benefits argue that this reduces pressure that would cause Israel’s strategic decision-makers

³ See section 4.5 for an explanation of these strategic concepts and their importance in the Israeli context

to make unwise or rash decisions that come from acting instinctively, and give the IDF additional time to plan a more thought-through and effective offensive strategy and dictate the timing of its response to increase its deterrence (Tira, 2014). However, the pessimistic outlook is that it can allow war to go on indefinitely and reduces Israel's deterrence since Israel is no longer obligated to act decisively with force, which means that its opponents have little incentive to halt rocket attacks (Stenzler-Koblentz, 2014; Kober, 2013). Kober also suggest that Iron Dome will lead to an arms race in which Iron Dome's existence will encourage opponents to stockpile weapons and experiment with ever-increasing barrages of rockets to thwart Iron Dome (Kober, 2013).

Debates about how Iron Dome strategically influences Israel's domestic and international political legitimacy mainly derive from the root assumption that Iron Dome is instrumentally effective in protecting the Israeli home front against rocket attacks, or at least that this is accepted at face value by those making pronouncements about its effect on legitimacy. Mecklin (2014) advances an adversarial position that Iron Dome is "a public relations weapon" to further the Israeli government's moral authority both domestically and internationally because it has taken the proactive, not to mention costly, measure of implementing the system to protect its civilian population. This is juxtaposed against the perfidious actions of Hamas, which instigates retaliatory strikes from Israel that it knows will harm Gaza's civilian population by firing rockets into Israel. The antithetical position, which is adopted by several Israeli strategists, counters that the Iron Dome system is harmful to Israel's international legitimacy because it supposedly negates the need for Israel to use force in response to rocket attacks if the rockets cannot cause any meaningful harm to the

civilian population or property because they are protected by Iron Dome (Stenzler-Koblentz, 2014). This makes it easier to “accuse Israel of a disproportionate response” in “international debate” (Landau and Bermant, 2014: 41) and IHL forums.

A related political question to the one of legitimacy revolves around claims about Iron Dome’s categorical nature as a “defensive technology” (Shabtai, 2014: 7), which is emphasised by Israeli military and government public relations, and which one participant suggests appeals to casualty aversion and war fatigue in Israeli society (Expert Interview 10). An example of this discourse in Israel was highlighted by an ethnographic moment in which I was being questioned about my thesis by an immigration officer at the Passport Control desk at Ben-Gurion International Airport. When I mentioned that I would be researching Iron Dome, he asked me to clarify whether I meant “life-saving technologies.” Such a normative value judgement of Iron Dome as a ‘defensive’ technology undoubtedly does political work in favour of the state’s current security regime, and its claims to protecting its population. However, it is also tenable to argue that Iron Dome’s ostensible temporal fix allows Israel to sustain offensive action against Gaza over longer periods by mitigating political pressure from the home front for a ceasefire due to harm from Palestinian rockets. Some political analysts, as well as some everyday research participants, have taken this argument further by suggesting that Iron Dome removes the necessity for Israel’s political leaders to seek a long-term diplomatic solution to the Israel-Palestine conflict (Fromer, 2014), since they can just use Iron Dome to “renew the war” indefinitely (Interview with Shira; Misgav, 2017)

Whilst Iron Dome's status as an 'offensive' or 'defensive' weapon is ambiguous and debatable, Iron Dome does categorically differ to a significant extent from blatantly 'offensive' weapons such as PGMs and armed UAVs, which have been the main focus of disciplinary concern in geographical and critical security studies readings of military technologies (Wilcox, 2017; Schwarz, 2016; Walters, 2014a; Holmqvist, 2013; Shaw, 2013; Sauer and Schornig, 2012; Shaw and Akhter, 2012; Gregory, 2011b; Williams, 2011). Unlike PGMs and the UAVs that often deliver them to their targets, Iron Dome is a technology designed to counter incoming ranged weapons rather than to actively kill people or cause material damage to equipment and infrastructure. As such, it requires a different sort of theorization.

This section has outlined a few of the recent political debates surrounding the social, economic, security and strategic dimensions of the Iron Dome system. Underlying the majority of these contestations is an emphasis on determining Iron Dome's efficacy in terms of instrumental criteria based on its declared function and functionality according to its manufacturers and the state. What in actuality emerges from these evaluations is confusion, polarisations, or even diametric contradictions, rather than any definitive answers or clarity. This in large part due to the divergent, and in some cases, antagonistic motivations and positionalities of the stakeholders, which must be critically assessed and contextualised when making judgements about Iron Dome's efficacy. Therefore, in order to gain a clearer sense of what Iron Dome is and does as a security technology, as well as to better evaluate its actual efficacy in producing security, it is necessary to move beyond causal paradigms

and consider the multiplicity of its capacities and agencies within the milieu in which it exists and operates.

The next section will critically interrogate what Iron Dome actually does through its imbrication in its environment by utilising Adey's (2014; Adey et al., 2013) concept of the production of security as an affective atmosphere. This allows for an evaluation of the extent, and the ways in which, Iron Dome exceeds its instrumental design. This line of enquiry will then be pushed further to question whether Iron Dome also has the ambivalent capacity to produce insecurity, which is paradoxical to the function intended by Israel's political leaders, security technocrats and its defence industry who advocate on the technology's behalf.

7.4 The affective "securityscape" of the Western Negev

To make clear the following discussion of Iron Dome's affective production of a security atmosphere, it is first necessary to give a working and workable definition of the much-debated and misunderstood concept of *affect*. According to Whatmore (2006: 64):

Affect refers to the force of intensive relationality — intensities that are felt but not personal; visceral but not confined to an individuated body. This shift of concern from what things mean to what they do has methodological consequences for how we train our apprehensions of "what subjects us, what affects and effects us" or "learn to be affected."

This approach codifies affect as the agential force that exerts an influence on the individual. It is generated through the more-than-human relations between bodies and objects. In order to make affect intelligible through the hybrid OOO-ANT epistemology of this thesis, the concept must account for the agential influences on nonhumans, through both human-nonhuman relations and nonhuman-nonhuman relations. It must also adequately differentiate between capacities and agencies, or put differently being and action. Whilst

affective forces emerge through agentive relations between entities, the agencies themselves derive from the capacities, or immanent conditions of possibility, intrinsic to both humans and objects.

As previously stated, this chapter argues that the question of Iron Dome's efficacy is a political one that must be understood in terms of the system's capacities and limitations that become salient through its imbrication within its complex environment. The spatial configuration of objects and people aligns their capacities in a way that allows for the generation of particular affective agencies at a particular time. It is in this way that affects of security and insecurity are produced and circulated through an atmosphere (Elden, 2013a). Adey (2014: 839) explains the constitution of such security atmospheres in the following way:

Notions of atmosphere encourage us to consider more complex forms of enveloping spatialities so that even bodies and objects might be understood as atmospherically distributed. ... Thought of in this way, security atmospheres could consist of distributed arrangements of objects, intensities, voices, and presences, reminiscent of the guide ropes, drag lines, and enveloping materials of the balloon expedition McCormack (2008, page 414) explores, as "a distributed and differentiated affective materiality" through which meteorological and weather conditions were encountered and sensed, and in which the expedition was experienced. We can explore these kinds of gaseous dispositifs—relations drawn between distributed and disparate elements—through... everyday security.

It is through the amalgamation of the heterogenous distribution of people, technologies, logics, practices, sensory stimuli, and the geospatial environment that a security atmosphere is actualised. This atmosphere becomes affective through the temporal modulation of intensities of danger, and conversely protection, in relation to the hostile actions of other events and objects. The register of "everyday security" is made real through both the subjects' ontological immersion and active engagement, in the form of either enrolment or resistance, with this all-encompassing environment, both as individuals and collectively.

Fregonese (2017: 1) states that “the intangible intensities and atmospheres of (de)escalating conflict, feed into spatial knowledges that are situated and embodied. Once analysed together, these knowledges compose a repertoire of understandings and practices.” This definition gives a performative understanding of how the modulation of intensities within security atmospheres affects individuals’ and communities’ actions. Residents of the Western Negev regularly internalise and embody affects of insecurity, as will be evidenced throughout this section. However, in order to give a fuller understanding of security atmospheres which is compatible with OOO’s emphasis on object ontologies it is necessary to invigorate the technological and material aspects of the production of affect in concert with the aspects of embodiment and practice, as the latter tend to receive greater attention than the former.

Iron Dome’s existence as a catalyst of the everyday security atmosphere of the Western Negev must be understood in relation to the nature of the atmospheric insecurity it works to counteract. Hamas and its allies’ practises of launching rockets and mortars against the populated areas of the Western Negev applies a rationale that Sloterdijk (2009: 23, 47) has coined “atmoterrorism.” This kind of terrorism “takes the form of an assault on the enemy’s acute environmental living conditions, starting with ... the human organism’s most immediate environmental resource: the air he breathes” (Sloterdijk, 2009: 29). Therefore, as a technological response to this weaponisation of the atmosphere, Iron Dome enacts security by working through the atmosphere to regulate it against such an assault. This mode of security militarises the atmosphere as an object of security through the enrolment of missile defence technologies by the state’s apparatuses of national defence

and the arms industry. This military milieu orientates the security atmosphere in which Iron Dome exists and operates in line with a territorial conception of the atmosphere as a space that must be defended against incursion.

In order for Iron Dome's atmospheric power to be made apparent, it must first be located spatially within its everyday political context as part of the "securityscape" (Azaryahu, 2000: 103) of the Gaza-Western Negev envelope. A key feature of this is Israel's socio-spatial arrangement according to a division between the hegemonic core and marginalised periphery (Slesinger, 2016). The core correlates to the area within pre-1967 Israel between Haifa, the Tel Aviv metropolitan area and Jerusalem, while the periphery consists of the northern Galilee region and the southern desert regions of the Negev and Arava. Whilst the core contains Israel's major cities and suburbs, the periphery regions consist of Jewish Development Towns (DTs) and a higher proportion of pre-1948 settled Israeli Arab/Palestinian citizens of Israel, Druze (in the Galilee) and Bedouin (in the Negev and Arava) towns and villages than the core. The demographic characteristics of the DTs in the Western Negev include a high proportion of *Mizrahi* Jews from the post-1948 wave of immigration to Israel, as well as later waves of Ethiopian Jews and Eastern European Jews. The high proportion of residents from lower socio-economic class and ethnic minority backgrounds, plus the distance from the centre of economic and political power, mean that the DTs tend to be poorer and suffer from a deficit of social services in comparison to the core region.

However, the rural settlements (*kibbutzim* and *moshavim*) in the Western Negev are anomalous in that they have a tendency towards being more *Ashkenazi* and middle-class, partly as a result of counter-urbanisation by young families. This is notable due to the emphasis on *Mizrahi/Ashkenazi* identity politics and tensions between residents of the *kibbutzim* and the DTs, particularly in the Sderot area, in many of the everyday participants' narratives. These categorisations of difference played a significant role during my field research, in addition to an antipathy to the perceived 'metropolitan elites' of the core region by both sets of Western Negev residents:

Er, (short pause) I think me personally, my um, my identity, because I am, my mother is Hungarian my father is Tunisian and I felt that there is no room for, um, for Sephardic Jews in the left-wing. At all! And when my identity... I felt more Sephardic myself, I felt less comfortable in those places because they are all white, rich and they are in the centre of the country. I also live in the periphery. And I felt that I can identify more with the people of Sderot than with these people. So this is what happened for me. And also we want to have people from this area in our movement, because we want to pressure the government into understanding we suffered from the missiles and from the wars. Otherwise we can pressure for change. Also, because Sderot is very right-wing and they are the natural voters of Bibi [Netanyahu], they come from Sderot. (Interview with Shira)

This quote highlights that Iron Dome does not exist in an anodyne security landscape, but that its political milieu is bound up with regional and national identity politics, and socio-economic and political alterities and inequalities. Such factors must be more carefully considered in materialist analyses of techno-politics in order to flesh out the intricacies and processes through which the technological becomes political.

The above quote also alludes to a sense of political disenfranchisement and neglect from the core, which was a recurring theme shared by many of the Western Negev residents interviewed in this research from both the DTs and the *kibbutzim*. One *kibbutz* resident, when asked by me his opinion on how the government thinks about residents' ability to cope with the insecurity from rockets and tunnels, retorted "I told you what we think, they don't

give a damn about us. They think we are not politically important” (Interview with Noam). Noam’s claim that Western Negev residents are not “politically important” implies a juxtaposition of the political desires of the core as inimical or incongruent to the interests of citizens in the sparsely populated periphery. He takes the view that the government is synonymous with the self-interest of elected politicians in the cabinet and Knesset, for whom public perception in the densely populated and economically stronger core is instrumental to electoral victory. This argument relates to the Knesset’s system of proportional representation according to a single national electoral boundary.

However, a third-sector community worker in the DT of Ofakim, whose work includes liaising with central government departments, gave a somewhat different perspective: “they do understand the needs of the community. Even if they can do something about those needs, the answer is yes. But if they do it actually [i.e. take steps to manage insecurity] practically, the answer is no” (Interview with Yael). She elaborated on this point by evaluating the politics of security in the Western Negev in spatial terms of proximity to the Gaza border:

I think that this is supposed to be a socialist welfare state, but sometimes... but the support is in critical areas of security problems, meaning closer to Gaza [than Ofakim], such as Sderot, such as the *kibbutzim* next to the border, so Ofakim in the view of the government isn’t considered such a problematic or dangerous place. So that’s why what happens is that the third sector... they have to get inside this vacuum and act, that’s it? And that’s where we fit in the picture. (Interview with Yael)

In order to develop a contextualised analysis of Iron Dome’s political implications, it is important to consider its relations to the spatiality of the area that it inhabits. These spatial factors include Israel’s core-periphery axis, the DT/*kibbutz* divide, relative proximity to Gaza, the landscape, patterns of settlement distribution and (mainly agrarian) economic activity,

as well as the socio-economic and political characteristics of the Western Negev's demography.

Another significant aspect of the spatialisation of the security atmosphere of the Western Negev is the pervasive infrastructure of security that affects the conditions of the physical environment and life within it. Whilst the infrastructure that sustains the security atmosphere has fused and become unified as an opaque "black box" (Star, 1986: 32), it is in fact comprised from a heterogenous array of materialities and practices, which must be critically examined: bomb shelters (*MAMAD*, *MAMAK* or *miklat*); warning sirens; telecommunications networks; fences and walls; military bases; the IDF Home Front Command [*Pikud haOref*]; police; municipal, regional and central government; community activist groups; third-sector organisations; emergency preparedness drills; sensory responses; running for shelter; and daily choices.⁴ Iron Dome is just one element of this network, and is yet another black box in its own right. Attention will now turn to empirically contextualising Iron Dome's environment by attending to a few of these other elements.

Bomb shelters are a ubiquitous architectural feature of the built environment in the Western Negev. These are typically rooms located in the basements of individual houses and apartment blocks that are constructed of thick steel-reinforced concrete with heavy steel plate doors, and are either windowless or have plate steel shutters to cover windows to prevent injury from exploding broken glass. In some instances these are constructed in other ways, such as the supposedly temporary shelter from a residential street in Ofakim shown

⁴ Some of these practices and infrastructures are illustrated in Figure 7.3.



Figure 7.2. Temporary bomb shelter on a residential street, Ofakim. (Source: the author)

in Figure 7.2, in which identical shelters were located at 50-metre intervals in front of the houses and had been there for several years at the time of my site visit in 2016. They can also be architecturally designed as dual-use features of another structure, such as the cubic solid concrete bus stops that I saw in Sderot, or a synagogue that I visited in Ofakim, which had a large inner space for prayer services with low ceilings, thick walls and small recessed windows that could be blocked of in case of need. This space was used as a communal shelter during the 2014 war.

These shelters are not a stand-alone solution, but are interwoven with other infrastructures and practices within the Western Negev's securityscape, which condition the

affective dispositions that produce its security atmosphere. Alert sirens that warn of incoming rockets in an area are positioned on rooftops and utility poles throughout the built environment in both the DTs, *kibbutzim* and even larger cities throughout Israel. Depending on the area, these either emit a wailing pitch, or a robotic male voice repeating “*tzeva adom, tzeva adom*” [red alert, red alert]. They are extremely loud and have an overwhelming sonic power which saturates the atmosphere. These klaxons are deliberately designed to have an affective force which conditions residents’ emotional states and their actions, as the following interview extract demonstrates:

Noam: And of course, all the fears, all the you, know, influence of, just even the noise is something. You know, I went with my wife to a funeral in Tel Aviv, by Tel Aviv. And there was from the office the call from the microphone “this funeral will go something like this.” And it makes me and my wife scared because...

Researcher: Oh, this was a siren during the funeral?

Noam: Yes, the sound from this monitor that made a noise that reminded us of the, you know the *tzeva adom* [red alert] signal.

Researcher: The warning to get a shelter, you mean?

Noam: You know *tzeva adom, tzeva adom*. This noise?

Researcher: Yeah, the “red alert, red alert” [warning from the siren].

Noam: It tells us a *Qassam* [rocket] comes, yeah. It reminded us, this voice.

Researcher: But it wasn’t a rocket attack, it was just a voice at the cemetery? It was a megaphone at the cemetery?

Noam: Yeah, it was just the voice, but we were influenced by that.

(Interview with Noam)

The participant and his wife, who are long-time residents of Kibbutz Be’eri, located approximately 5 kilometres from the Gaza border, were instinctively frightened by what they mistook as a warning siren in a profoundly ingrained and embodied way that has been programmed through a repetition of experience, and exceeds rational thought.

Individuals are trained to run to the nearest available shelter upon hearing the alert siren. Depending on their location within Israel proximate to Gaza, they have between 15 seconds and 3 minutes to reach shelter (see Figure 7.3), although in the Western Negev this will be from 15 seconds in Sderot to a minute in Beersheva. This response is reinforced from a young age through emergency preparedness drills in schools and in the community, which one participant stated were responsible for re-triggering trauma for his children (Interview with Ari). The rockets from Gaza are unguided, the alert sirens give warning to a relatively large area, which means it is impossible to mentally prepare for whether the rocket is likely to strike close by or far away. However, other factors influence individuals' capacities and dispositions in response to the alerts. Yael explained that a number of the residents in Ofakim are recent immigrants from the former Soviet Union, many of whom only speak Russian, and that they do not individually move to the shelters in an urgent manner, but "will move together." She also explained that many nursing home residents have poor mobility or are wheelchair-bound, and are thus unable to make it to the shelter within the 45 second window after the alert siren is broadcast. This means that the nursing home staff must make difficult choices under pressure about which of their charges they will escort to the shelter.

■ Immediate
■ 15 Seconds
■ 30 Seconds
■ 45 Seconds
■ Minute
■ Minute and a half
■ 3 Minutes

My family's preparations in case of missile strikes

www.ofef.org.il

**The Home Front
Command**

104
We all
take
command

Dear resident

This letter specifies how much time you have to enter a protected space as well as providing several guidelines and simple steps to help you prepare today to protect yourselves in the future:

- Guidelines for choosing the protected space
- Guidelines for what to do when you hear the siren
- Preparing the family emergency plan
- Map of defense zones with the new amounts of time you have to enter a protected space

With you, the Home Front Command

What to do when the siren is sounded

When the siren is sounded or an explosion is heard, enter the protected space within the amount of time at your disposal, according to the following guidelines:

- If you are inside a building,** go into the MAMAD immediately and close the steel window. If there is no MAMAD in the building, go into the chosen protected space. If there is no such space, go into the building stairwell. In the protected space, sit on the floor, below window level, against an inner wall, but not opposite a window.
- If you are outside in a built-up area,** go into the nearest building or sheltered spot. If you are out in the open country, lie down and protect your head with your hands.
- If you are in a car, stop by the side of the road, get out of the car and go into the nearest building or sheltered spot.** If you cannot reach a building or sheltered spot in the allotted time, get out the car, lie down on the ground and protect your head with your hands.
- After 10 minutes have passed, you can leave the protected space if no other instruction has been given.**
- It is important to keep your distance from unidentified objects or a rocket lying on the ground.** In this event, get curious bystanders to move far away and notify the police.

Preparing the family emergency plan

The family is the most significant source of support for both parents and children alike. It is therefore vital that all family members be involved in preparing the plan, which will also equip you all better to deal with the various situations.

- It is important** that all the family members, including the children, be familiar with the guidelines for the proper conduct when the siren is sounded, know what to do and where to enter, also when they are not at home or are on their own.
- Choose the protected space** that you will enter when the siren is sounded together with the children and family members, and explain the logic behind the choice (why this is the most protected room in the home and the importance of entering it when the siren is sounded).
- Divide up the roles among the family members** and plan your preparedness according to the characteristics and specific needs of your family.
- Stock up** on items that will help you cope better: some food and water, emergency lighting, a radio with batteries, and a first aid kit.
- Make a list of telephone numbers** that will help your children and the rest of the family know who they should call in different cases. Write down the telephone numbers of the Israel Police, Magen David Adom (ambulance service), the Fire Fighting Services, the Home Front Command, as well as mobile phone numbers and the telephone numbers at your place of work.
- Discuss preparedness for a missile strike with your family.** A parent must manage the discussion, and it is important that the children join in the discussion. If one of the parents feels anxious in the situation, it is recommended that the discussion not be held, and that the parent seek advice from the school or local authority in order to acquire the skills to manage the discussion. You are advised to prepare for the discussion in advance:

- Think about what issues to discuss.
- Set aside a suitable time to hold the discussion and arrange a place where everyone is comfortable.
- Mention that during the Second Lebanon War and in the conflict involving the populated areas surrounding Gaza, people's lives were saved because they obeyed the guidelines. Let your children talk about their feelings.

Cooperation with neighbors and mutual help is extremely important. Talk to your neighbors about these situations and arrange what courses of action you will take.

The Home Front Command

is working to improve the warning system and in an emergency will enable the siren to be heard on the regional radio station frequencies.

A list of frequencies will be published when the need arises.

For more information
Phone **104**
and visit our website:
www.ofef.org.il and

Figure 7.3. English language leaflet produced by the IDF Home Front Command. (IDF Home Front Command, n.d.: used with the kind permission of the IDF Spokesperson's Office)

In addition to the security practices proscribed by the state, individuals must inculcate “resiliency and adaptability” as “techniques of the self” in their “everyday life” (O’Malley, 2010: 505) to “cope” (Dunn Cavelty et al., 2015: 7) with danger. This takes place through the ongoing development of the small-scale practices and risk choices that they are required to make in order to manage a condition of perpetual insecurity. A poignant example of this was related by Shira:

Yes, so we are always alert. And you have to deal in your daily with questions that normal people don’t deal with. If there is escalation, even a small one, I learned during time to tell my daughters, ‘well have a nice day, and today stay in class and don’t play outside because there is a danger of having rockets, so stay in class.’ And I say to her sometimes there are days I decide you are not going to school today because somebody killed somebody, somewhere. So I learned as a young mother to be, to watch the news because of my own family’s safety. This is one thing. Or if I have to consider today I wear high heels or I don’t wear high heels today because there is a danger of rockets...

The volatility of the Gaza conflict requires the Western Negev residents to read and anticipate the flows and eruptions of the security atmosphere by following the morning news to obtain information on the regional security situation, as if it were the weather report, in order to make practical decisions about how to manage the ever-possible geopolitical risks of political violence against them. These decisions permeate the most prosaic aspects of daily life, such as which shoes to wear in case one has to run to a missile shelter. This is not common-sense or an innate quality that residents naturally possess. Rather, it is a set of techniques and practices for coping with danger that must be learned and developed, as Shira elaborates:

I am failing to understand not the situation, but failing to understand personally how a mother needs to deal with it in a way her children are protected and she would feel safe, and not break down. It’s something that you need to learn how to do it. You are not born with this knowledge on how to defend your children from missiles.

The requirement for the individual to instil and strengthen these heuristic skills in and by their selves in order to adapt to living in an environment afflicted by geopolitical violence is a hallmark of the neoliberal governance of resilience. According to Evans and Reid (2014: 41), resilience requires that “the subject must disavow any belief in the possibility to secure itself and accept instead an understanding of life as a permanent process of continual adaptation to threats and dangers which are said to be outside its control.” The development and strengthening of the resilient stamina of the home front to tolerate assault is of strategic value for the military in counteracting the benefits of violence for the state’s opponents. This rationale was set out in an interview with Expert 2, a high-ranking strategic planner in the IDF:

Expert 2: I think the resilience; the civilian resilience is something that we have to work on. It’s not something that either it has or it hasn’t. You have to build it. You have to ... you have to demand it for the people that are part of the operation - very important part of the operation – sometimes much more important than the military forces that try to manoeuvre and because the targets of the Hamas, also the Hezbollah, is not ... how to hit ... the IDF units, it’s how to break the resilience of the Israeli population. This is the main target and in order to create active and passive sufficient defence system against that you don’t need just [the] Iron Dome, you need also to create a strategic programme [for] how to build the stamina of the population.

Researcher: Do you think that’s something that can be achieved from top-down planning, through – do you think that’s something that can be imposed on a population or...?

Expert 2: I think it’s a matter of education and I think it’s something that gradually you can put all the stuff on the population because [of] fear... It’s not a gift from God, it’s something that can be, it is changeable. Something that you can work on... (Expert Interview 2)

According to Expert 2, resilient capacity is not an innate quality, but is a skillset that must be actively taught and inculcated in the population in order to build a greater tolerance for violence. This understanding of resilience as an aptitude that can be nourished through training and exposure to danger corroborates Evans and Reid’s (2014: 42) point that

“building resilient subjects involves the deliberate disabling of the political habits, tendencies and capacities of peoples and replacing them with adaptive ones.”

However, such attempts to regulate the dispositions of the residents of the Western Negev to tolerate persistent danger are not passively accepted, nor uncontested:

There is a notion that people here are strong and they can take it, because they come from the kibbutzim, they are pioneers and all that shit. And the other is that the people of Sderot now are proud, that in the last days... during the war, the people of Sderot learned to live with the missiles. So they have this narrative we can take it, as opposed to the people in Tel Aviv, but they [the people in Sderot] can handle it. But it has a price. It takes a toll on everybody and of course if you have less money, and less ability, and your community is less organised, it takes a larger toll. (Interview with Shira)

Shira takes aim at the way ideological motifs of Zionism are deployed and assumed with regard to the Western Negev population's resilience based on the region's popular history as a challenging periphery area that had to be tamed through nationalist self-sacrifice, spirit and will (Almog, 2000: 67, 153-154). To disabuse this notion, she articulates a political protest that emphasises how the onus of resilience places an untenable and unlivable burden of duress on individuals and community in the context of the Western Negev's socio-economic disparity to Israel's core region. This example indicates that at the everyday register resilience is a “contingent, incomplete, and contestable project” rather than an “inevitably successful” strategy of adaptation that is passively adopted by both state institutions and publics (Brassett and Vaughan-Williams, 2015: 34; Kaufmann, 2015).

Within the milieu of security practices, infrastructures, skills and adaptations that combine to inculcate resilience, and likewise the political articulations of resistance to it, Iron Dome is designed to be a technological catalyst for normalising how individuals and communities cope with the existential insecurity of persistent rocket attacks from Gaza. This political-rational role of Iron Dome to enable the everyday deployment of resilience in the

Gaza-Western Negev envelope, and the extent to which it is actually feasible, is closely bound up with the particular and acute ways in which the technological system modulates the affective security atmosphere of the Western Negev. The following sections will pay attention to the pluripotential and ambivalent ways in which Iron Dome's capacities produce variable affects of security and insecurity within the atmosphere it is supposed to regulate.

7.5 Atmospheres of security

Although Iron Dome is a relatively recent introduction to the securityscape of the Western Negev, having been first deployed to the area in 2011, it has become integrated as an axiomatic and fundamental apparatus within the area's security atmosphere over a short period of time. One of the primary ways it has done so is by exercising an affective facility to offer a measure of psychological protection to Western Negev residents that improbably exceeds its technological utility, as the following excerpt demonstrates:

Noam: Kippat Barzel Doesn't influence us. Doesn't defend us....

Researcher: So you felt more defended where you were?

Noam: Yeah, we felt more defended, but it was only a feeling. [laughs]... But still one felt here, in the area...

Researcher: But why did the Iron Dome make you feel protected?

Noam: Psychologically... We felt secure because you know even Beer Sheva was secure. We empathised with Beer Sheva. With the citizens there.

(Interview with Noam)

Noam lives in Kibbutz Be'eri, which is located approximately 5 kilometres from the Gaza border. This is too close for Iron Dome to effectively intercept rockets due to the shallow trajectory of the incoming rockets from Gaza, a fact of which Noam is acutely aware. Despite this, Noam still expresses an affective sense of protection from Iron Dome, which he

describes as a “psychological” disposition of security. He identifies this sense of security as emanating from an empathic social connection with the regional security of the population, rather than from the instrumental efficacy of the Iron Dome system.

The visible presence of the Iron Dome system in the landscape and in action in the atmosphere are vectors of its affective power that work through the visual register to produce security. This sense of security comes about through Iron Dome’s conspicuous aerial display of the transcendental qualities of the “technological sublime,” which Nye (1996: xvi) defines as a “politics of perception” created through “the repeated experiences of awe and wonder, often tinged with an element of terror, which people have had when confronted with particular ... technological achievements.” One participant narrated this sense through a vignette of an experience she had during the 2014 Gaza War:

The most memorable moment in the last war for me was when I went to a [nearby] *kibbutz* ... this was during the ceasefire period in the middle of the war. A rocket went off and there was a red alert. I saw Iron Dome hit a rocket. It was beautiful, like a firework show. (Interview with Maya).

The experience of actively seeing the Iron Dome interceptor explode in the sky influences an affective disposition of security because it “creates an image of power and sovereignty that will affirm the confidence of citizens in the legitimacy and inviolability of the state” (MacDonald, 2010: 276) through its command of the aerial layer of the territorial volume.

This atmospheric production of security through visual demonstration requires a seemingly paradoxical combination of visibility and secrecy. In a *Vice News* feature filmed during the 2014 war, journalist Danny Gold visits the site of an Iron Dome battery located in an open field in the Western Negev (*Life Under Israel’s Iron Dome: Rockets and Revenge* (Dispatch 3), 2014). Rather than being a secret location or a closed site that is off-limits to

non-military personnel, it was a hub of activity with individuals coming to spectate, socialise and provide moral support to the soldiers stationed there. Gold meets a group of young Israeli men smoking a *shisha* pipe who drove out to the site in order to watch Iron Dome interceptions. When asked why he came out to the site, one of the men replied in Hebrew that “it’s cool to watch... And it’s also protective. It feels safe here.” Although it is illegal under Israeli law to publicly identify the locations of military installations (Bittner, 2017: 39), the location of the batteries is an open secret and is publicly accessed. Likewise, whilst many of Iron Dome’s technical features and detailed data about its efficacy are state and defence industry secrets, images of Iron Dome interceptions were frequently shown in both Israeli and foreign news media during the 2014 war. The materiality of Iron Dome as an object, rather than being a source of “contradiction” against which secrecy must iteratively manage (Paglen, 2010: 760), is a resource for the affective production of security by the state’s security and political elites. The mediation of visible spectacle to demonstrate Iron Dome’s efficacy and secrecy to protect its operational viability is in itself “an affective mode of communication and a technology of power” that becomes all the more potent because of “the peculiar aura which secrecy confers upon its objects” (Walters, 2015: 288, 290).



Figure 7.4. Top: Concept illustration of the Iron Dome system. (Source: Rafael Advanced Defence Systems; source image available at https://i.dailymail.co.uk/i/pix/2014/02/14/article-2559358-1B7C726D00000578-169_634x462.jpg)

Bottom: Still from The Simpsons Movie. (Source: 20th Century Fox; source image available at http://pixel.nymag.com/imgs/daily/vulture/2013/07/09/09-dome-simpsons.o.jpg/a_560x375.jpg)

Iron Dome has produced a powerful imaginary of security that exceeds the technological assemblage of the system itself as a set of synergistic components. The system's manufacturers have disseminated imagery of Iron Dome as a protective dome. The powerful and intuitively convincing visual trope of Iron Dome as a hermetic semi-sphere has

become pervasive to the extent that it influences how Iron Dome's efficacy is understood both in elite and everyday contexts. The seductive power of such imagery was highlighted in a critical way during an interview with a respected Israeli defence journalist and military affairs analyst:

You know, look, I think that the Iron Dome is a great invention. I think that Israel is probably the first in the world to achieve such results, but I think that we should also understand the shortcomings of, the limits of, this system. ... I think some Israelis see this as, you remember *The Simpsons Movie*, the dome? [But] it's not Springfield, it's all of Israel, you know, and it's more complicated than this. (Expert Interview 10)

The interviewee's comparison between the imagery of Iron Dome as a protective dome and *The Simpsons Movie*, which is visually demonstrated in Figure 7.4, conveys both the intuitive power and the absurd hubris of the security Iron Dome produces through its imaginary resonance that exceeds its instrumental function. In *The Simpsons Movie* (2007), a glass dome is placed over the fictional town of Springfield by the US government as a neat solution to gloss over the political complexity of an environmental disaster. In a similar way, the Iron Dome is applied by state security officials and endorsed by political leaders as a simple and comprehensive means of securing the atmosphere of the Western Negev by making it impermeable to rocket fire from Gaza.

However, this imagination of Iron Dome as a literal shield oversimplifies and reduces the complex and multifaceted geopolitical and security problems of the Gaza-Israel conflict to an unproblematic technical fix, and ignores the embodied socio-economic and environmental milieu in which Iron Dome exists. Doing so also negates the ways in which place differences between the locations that Iron Dome is meant to protect alter the atmospheres of security. Even though an Iron Dome battery is often deployed to protect both Sderot and Tel Aviv, the practices and dispositions of a Tel Aviv resident, who is

infrequently subjected to rocket attacks and has 105 seconds to seek shelter before impact, will be entirely different from those of a resident of Sderot who is consistently reacting to rocket attacks and only has 15 seconds to reach shelter. Another aspect of this contrast in place is that Sderot has a pervasive infrastructure of public and private bomb shelters that residents can access, as well as frequent preparedness drills to train residents embodied practices, whereas Tel Aviv has far fewer shelters and infrequent drills. This means that Tel Aviv residents are far less likely to be confident or conditioned in their response to a rocket warning klaxon than their counterparts in Sderot. This exemplifies how Iron Dome is an ambivalent object that can produce forms of insecurity in certain places and situations simultaneously as it produces security in others. This counter-intuitive concept will be expanded upon in the next section.

7.6 *Atmospheres of insecurity*

Iron Dome's seemingly paradoxical ability to produce both security and insecurity at once stems from its multifarious ability to exercise and withhold its capacities as an object at different moments and places, and in different ways. One source of Iron Dome's ability to foment an affect of insecurity is the mobility of the system, as the batteries are deliberately designed with the ability to be located temporarily at a particular site and easily redeployed to a different location. This mobile capacity is meant to make the system flexible and adaptable in response to changing geopolitical circumstances and security needs. However, this adaptability has also become a vector of insecurity because it creates a conflict between

the military's strategic interests and the infrastructural requirements for producing everyday security atmospheres.

The system's mobility allows it to be directed towards a particular area that is deemed in need of protection by the state. However, this does not necessarily mean the protection of the population. This is evidenced by a court petition filed against the state by the Eshkol Regional Council, whose authority covers an area in the northern part of the Western Negev adjacent to Gaza. The petition argued that the state is legally obligated to keep an Iron Dome battery permanently deployed in the area to protect communities near the Gaza Strip located between 4.5 kilometres and 7 kilometres from the Gaza border. The council's reasoning was that the range of the Qassam rockets extends beyond the immediate proximity to the border, and this area can be protected by Iron Dome, unlike the 4.5 kilometres closest to the border which already receives government funding for architectural reinforcement and other protection measures (Paraszczyk, 2011). Part of the government's counter-argument was that the system's portability meant that it must have the flexibility to deploy Iron Dome "in different areas based on operational need" (Paraszczyk, 2011). Furthermore, due to "budgetary limitations" it would be impossible to deploy an Iron Dome battery to protect every community, and if the court were to order the state to deploy a battery in a particular area it would prevent other communities from "receiving protection" (Paraszczyk, 2011). The court sided with the state, ruling that "in balancing all relevant considerations including budgets, changing security realities and operational matters, the government's decision not to deploy Iron Dome in the area was reasonable" (Paraszczyk, 2011).

In this court case, the contestation between the state and the regional government centred on the mobile capacity of the Iron Dome battery as a potential source of both security and insecurity. While the state argued that the mobility of the system allowed it to make dynamic decisions to best allocate its limited resources in order to define objects of security protection according to necessity, the regional council's position was that the mobility of the system was a cause of insecurity because it could not be relied on to be present in order to protect the populated areas most at risk from rocket attacks. This concern was corroborated by a participant who suggested that in some instances the military makes deliberate decisions to move an Iron Dome battery from their area to protect "army bases" over residential communities, which they felt meant that Iron Dome produced a potentially dangerous false sense of security for the area's residents.⁵ This indicates that the state's object of security is not necessarily the protection of the population, but rather of its own assets and capabilities.

Another vector of insecurity emanates from the affective disposition of Iron Dome as a security presence that comes about through its reputedly localised existence. In an interview with Yael, whose professional responsibility is coordinating civic response to rocket attacks in a DT, she expressed concern about how Iron Dome inculcated complacency in residents' responses to rocket attacks:

The problem is [residents'] mindset. They don't get in the shelter in their house, and don't get inside shelters and places where they are protected. Because they go 'yeah, we have the Iron Dome.'

⁵ For ethical reasons due to the political sensitivity of this testimony, the corresponding interview details will be withheld to better protect the anonymity of the participant.

She sees such complacency as dangerous because it undermines the other pre-existing infrastructures and practices for securing life against rocket attacks. Iron Dome's strong affective power actually produces a paradox whereby its ability to produce the affect of security becomes a source of insecurity by negating other less scintillating materialities and practices that it exists and works in conjunction with.

The role of humans "in the loop" (Singer, 2009: 128) of the Iron Dome system has also become a potential source of insecurity. At present Iron Dome requires a human operator to actuate a decision to fire an interceptor rocket according to an algorithmically calculated trajectory. This is intended as a response to post-humanist ethical and legal concerns about the automation of weaponry (Schwarz, 2018; Coker, 2013; Sharkey, 2013; Singer, 2009). However, due to the speed at which firing solutions must be computed and actualised in response to the impossibility of anticipating when a rocket attack will occur, the human operator becomes a weak link since they are either unable to process and make the often near-instantaneous decisions based on the algorithmic data that Iron Dome's effective use requires, or are bound by fallible protocols and bureaucratic restrictions that regulate their decisions. A revealing example of this was a rocket attack during the 2014 war that caused Ben-Gurion Airport, Israel's only major international hub located near Tel Aviv, to be partially closed for 36 hours. In this incident an officer in charge of an Iron Dome Battery intended to defend the airport made the decision not to fire an interceptor rocket in response to a detected incoming missile "for calculated reasons" in line with IAF policy at the time (Oren, 2014). The missile landed approximately one mile to the north of the airport perimeter. This resulted in the US Federal Aviation Administration, as well as multiple international carriers,

suspending inbound and outbound flights to or from Ben-Gurion Airport (Anon, 2014e). Following the incident the IAF altered its protocols “in order to prevent further disruptions in the airport’s activities” (Oren, 2014). The political consequences of this disruption to an economically and socio-politically valuable nexus of critical infrastructure to the state far exceeded the immediate physical damage caused by the rocket strike. The fallibility of human miscalculation in the post-human Stack of Israel’s territorial volume suggests that the difference between the capacities immanent to materialities and their interaction with humans, which characterises the heterogenous composition of the state as a holistic object, is a factor of primary significance in the mediation between affective security and insecurity.

7.7 Conclusion

Iron Dome is an object that modulates the affective atmosphere but does not act as a singular force to produce security or insecurity. Rather, its latent capacities work in complex relation to other technologies and humans to produce these affective dispositions. This does not mean, however, that Iron Dome sits flatly alongside other assembled elements in the territorial volume and that all of these materialities exert an equal agentive pull. Iron Dome’s techno-ecological position within its environment fits broadly with Bryant’s (2014: 202) category of a “bright object” which he defines as “a machine that gravitationally overcodes the local manifestations, movements, and becomings of other machines” in relation to less powerful or conspicuous objects within its milieu. Although Iron Dome is more obvious and alluring than these other objects, work must be done to make visible and clear the schema through which it exists and acts in relation to other materialities and

practices – such as infrastructures, technologies, routines, habits, and political activities and discourses.

Acknowledging the relational inequality and incommensurability of objects in perpetuating states of security or insecurity in conflict requires an evaluation of object politics that gives consideration for the ways that objects can either reinforce, exceed or inhibit the biopolitical project of security:

A thorough materialism of security might learn to attend not only to the excess of matter — the ways in which materials exceed their assembling or writing into apparatuses — but also to a stranger sense of materiality as taking place with multiple properties and capacities. To put it differently: in addition to understanding how life is now governed in and through its materiality (through, for example, critical infrastructure), it is also vital to understand apparatuses of security as material compositions populated by things with different powers of expression and action. To do so is to attend to the life of apparatuses of security while, at the same time, showing how life — and in our case the turbulent life of events — is security's referent object. (Adey and Anderson, 2012: 113)

According to Adey and Anderson, what must be foregrounded in discussions of the materialities of security is “life” as the fundamental “object” of security. However the vitality of life that must be secured comes to exceed the human subject, and increasingly incorporates infrastructures (Aradau, 2010), the *mobilities* of people and capital (Adey and Anderson, 2011), and even the apparatuses of security themselves. Therefore the “the referent object” of that which must be secured both encompasses and exceeds the biopolitical domain. This widened conception of what must be secured alters the calculus of what the acceptable purpose of war can be, as well as what weapons and acts can be used to produce security.

The empirical case presented in this chapter suggests that in the geopolitical context of the Western Negev, Iron Dome exists and works towards the stabilisation and preservation of the state itself as the ultimate referent object of security, rather than the

“bare life” of its citizenry (Agamben, 1998: 6). This is evident in how military decisions are made on where and why Iron Dome is deployed, and is even designed and programmed into the system’s architecture in order to make economic calculations that weigh financial risk against existential risk. This contradicts both the social contract model which reasons that the purpose and responsibility of the state is to protect the individual, and the Foucauldian position which points to the population as the object and means of security through which power is exercised according to a utilitarian rationality. Instead, protection of the population is only one possible object of security in the governance of territory through technological apparatuses that is weighed against other bureaucratic rationalities by political and military decision-makers. Such considerations include damage to the state purse, strategic advantage, defence of infrastructure and assets, and speculation on political cost or benefits. Technological objects are designed and delegated the labour of protecting the state, although in actuality their capricious capacities are excessive and insubordinate to human agencies, resulting in ambivalent actions that can destabilise the project of state control just as easily as supporting it.

The concluding chapter of this thesis will make a synthetic analysis of the three core case studies that illustrate how military technologies work through the surficial, subterranean and aerial dimensions of Israel’s territorial volume. The more-than-human volume of the Israeli state will be treated in relation to its spatial contiguity with the territory of Gaza in the 2014 Gaza War, and the wider Gaza-Israel conflict. This spatial discussion will be linked to the formal, practical and everyday registers in which technologies are politically

salient.⁶ In doing so, the chapter will push towards conclusions that can elucidate how, and the extent to which, military technologies constitute the state and exert political influence upon it.

⁶ N.B. The “formal, practical, everyday” schema here should not be conflated with the similar distinctions made by Ó Tuathail and Dalby (1998: 4) and Dittmer and Dodds (2008). Whilst it borrows loosely from these iterations, its purpose and definitions of categories differ in several significant ways. See Section 8.1 for a more detailed discussion of this framework and its differences from the above authors.

CHAPTER 8. CONCLUSION: RE-EVALUATING TECHNOLOGY, TERRITORY AND THE STATE IN VIOLENT CONFLICT

8.1 Introduction and summary

This final chapter consolidates the thesis' overall argument in respect to the preceding empirical analysis. In doing so, it spells out the analytical conclusions of this research and explicates its main contributions to the study of geopolitics in political geography. The concluding section suggests a pathway for this research's value and potential for impact beyond the confines of the discipline.

To summarise, this thesis began with the call for a more precise model that can accurately represent how technological agency affects state power in a way that accounts for both technological systems' and the state's symbiotic alignments to retain stability as objects. In order to illustrate the necessity and value of this intervention, present treatments of technologies in geopolitical conflict from both critical geography and normative strategic and policy discourses were examined through the lens of OOO's paradox of duoming. This demonstrated that the powers of technologies are both overmined as omnipotent over human agency and undermined as subservient to human desires, sometimes even contradictorily within the same argument. In order to suggest a corrective to duoming, the thesis applied a hybrid more-than-human epistemology and methodology that relies on the in-depth examination of empirical evidence derived from thick case studies to highlight the material aspects of geopolitical phenomena (Barry, 2013).

The three interlinked case studies of the *Surficial*, *Subterranean* and *Aerial* presented in Chapters 5, 6 and 7 respectively worked through the territorial volume of the Gaza-Israel envelope to analyse the Israeli state's attempts to use technological means to manage space, in order to maintain its integrity and authority as required by the political logics of sovereignty and security. They do so by correlating the interplay between the formal, practical and everyday registers of geopolitics to the material and temporal processes that politically (re)shape space. This tripartite schema borrows loosely from earlier iterations of the "formal, practical and popular" modes of "geopolitical reasoning" formulated by Ó Tuathail and Dalby (1998: 4) and rearticulated by Dittmer and Dodds (2008) as a framework for analyzing geopolitical discourses in their project of popular geopolitics. However, its application here modifies the previous versions of the triad to make it a viable analytical tool for a more-than-human geopolitics, and as such differs in several notable ways from its predecessors. Here the 'formal' register refers to elite geopolitics in the sense of normative international relations, state diplomacy, strategy and policymaking; the 'practical' refers to the tactile bureaucratic, technocratic, scientific and operational techniques and practices through which geopolitics are governed by the practitioners of the state and technologies; and the former "popular" category is replaced by the 'everyday' to classify the quotidian perceptions and practices through which individuals do more than interpret or internalise geopolitics, but also experience it, act upon it and reconfigure it.

The *Surficial* case study emphasises the roles of the technological capacities of weapons on the formal geopolitics of strategy, international law and legitimacy. However, it also relates these elite concerns to their cyclical feedback with the practical domain by

examining the messy entanglement between the IDF's tactics and uses of technology in attempting to manage Hamas's symbiosis with the insubordinate urban terrain of Gaza's cities and refugee camps, and formal, everyday and popular mediations of Israel's legitimacy. The *Subterranean* case study primarily deals with the practical register of the techno-scientific practices of geophysical sensing experts to render territory legible and controllable in the case of tunnel detection at the Gaza-Israel border. However, it also touches upon how this project is strategically vital for the state as a formal political concern in relation to domestic everyday concerns of both the affective security of the border residents and public dispositions surrounding missing soldiers in Israel. In turn, the *Aerial* case study of the Iron Dome missile defence system focuses on the everyday security affects, experiences and practices of Western Negev residents. Here too the everyday dimension is bound up with the formal politics of Iron Dome's strategic value and the neoliberal economic rationality of the state, and the system's algorithmic practices of missile detection, as well as its portability and deployment. In all of these cases, the overlaps between the formal, practical and everyday are not necessarily neat and hierarchal. Rather, these interfaces are sites of contestation or in some instances negotiation, and there are often more disconnects and miscommunications between registers than smooth translations between them.

The above empirical studies suggest that in actuality the state's territorial control is precarious and volatile, rather than stable and assured. This means the state must constantly work to adapt in order to stay viable as a locus of sovereign power, in both anticipation of and response to the permutations of internal and external forces that threaten it. State decision-makers and security practitioners deploy technologies as solutions to neutralise

these threats to its sovereignty and political authority. However, the relationship between means and ends here is not linear. Technologies have both active agencies and withheld capacities, as well as limitations arising from the capacities they lack which can diminish their agency. These qualities of technologies can variably enhance or undermine the stability of the state in complex and unanticipated ways due to the dynamic *interplay* of technological, socio-political and geophysical factors.

The above synthesis points towards three original contributions to the literature that can be distilled from the thesis. First, it develops a hybrid theoretical approach that borrows aspects from OOO, ANT and assemblage theory, as well as the synergies and productive differences between them, to elucidate a more-than-human geopolitics. This can give a more realistic and pragmatic account of technological agency in the anomalous contingencies of war and violent conflict than existing theorisations in political geography. Although the thesis' application of Harman's (2016) take on OOO is often more immediately obvious than its use of the other two theories above, it adds to OOO two novel concepts of *limitations* and *detachments* to address the implications of counteracting forces that weaken an object. This is something missing from Harman's analytical toolkit of capacities, agencies and symbioses.

Second, it demonstrates that technologies are applied by the state's decision-makers and bureaucratic institutions to do work that stabilises the state as an object. However, this instrumentalization of technologies is frequently thwarted due to the iterative complexity and *excessive* power of the interrelations that constitute geopolitical processes.

This comes from the convergence of technologies, geophysical materialities, spatial configurations, temporalities with divergent human political desires in the formal, practical and everyday geopolitical registers, as well as the ambivalent and indomitable ontological capacities of the technologies themselves.

Third, it argues for a reinvigoration of place specificity and rich empirical detail in the geopolitical analysis as an antidote to the lack of precision, clarity and nuance in many current accounts of technologies and war in the discipline. This includes a more detailed attention to the difference that place generates for the constitution of geopolitics, particularly in how technological materialities and practices relate to the socio-political dynamics, topology of terrain, and elemental geophysical properties and processes endemic to a particular place. This awareness of difference can allow for more meaningful understandings of violent conflict and offer a more helpful basis for targeted interventions.

The remainder of this chapter will consider how the three case studies of the *Surficial*, *Subterranean* and *Aerial* layers of Gaza-Israel in and around the 2014 war push towards a wider evaluation of the implications that a critical examination of technological agency has for understanding the nature and power of the state. The crucial question that arises from the findings of this research is what is the value of applying more-than-human theory to political violence for producing new knowledges for understanding and intervening in situations of violent conflict? In other words, what can a materialist understanding of the political agency of technology in violent conflict do to ameliorate or mitigate the causes and/or effects of political violence? This question will be addressed using examples from the

thesis' empirics to re-evaluate its theoretical concerns about technological agency, the spatialisation of state power and productive avenues for mediating geopolitical conflicts.

8.2 Rematerialising place in geopolitics

The thesis' epistemological grounding in the consanguineous but ontologically divergent materialist theories of OOO and ANT is an experiment to test what "*Dingpolitik*" (Latour, 2005: 4) — how nonhuman objects shape the interactions of the physical and social in the world — can say and do in the exceptional context of violent geopolitical conflict. This is in contrast to these theories' typical application to the deliberative mode of politics that addresses "matters of concern" in other contexts — scientific discovery, ecological management, technological innovation and projects, business enterprises and post-conflict reconstruction (Marres, 2010: 189). Conversely, applying these supposedly "lame bourgeois" (Jones et al., 2007: 271) and unapologetically non-partisan theories to examine the contentious Gaza-Israel conflict was deliberately intended from the outset of this project to be a provocative experiment to test some of the assumptions that have arisen in recent critical geopolitics about the relationship between military technologies and state power. It can be argued that these problematic renderings of techno-politics emerge from the subdiscipline's tendency towards aversion or opposition to geopolitics as an analytical phenomenon (Kelly, 2006; Routledge, 2003; cf. Ó Tuathail, 1996), or a utopian desire to transcend its structures and configurations (Dodds, 2000).¹ This attitude derives from

¹ Simon Dalby, a key figure in critical geopolitics, stated in an interview: "I wasn't attracted to geopolitics; I was repulsed by it, and in particular by the geographical formulations used to denigrate other peoples, and the invocation of supposed geographical verities to justify violence" (van Efferink, 2015). However, this response to the nature of geopolitics fails to consider that geopolitics is an inevitable and permanent phenomenon that

associations in the discipline with the production of knowledge about place as a means to facilitate the project of European imperialism in the 19th and early 20th centuries, and the exercise of military domination by competing states (Klinke and Bassin, 2018; Powell, 2011; Agnew, 2005; Dodds and Sidaway, 2004; Ó Tuathail and Dalby, 1998).

The “avowed politicization” of research in political geography (O’Loughlin, 2018: 149) according to an anti-geopolitical consensus undercuts not only its credibility and breadth of appeal beyond its adherents, but ultimately its commitment to sophisticated theorisation of the ambiguities and details that empirical depth brings. As evidenced by examples in the introduction and literature review, dominant approaches in the subdiscipline to the technology-geopolitics nexus rehash variations of an ideologically inflected trope that generalises spatial difference according to a universal archetype. This perspective can be summarised as follows: the colonial/neo-imperial conditions of global hegemony by Western states (Israel is included in this classification) produce, and are reinvigorated by, the repressive deployment of military and security technologies by these powers.

In contrast, this thesis suggests that the didactic representation of geopolitics depicted above can be superseded by a geopolitics that is more cognisant of how the specificities of place condition the sorts of power that emerge through the relational potentials of nonhuman agencies. Such an awareness gives greater “radical” *and* “realistic” potential to understanding socio-political processes than traditional radicalisms (Collinge,

results from the spatial ontology of the human proclivity for political organisation, which it is impossible to transcend, and that violence has always been part and parcel of the spatial projection of power.

2006: 250). This reappropriates the label “radical” to suggest that the latent powers of objects to shape the world are a more powerful force in enacting political change than any discursive human politics alone. Such a geopolitics must consider in forensic detail how the spatial relationalities, infrastructures, mobilities, technologies and manufactured materialities, and the elemental constitution of the Earth that configure place relationally affect human political affairs. Geographers must think about the dynamics, practices and geopolitical substance of war in terms of the granular detail that an analysis of place provides, and the differences that make a particular conflict endemic and distinct from other conflicts. This includes giving meaningful consideration to the contexts in which military strategy, operations and tactics work as techniques of geospatial control, and how countervailing factors and forces work to destabilise the power of a given actor in a specific spatial configuration.

Contempt for geopolitics from within the subdiscipline also inhibits political geographers’ abilities to provide workable and listenable recommendations for intervention to mitigate war’s length, severity or harm to policymakers and practitioners. This fear of “selling out” (Toal, 2018: 153) limits us to the status of outsiders who might align with a few counter-state NGOs or activist programmes, but fail to have the influence required to be taken seriously in policy debates. Violent conflict is an enduring and pervasive political practice that is carried out by states, counter-state revolutionaries or militants, and non-state criminal organisations. A better awareness of place makes it possible to formulate targeted interventions that address the unique processes and challenges that are endemic

to a specific conflict, rather than applying a 'one-size-fits-all-approach' to a range of different situations.

Therefore, instead of persisting with the entrenched antagonism between critical geopolitics and both traditional and neo-realist theories of geopolitics from International Relations that assume a normative international order, it is perhaps necessary to find a conciliatory approach that at least allows concomitant space for the two approaches, even if it cannot unite them. Kelly (2006: 50) advocates that "what might be productive to the study of geopolitics in general is to agree that for the fullest understanding we might accept both types' unique perspectives as legitimate and productive and find that each viewpoint by itself tells somewhere about half the truth." To add to this, rather than seeking to deconstruct, demolish or wilfully disregard the *Realpolitik* approaches used by practitioners of statecraft, a critical approach to geopolitics ought to consider the explanatory value of these normative approaches for understanding the logic by which the state works to maintain its stability. This could provide more subtle interventions to problematise or redress the flaws of these mechanisms. The contextual discussion of shifts in the IDF's strategic approaches in relation to the state's political legitimacy in Chapter 4 sought to model such an analysis.

The more recent formulations of the materialist turn in political geography that propose a fuller volumetric conceptualisation of territory and an elemental geopolitics take steps in the right direction by emphasising the physically real qualities of space in geopolitical processes over the abstraction of its discourse. The epistemology applied in this thesis works to push this rematerialisation of space in geopolitics further by arguing for a

greater attention to how the place-specific dynamics of technological, geophysical and human convergence in particular violent conflicts and wars coproduce their unique geopolitical conditions. Showing greater attentiveness to the capacities and limitations of the agencies of the diverse human actors, technologies, and the elemental and atmospheric constitution of space within a specific environment can lead to more nuanced understandings of conflict. The application of Harman's concept of duomining in this thesis has made this argument possible by forcing a re-evaluation of the actuality of technologies in the world as agentive objects in themselves, and as symbiotic constituents of larger objects.

8.3 Rethinking technological agency in conflict

This section evaluates how the empirical case study of the Gaza-Israel conflict presented in the thesis encourages a reconsideration of the roles of technological agencies in spaces of conflict. As the empirical chapters demonstrate, military technologies clearly do have some political agency, however it is constrained and modulated by other social, political and environmental factors, including the elemental volume of terrain, and the excessive amplification that results from their coalescing.

Bousquet et. al.'s (2017: 2) concern with "the making or becoming of weapons" discussed in Chapter 5 fits neatly with ANT's interest in the processes of translation that make weapons viable agents. Whilst the former intervention makes a much needed and sophisticated contribution to the literature, it can be developed further by incorporating Harman's concern about an object as a stable entity that can withhold and activate its

varying capacities at different times. The biography of a weapon should not only consider the factors and context that bring that weapon into fruition, but also evaluate the latter stages of the weapon's lifecycle including its use or unused potential, and the aftermaths and iterative developments that result from its being.

Technological capacities and limitations need to be considered in relation to the *excessive* spatial and temporal context in which they are materialised. A capacity is the latent potential of an object to exercise agency that exists due to the relation between an object's inherent properties and the other material capacities that constitute its environment, and the temporal processes that shape and reshape that environment. However, a capacity precedes agency, and an object has multiple capacities that are withheld and can become agentive in different times, places and circumstances, and in relation to other agencies and events. Likewise, an object's limitations are constraints to an object's agency, although they can arise from a lack of certain capacities. Limitations emerge when an object's agency is opposed or counteracted by another agency in a way that modifies or negates that agency. Furthermore, a limitation should not be confused with a capacity that adversely subverts human intentionality. The difference here is that a capacity exists because of an object's intrinsic properties. However, what is shared between capacities and limitations is that they become salient through an object's existence in relation to the other objects that make up its spatial environment and temporal context, but only become apparent through the clash of agencies in action, often during the intensities of events.

The *Aerial* case study illustrates how an object's capacities exceed its instrumental function as envisaged by its human allies. It is important to remember that instrumentality

should not be conflated with excessive possibilities of capacities. Capacities must be epistemically differentiated from limitations by identifying the source of agentive potential, and a capacity (i.e. innate potential) should not be confused with the agency (i.e. action) that arises from it. Iron Dome's ambivalent capacities to secure or cause insecurity become agentive in different times and contexts. The system's mobility to be redeployed based on security officials' assessment of threats and economic, military or political interests is a capacity that can variably produce security or insecurity through its action in relation to a particular place and set of circumstances. Moving an Iron Dome battery to intercept missiles directed towards Ben Gurion Airport – Israel's only international flight hub and an economically and societally important piece of national infrastructure – in order to maintain its continuity of operation, worked for a time to produce a reassuring atmosphere of security for the country's population during the 2014 conflict. Conversely, the mobility of Iron Dome was pointed to as a source of insecurity by the community worker in Ofakim, because residents' practices in response to civil defence alerts become less vigilant due to the expectation of protection of an Iron Dome, despite the very real possibility that a battery protecting the area could be moved elsewhere.

Other aspects through which Iron Dome exercises capacities in a capricious way are the mutable conditions or logics it can create for the state's strategic decision makers, which are hard to generalise and anticipate beyond a relation to specific contexts and actors. The system's limitations become apparent through its relational agency to other agencies in its environment. For example, Iron Dome is not able to intercept short-range mortar attacks aimed at communities closest to the Gaza border. This is due to the limitations presented

by the agency of the mortars at that trajectory and range, even though the technical capacities of Iron Dome specify that it can defend a spatial depth between a 4-kilometre and 70-kilometre radius from its location. Another limitation that became apparent in the case study is the finitude of available state resources that can be devoted to Iron Dome against competing priorities, such as the economic considerations, production capacity and human resources. This materially limits the number of batteries, locations and stock of interceptor rockets available to the military. Additionally, it is a cause, and justification, for political inertia against Iron Dome by its opponents and sceptics amongst Israeli policy decision-makers.

In the case of violent conflict as a particular class of phenomenon, the enrolment of technologies unsettles normative strategic assumptions about the nature of war. When properly considered how do technologies affect Clausewitz' (Clausewitz, 1976) "fog" of war, the obfuscating "uncertainty" that results from the intense cocktail of the chaos and speed of military violence? Do the withheld properties of technological objects increase the fog of war, or conversely can their agencies lift the fog of war to "dominate the unknown" (Roboteam, 2016), as one Israeli military robot manufacturer puts it? The empirics of this thesis suggests that the answers to these questions are contingent and complicated, but can be tackled with greater clarity by thinking through technological capacities and limitations in relation to the excessive spatial and temporal milieu of the environment in which they exist. How such technologies act within their environment can be elucidated by using ANT's epistemological toolbox as a supplement to overcome OOO's sometimes static theorisation

of the ontological stability of objects. ANT's concern with mapping socio-technical relations raises questions about who or what the human and nonhuman actors in a contest are, through what kinds of enrolment do they interact, and how do these (inter)actions create change in the world? However caution must be exercised not to attribute equal power to all forms of agency, as inequalities and limitations clearly do exist alongside the creative potential of both human and nonhuman capacities that have not yet been exercised.

To briefly draw from the *Subterranean* example, the tunnels became a vexing problem for Israeli security practitioners due to an entangled combination of spatial and technological factors. Hamas employed increasingly sophisticated engineering practices deliberately designed to thwart detection, which enrolled the complex geology of the region as an agency to limit detection by the IDF. The patterns of settlement and previously withheld capacities of the area's infrastructure, including Israel's own security infrastructure, became salient as agencies that undermined the tunnel-locating efforts. Also, the technological limitations of the geophysical detection systems to deal with the complications caused by the Gaza-Western Negev area's endemic geology became apparent only through the encounter of these competing agencies in such a configuration, which is profoundly connected to the pursuit of political goals. This consideration of the complex spatial constitution of technologies' capacities and limitations raises questions of how, and to what extent, are they enrolled in the production, stabilisation and maintenance of the state as a spatial-political object?

8.4 Technologies, space and the constitution of state power

Attention will now turn to what broader implications a critical examination of technological agency has for understanding the power of the state in geopolitics. Firstly, to reiterate the framing of the state suggested by OOO, states are coherent objects that exceed the sum of their parts. They are impelled to maintain their own existence by working towards a stable equilibrium, despite the heterogeneity and differences of their many constituent parts. This equilibrium is achieved, or at least strived for, through constant work by the parts that applies bureaucratic practices and geostrategic logics of sovereignty and security towards the goal of maintaining the integrity of the state as a whole. However this effort is frustrated by countervailing forces of the competing agendas of factions within the state, other states, markets, the citizenry, NGOs, the geophysical environment and so forth (Clark and Jones, 2017). Technologies are frequently applied by states, especially in the most developed countries, as a means to enact stability. However, in actuality they are rarely the 'quick fix' that decision-makers intend them to be. This is due to the iterative complexity that characterises the relationship between technological capacities, spatial materialities, human intentions and political accountability for consequences.

War and violent conflict are the most extreme and consequential examples of the hubristic applications of technology in the state's struggle to maintain its coherency. In the novel *Blood Meridian*, Cormac McCarthy's (2015: 263) villain Judge Holden meditates that "war is the ultimate game because war is at last a forcing of the unity of existence. War is god." Although this is an ostentatious and hyperbolic philosophical claim, there is a certain degree of truth in it from an OOO point of view. War and political violence are in some sense

politically productive forces that work to unify the existence of the state. This occurs paradoxically through violence's destructive potential that comes into being by way of the state's military apparatus' coproductive enrolment of technologies with human actors and their political desires. This technological mediation of violent destruction attempts to achieve political reconfiguration through the cataclysmic reshaping of spatial reality in a way that re-centres stability in a manner that is desirable, or at least more desirable than prior conditions, to one or more of the antagonistic objects in war. However, in actuality the volatile conditions of war, and the unruly materialities that contour its unfolding and aftermaths, exceed rational calculation and produce a trap in which the iterative emergence of unanticipated conditions requires an ongoing and ultimately insoluble cycle of management by the state.²

To clarify, this argument does not in any way suggest that geopolitical scholars ought to adopt Luttwak's (1999: 36) exhortation to "give war a chance." War should never be celebrated as a positive or decisive creative process that instrumentally produces the political stability that results in the teleological condition of peace. Rather, it should be interrogated as a set of chaotic, iterative and excessively forceful more-than-human processes through which geopolitical power is spatially remade, redistributed and/or rearticulated in complex and often unpredictable ways.

To return to the problematisation that was raised in Chapter 1 of the radical critiques regarding the Israeli state's use of military violence in the Gaza conflict, the empirical

² In colloquial terms this process can be understood through the metaphor of the classic arcade game Whack-a-Mole.

evidence presented in the thesis indicate that Israel does not exercise an omnipotent hegemonic control over Gaza from a position of absolute strength as a pre-determined strategy, presumably to bring about its eventual subjugation or eradication. Instead, a more plausible explanation for the Israeli state's coercive and destructive practices come about through its enrolment in a frequently reactive programme of iteratively managing relentlessly emergent risks and threats. This indicates a certain precarity and instability that characterises the inner mechanics of state power. Despite Israel's disproportionate military advantage in conventional terms of weaponry and force size, and political and economic strength relative to its Palestinian counterparts, it is constantly labouring with a variable amount of success to anticipate and mitigate threats such as tunnels, rockets, incendiary kites, stabbing attacks, or car rammings, which can result in detrimental political consequences for the state. Technologies are deployed by Israeli security and military branches to solve the threats to the state generated by the interplay of geopolitical circumstances, including its own previous actions, and the geospatial environment.

Rather than containing the existing problem, these technologies either produce new problems or precipitate a shift to a new mode of confrontation that requires a counter-response by the state. An example from the *Surficial* case study is Israel's struggle to justify the proportionality of its military actions in the aftermath of Operation Protective Edge. The IDF applied superior force in conventional military terms to dominate urban spaces in Gaza during the 2014 war. However, the significant number of Palestinian casualties and severe damage to Gaza's built environment that the IDF inflicted through its application of heavy firepower ultimately had a negative impact on its ability to meet its stated military objectives,

since it created adverse publicity that caused political pressure for Israel to halt its operation before completing its goals. The operation also had the opposite effect from the desired outcome of enhancing the state's political stability. Instead, Israel faced a crisis in its international legitimacy, which the state's strategists perceived as having the potential to constrain the IDF's latitude for future military actions. This necessitated new techniques of public relations and elite-level diplomacy by state apparatuses in order to contain the consequences of its previous uses of weaponry. However, what remains less clear is the extent to which political legitimacy or illegitimacy conferred through the articulation of technological capacities in legal forums translates to political legitimacy in other arenas, such as global public attitudes, media and diplomatic relations. This question merits further investigation, possibly through a comparative study that can give a broader range of insight in different contexts beyond the specific contingencies of the Israel-Palestine conflict.

To draw this discussion back to the broader applicability of the case studies presented in the thesis to the geopolitics of conflict, what becomes evident through analysing these examples is the central and crucial role of the interaction between technologies and the physical environment in conditioning the spatial and temporal vectors of political violence. Geopolitical scholarship must attend to how these materialities rupture, reconfigure and recast socio-political relations. To restate the point made earlier, this emphatically does not mean reifying violence as a stabilising political force in the manner of Luttwak, but rather calls for thinking more critically through the political operations and effects of violence, including the iterative ability of violence to exceed human intentionality in unpredictable and uncontrollable ways. In other words what must be interrogated is why

do states use violence, through what means, and how do the means of violence come to matter in ways that exceed their utilitarian value?

Another pitfall that must be avoided in this mode of enquiry is fixating on the normative concern of strategy with how to conduct war, and its symptomatic warning sign of regurgitating Clausewitz' dictums *ad nauseum*. Rather, attention must be given to how strategy works as a technique of governance, and what it actually does when looking beyond its functional application. This is exemplified by the question of why Israel does not attempt to permanently destroy Hamas to neutralise Gaza as a threat, which was discussed in more specific terms of regional statecraft in the conclusion of Chapter 4. In the broader theoretical conceptualisation of this thesis, Israel's strategy of responsabilising Hamas as a territorial sovereign, despite Hamas' only partial ability to fulfil this normative role due to Israel's maritime and aerial control, can be understood in terms of the constitution of Gaza and Israel both as spatialised objects in their own right vis-à-vis their respective governments and as relational components of the spatial assemblage of Gaza-Israel. The spatial contiguity and interconnectivity of Gaza and Israel within the territorial volume of Gaza-Israel impels Hamas and the State of Israel to either compete or cooperate in order to maintain their stability as territorialised objects. In the present case, the Gaza-Israel conflict is perpetuated through competition that results from the contrary objectives and *raisons d'être* coded into each political object, and is aggravated by the profound asymmetry in technological power and resources between them, which fuels the intensity of violence and entanglement in the cycle of hostile action and reaction that has become the defining feature of the conflict.

As the above example indicates, in order to trace and derive explanatory meaning from the bondedness between geopolitics, power and the ontology of the state, it is necessary to pay attention to the technological worlding of space. This should consider carefully how the spatialised technological capacities that constitute the state modify, and are in turn affected by, the relations of cause, effect and force enmeshed with the goals and desires of the state's human translators. OOO's paradigm suggests that there are key symbioses that occur between the state and technological objects in which they combine to increase the state's power and stability. However, this thesis suggests that consideration must also be given to the *detachment* of objects in which the state jettisons a symbiotic relationship in order to mitigate harm to its power or integrity. Take for example, the banning of the use of white phosphorous shells following pressure and embarrassment from human rights organisations in the aftermath of the 2008 Gaza War.

Rather than there being a stable programme of management as much of the risk literature assumes, in the case of Israel's involvement in the geopolitical instability of the MENA region there is an unsettled movement along the risk-emergency spectrum, which technological capacities are enrolled to modulate and conversely are eschewed when their potential to destabilise the state outweighs their efficacy or beneficial qualities. This requires further scholarly attention to explain its dynamics, which is beyond the purview of this thesis. However, what can be addressed here is the potential usefulness of thinking through geopolitical violence in a way that decentres the premise of state stability as the default condition of political order. By doing so more careful consideration can be given to how technological capacities and limitations modulate political stability vis-à-vis security and its

antithesis, violence. This in turn can have practical value for encouraging new modes of reflexivity in both the analysis of geopolitical conflict, and in the policymaking and operational decision-making processes that govern state-sanctioned violence.

8.5 What can a materialist techno-politics do to mitigate geopolitical violence?

The findings of this thesis make a strong case for rethinking the relationship of military technologies in geopolitical violence in relation to their spatio-temporal ontologies and agentive potency in order to give a more sophisticated account of their significance in shaping conflict. Alongside this reappraisal must come a praxis that can make it valuable for dealing with geopolitical conflict. This follows from Latour's (2004) call for a shift from deconstructionist critique in the social sciences to an engaged concern for realising the world-creating potentials of nonhuman agencies. This thesis avoids by design any moral justification against political violence in order to highlight the precarity of technological agencies within a materially real world, and as a strategy to unsettle didactic moral certainty that clouds analytical insight about the nature of war. As a result, the thesis presents a certain scepticism towards teleological attempts at peacebuilding that hope to bring about the end of war as a phenomenon stemming from moral certainty and commitment. Instead, it advocates a more partial approach to conflict mitigation along the lines of what Thrift (2007: 287) calls a "politics of compassion," which is cognizant of moral complexity and ambiguity, and relies on having "the courage of one's own ambivalence." However, this is not to say that a "politics of compassion" does not entail an ethical cognisance of the pain and suffering that political violence inflicts on individuals and social groups. In the present

research this empathy came from both the complexities of the researcher's beliefs and positionality, and his experience of ethnographic engagement with some of those affected by conflict and war. As such, the possibility of mitigating violence through a more cautious and circumspect approach to the political utility of state violence (and hopefully political violence by non-state actors as well) is an unequivocally desirable outcome from this research.

Pacifism and moral opprobrium are naïve responses to the ubiquity of geopolitical conflict, but what replaces them? What can be proposed towards this end is an application of Jasanoff's (2003: 243) "technologies of humility" from the STS literature as a response to the inevitability of uncertainty. This requires a more tentative approach to how military technologies are understood and utilised that gives careful consideration of what technologies are, and how this affects what they can or cannot do. This means accepting the very real limits to what can be known and predicted about the extents of their capacities and limitations, and an awareness of the overwhelming complexity of their imbrication in a spatial context. It also requires eschewing tendencies to either subordinate technological capacities to techniques for achieving instrumental geopolitical objectives, or to superficially rely on technological agencies as complete solutions to profound geopolitical challenges. This more modest approach may lead analysts, political decision-makers and their advisors to consider differently decisions about whether to apply military violence as a solution to further the stability of the state in a specific geopolitical context relative to the destabilising entanglement that such an act could trigger. It could also help military practitioners in their analytical approach to evaluating the means, extent and scope of the use of force relative

to the significance of a given military objective in comparison with the wide field of adverse possibilities, both foreseeable and unpredictable, that could come to fruition through that application. Put differently, the “calibration” of force deplored by Shah (2017: 19; see section 5.2) might not necessarily be a base political evil, or a hypocritical equivocation to legitimise state-sanctioned killing. It could also be transformed into an approach for mitigating war’s injuriousness by refining and making more accountable the ways in which advanced military technologies are, or ought to be, enrolled in war.

A more reflexive turn to “technologies of humility” can also encourage greater democratic participation by the state’s citizenry in decision-making and overseeing “accountability” in the application of technologies to manage geopolitical insecurity by questioning “what is the purpose; who will be hurt; who benefits; and how can we know” (Jasanoff, 2003: 226, 240)? However, implicit challenges to this project are the opaque bureaucratic logics and protocols of secrecy through which state security apparatuses operate. This is a problem with no easy solution. However, mechanisms that have had some efficacy in “opening the black box” (Müller, 2012) of state security apparatuses include whistle-blowing, independent and critical academic research, and robust investigative journalism (Walters, 2014b; Ku, 1998). Former US National Security Agency contractor Edward Snowden’s revelations to journalists about the pervasive and illegal extent of surveillance by the United States intelligence services and its foreign partner agencies generated a huge amount of public controversy regarding the technological potentials of telecommunications surveillance and metadata collection (Greenwald, 2014). This moment raised profound concerns in public discourse about citizens’ privacy and welfare, and the

abuse of power that can easily take place as a result of the lack of democratic oversight of secretive state security agencies. Unseating the secretive workings of state security apparatuses, or at least opening them up to public scrutiny where possible, can enhance critical oversight of the capacities of security technologies to do harm and allow for more rigorous evaluation of their actual efficacy in contrast with the claims that are made about their benefits.

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LIST OF INTERVIEWS AND RESEARCH SITES

In keeping with the University of Birmingham's ethical guidelines and standard research practices in the social sciences, all interviews have been anonymised to protect the confidentiality of participants. Twenty-one interviews were conducted in total, including three elite interviews that were conducted on an off-the-record basis in accordance with the participants' wishes, and two elite interviews that are not referenced in the thesis. Elite interviews with high-ranking military personnel, academics, analysts, scientists and engineers referred to in the thesis are designated 'Expert Interview' and numbered in accordance with their order of appearance in the main text. Everyday interviews with local activists, social service practitioners, and citizens are listed in order of appearance using first-name pseudonyms to safeguard participants' identities. In several instances in which particularly sensitive information is being related, the pseudonym or designation, location of the interview and professional affiliation of the interviewee has been omitted in the text to provide participants with an additional layer of anonymity.

Expert interviews:

Expert Interview 1 - Geographer specialising in remote sensing at an Israeli university, March 2016 (notes).

Expert Interview 2 - High-ranking IDF officer (reserve) involved in strategic planning of 2014 Gaza War, March 2016 (recorded).

Expert Interview 3 - Engineer specialising in seismic detection for an Israeli scientific institution, April 2016 (notes).

Expert Interview 4 - Engineer specialising in GPR and FDEM at an Israeli university, April 2016 (notes).

Expert Interview 5 - Engineer specialising in seismic detection at an Israeli university, April 2016 (notes).

Expert Interview 6 - Retired executive from a major Israeli defence company, January and March 2016 (recorded).

Expert Interview 7 – High-ranking IDF officer (retired) and former Israeli government advisor, February 2016 (recorded).

Expert Interview 8 - Missile defence expert and retired senior civil servant in the Israeli Ministry of Defence, January 2016 (recorded).

Expert Interview 9 - Research associate at an academic Israeli strategy think tank, and former civil servant involved at a senior level with Israel's national security strategy, March and June, 2016 (recorded).

Expert Interview 10 - Defence journalist for a prominent Israeli broadsheet newspaper, January 2016 (recorded).

Everyday interviews:

David - Resident of Kibbutz Nahal Oz, approximately 1.5 kilometres from the Gaza border, and community activist with Movement for the Western Negev, June 2016 (recorded).

Maya - Resident of Kibbutz Nirim, approximately 2.5 kilometres from the Gaza border, March 2016 (notes).

Shira - Resident of Kibbutz Nir Am, approximately 2 kilometres from the Gaza border, and activist leader with Movement for the Western Negev, June 2016 (recorded).

Noam - Resident of Kibbutz Be'eri, just outside Sderot and approximately 5 kilometres from the Gaza border, and community activist with Movement for the Western Negev, June 2016 (recorded).

Yael - Resident of Ofakim, approximately 22 kilometres from the Gaza border, and community trauma response organiser, February 2016 (recorded + notes).

Ari - Political activist for left-wing Meretz party and resident of Kibbutz Bror Chayil, approximately 8 kilometres from the Gaza border, March 2016 (notes).

Fieldwork and site visits:

Defence and Security Equipment International Exhibition, London, UK – September 2016

Primary fieldwork based in Tel Aviv, Israel – January to June 2016

- Academic internship in the Department of Politics and Government, Ben-Gurion University of the Negev, Beersheva, January to April 2016
- Site visit to Ofakim, February 2016
- IDF Challenges conference, Begin-Sadat Centre for Strategic Studies, Bar-Ilan University, Ramat Gan March 2016
- Site visits to Sderot and the Gaza border, March and June 2016

APPENDIX A. TABLE OF NEWS MEDIA SOURCES USED FOR EVIDENCE IN THE THESIS*

* The characterisations of political bias in this table are of course a heuristic simplification, and are partly subjective. Where possible I have referred to the guide produced by the University of Michigan Library (Desai et al., 2018) to label a media source's political bias. These are marked with an asterisk next to the description. However this list only covers American and the occasional British news sources. Therefore I had to rely on my own knowledge and intuition for the other sources. N.B. The Michigan guide classifies the *Wall Street Journal* as centrist, however I have made a decision to label it 'centre-right' due to its pro-market stance.

Source	Location	Editorial bias	Additional comments	Number of citations
<i>Haaretz</i>	Israel	Left	Established daily newspaper with a reputation for high-quality analysis and investigative reporting. Published in both print and online in Hebrew, and online in English. Includes perspectives from across the political spectrum, albeit left-wing sources are more represented.	27
<i>The Guardian</i>	UK	Left	Established print newspaper with online outlet. Its coverage of the Israel-Palestine conflict tends to be sympathetic to the “pro-Palestine” position.	6
<i>BBC News</i>	UK	Centre*	UK public television broadcaster’s news website. Claims to be politically independent. However, it has been accused of both ‘pro-Israel’ and ‘pro-Palestine’ bias by activists on opposite sides in its coverage of the Israel-Palestine conflict.	6
<i>Jerusalem Post</i>	Israel	Centre-right	Print and online English language newspaper.	5
<i>Al Jazeera</i>	Qatar	Left	Arabic and English language satellite news network owned by the Qatari state with an online outlet. It has a broadly ‘pro-Arab’ stance and a clear ‘pro-Palestine’ bias in the conflict. It has been criticised for being a mouthpiece for the political interests of the Qatari state.	4
<i>Times of Israel</i>	Israel	Unclear	English language online newspaper founded in 2012. Claims to have no partisan political affiliation but uses ‘pro-Israel’ political language in its reporting.	3

<i>Ynet News</i>	Israel	Centre-left	Online English and Hebrew language outlet of the established Hebrew daily tabloid <i>Yedioth Ahronot</i> , the second most widely read newspaper in Israel. It has a reputation for a critical stance towards Israeli Prime Minister Netanyahu, but has recently been involved in a corruption investigation that alleges the paper's owner struck a secret deal with Netanyahu to soften the paper's editorial stance towards the PM in exchange for him introducing legislation to curb the circulation of its rival, the right-wing free distribution print newspaper <i>Israel Hayom</i> .	3
<i>Al-Monitor</i>	USA	Centre-left	English language online news outlet that specialises in in-depth coverage and analysis of the Middle East. It is divided into national 'Pulse' sections, which feature regular articles by prominent journalists from that country. The Israel Pulse section features the investigative journalist Shlomi Eldar, who is a vocal critic of PM Netanyahu.	2
<i>New York Times</i>	USA	Centre-left*	Established print newspaper with online outlet. It's coverage of the Israel-Palestine conflict is broadly considered to have a moderately 'pro-Israel' bias, although it has faced accusations of bias in both directions by partisans.	2
<i>Washington Post</i>	USA	Centre-left*	Established print newspaper with online outlet.	2
<i>Reuters</i>	UK	Centre	Global news agency service with online outlet. Has a 'value-neutral' editorial policy.	2
<i>The Economist</i>	UK	Classic Liberal	Established weekly current affairs and business magazine. It has a distinctive editorial position that is 'pro-free market' and socially liberal. It also has an unconventional policy of not attributing individual authorship to articles in order to maintain a homogenous editorial voice.	2

<i>Sydney Morning Herald</i>	Australia	Centre-left	Established broadsheet newspaper with an online outlet.	1
<i>Wall Street Journal</i>	USA	Centre-right	Established print newspaper with an online outlet. Has a 'pro-business' economic stance.	1
<i>Daily Mail</i>	UK	Right	Tabloid newspaper with an online outlet. Known for its populist right-wing political stance.	1
<i>Der Spiegel</i>	Germany	Centre-left	Weekly German language news magazine with an English language online outlet. Known for its investigative reporting.	1
<i>Mother Jones</i>	USA	Left*	'Progressive' bi-monthly magazine with emphasis on investigative journalism about environmental and human rights issues.	1
<i>National Geographic</i>	USA	Non-aligned	Monthly magazine published by the National Geographic Society. Its feature-length articles communicate to the general public about geographical issues and topics of interest.	1
<i>The Independent</i>	UK	Centre-left	Formerly an established print broadsheet newspaper; switched to an online-only format in 2016. Claims to be politically non-partisan although it does have a clear left-leaning ideological bias.	1
<i>The Telegraph</i>	UK	Centre-right	Online outlet of <i>The Daily Telegraph</i> , a broadsheet newspaper with a good reputation for the factual credibility of its journalism. It has a clear conservative political orientation and ties to the British Tory party. Its reporting on the Israel-Palestine conflict takes a broadly 'pro-Israel' stance.	1
<i>Tablet</i>	USA	Non-aligned	Online magazine dedicated to Jewish culture, literature and politics. Has a broadly 'pro-Israel' bias.	1
<i>Time Magazine</i>	USA	Centre-left	Established weekly American current affairs magazine with a good reputation for factual accuracy.	1

APPENDIX B. MAPS OF ISRAEL-PALESTINE AND THE GAZA-WESTERN NEGEV AREA*

* Sources:

Map 1. The author, based on UN map of Israel, no. 3584, rev. 2, January 2004; Open source map modified by the author to add inset for Map 2 and remove UN label and legal statement in compliance with the UN Geospatial Information Section's publication permissions policy.

Map 2. The author, map data modified from Open Street Map data to rescale and relabel place names in English, copyright OpenStreetMap contributors, used with permission granted by CC-BY-SA license.



*Map 1. Political map of Israel with inset of the Western Negev region shown in Map 2.
N.B. The area of the Golan Heights to the west of the Armistice Demarcation Line is an internationally recognised territory of Syria occupied by Israel.*



Map 2. Map of the Western Negev region with major settlements and locations discussed in this thesis labelled for reference (see Appendix D for detailed map of Gaza)

APPENDIX C. ANNOTATED MAP OF GAZA SHOWING ACCESS AND MOVEMENT RESTRICTIONS AS OF 2017*

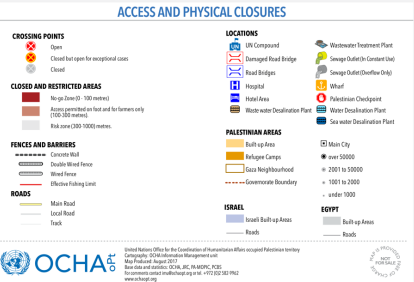
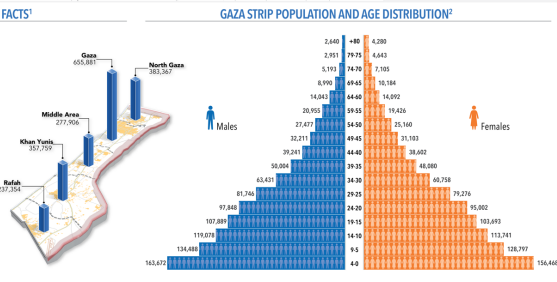
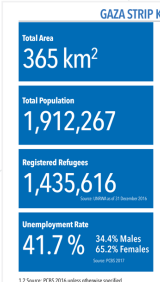
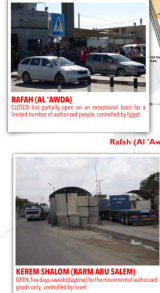
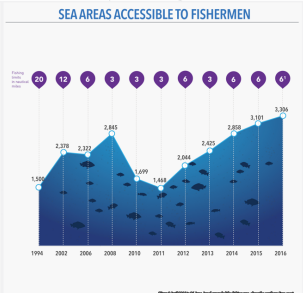
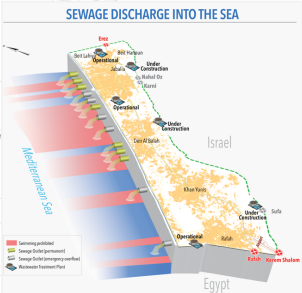
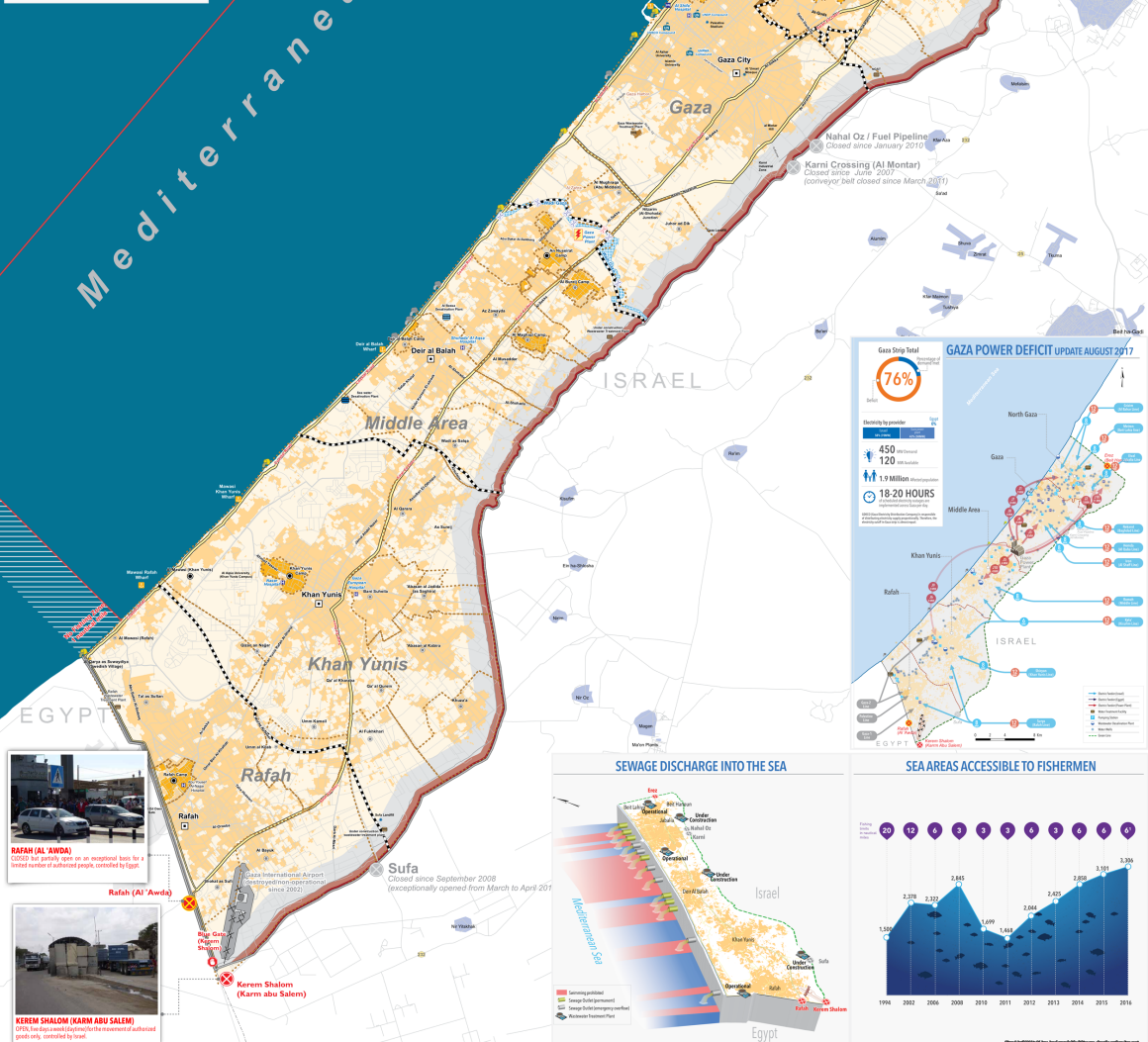
* Source: UN Office for the Coordination of Humanitarian Affairs in the Occupied Palestinian Territories, 2017. Used in accordance with reproduction and attribution policy stated on the document. Available at: https://www.ochaopt.org/sites/default/files/gaza_a0_28_08_2017_draft8.pdf

GAZA STRIP

ACCESS AND MOVEMENT - AUGUST 2017



6 nautical miles fishing limit enforced by Israel since November 2012



1,2 Source: UNCTAD 2016 unless otherwise specified

The information presented and the presentation thereof in this map are not meant to imply any opinion or judgement on the part of the Secretariat of the United Nations concerning the legal status of any territory, city or area or of its authorities, or concerning the extent or nature of its boundaries. It is the responsibility of the user to verify the accuracy of the information presented.